Introduction to *SPSS* Statistics Software Package

e-mail: training@glasgow.ac.uk
web: gla.ac.uk/services/it/training

Introduction

SPSS is a computer program used for statistical analysis. SPSS consists of a **worksheet** where data are stored and **commands** that operate on the data. In the worksheet you can store columns of data denoted by VAR00001, VAR00002, VAR00003, VAR00004, … and may have variable names. The total worksheet size and number of columns available to you depend on your computer – the total worksheet size available to you is displayed whenever you start SPSS.

When you want SPSS to analyse data, you type the appropriate commands. There are commands to read, edit and print data, to do plots and histograms and to do various statistical analyses such as tests, regression and analysis of variance.

Course objective & structure

The general objective of this introduction is to provide you with the basic skills needed to use SPSS. This course *does not* teach you how to do statistics with SPSS; its purpose is simply to familiarise you with the application.

By the end of this course you should be able to demonstrate competence in the following areas:

- open SPSS and understand what the different windows do
- create variables in order to properly structure and format data entered
- enter data and save it on personal file space or personal disk
- use the help system in SPSS
- know how missing data is indicated and handled
- know the different file types involved
- enter data in rows and columns, erase, copy and paste
- compute new variables from existing data
- use the Random Data facility to generate data for testing & practice
- know how to import numerical data from an Excel spreadsheet
- know how to print raw data and graphics
- know how to export raw data and graphics to Word or PowerPoint
- display sample data in a variety of graphic forms
- display multiple sets of data on one graph
- annotate graphs so that they can be included in publications and presentation

Author: Stuart McPherson 2008. Updated 2008 (including some new material courtesy of J. Currall). Updated 2010; 2013; 2014, 2020

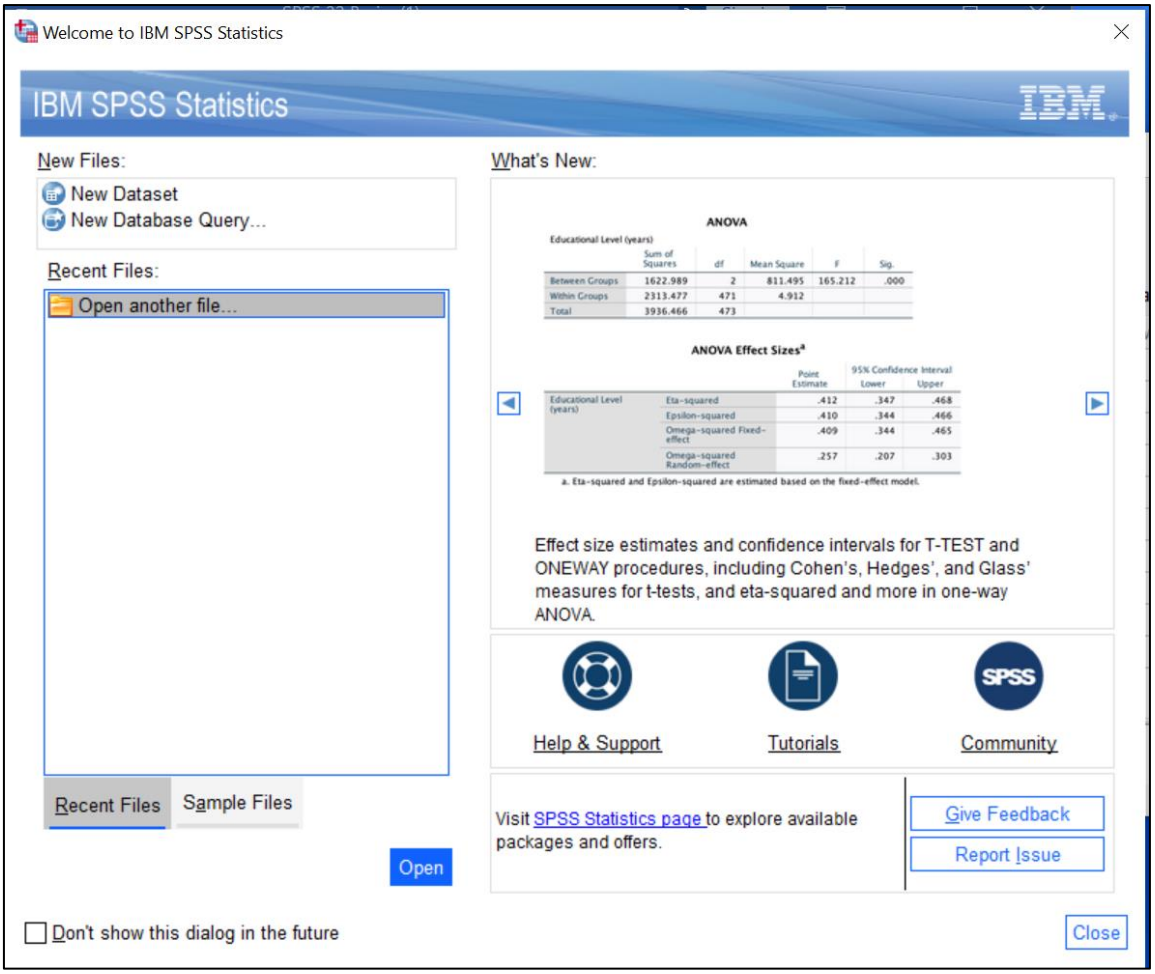
Session Start

Starting SPSS

If you are on campus, before you can start **SPSS** you will have to log on to one of the PCs in the cluster. PCs on the Common Student Computing Environment (**CSCE**) in the Library and those in the clusters of certain departments will have SPSS installed on them for you to use. For today's training session your tutor will show you how to access the software.

To start SPSS, select **Start ➔ IBM SPSS ➔ IBM SPSS Statistics**.

When the program starts the screen will show this window.



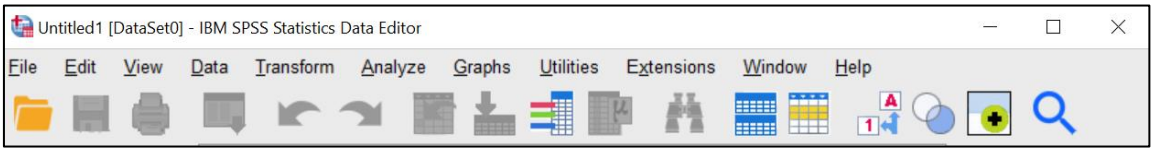
The first time you open this program you should select whether to **Type in a New Dataset**, **Open a Recent File** or **Create a New Database Query**.

When you start up the program after this brief introduction you will choose the **New Dataset** *option.* The introductory window will disappear, and you will be presented with the **Data Editor** window (see the following page).

When you perform actions on data entered in this window, the results will appear in the **Output** window (see page 4). Both windows have menu and tool bars which share some features but also have their own individual options.

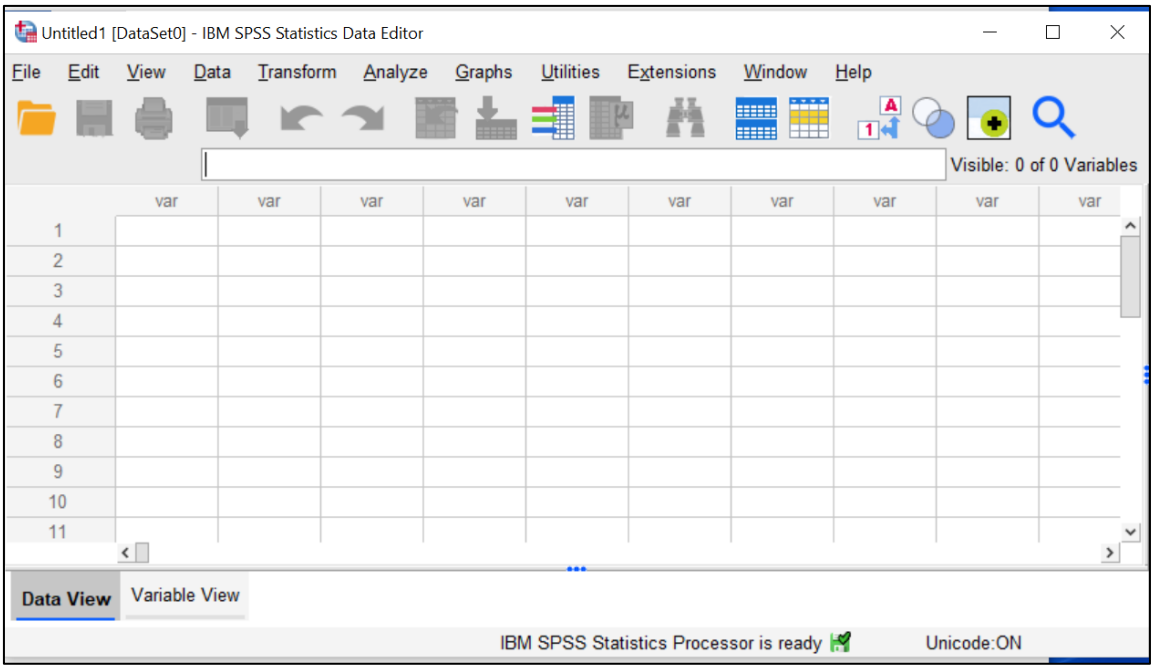
Menu Bar

The **Menu Bar** at the top of the screen contains drop-down menus (e.g. **File**, **Edit**, **View**, **Data**, **Transform**, **Analyze**, **Graphs**, **Utilities**) which you will use to access all of SPSS's commands and functions. To see what is in a menu simply use the mouse to point and click on the appropriate menu name



Tool Bar

The **Tool Bar**, lying below the **Menu Bar**, has many icons which can be used as shortcuts to performing common activities. To find out what the icons do simply point your mouse at the icon and a label describing its action will appear.



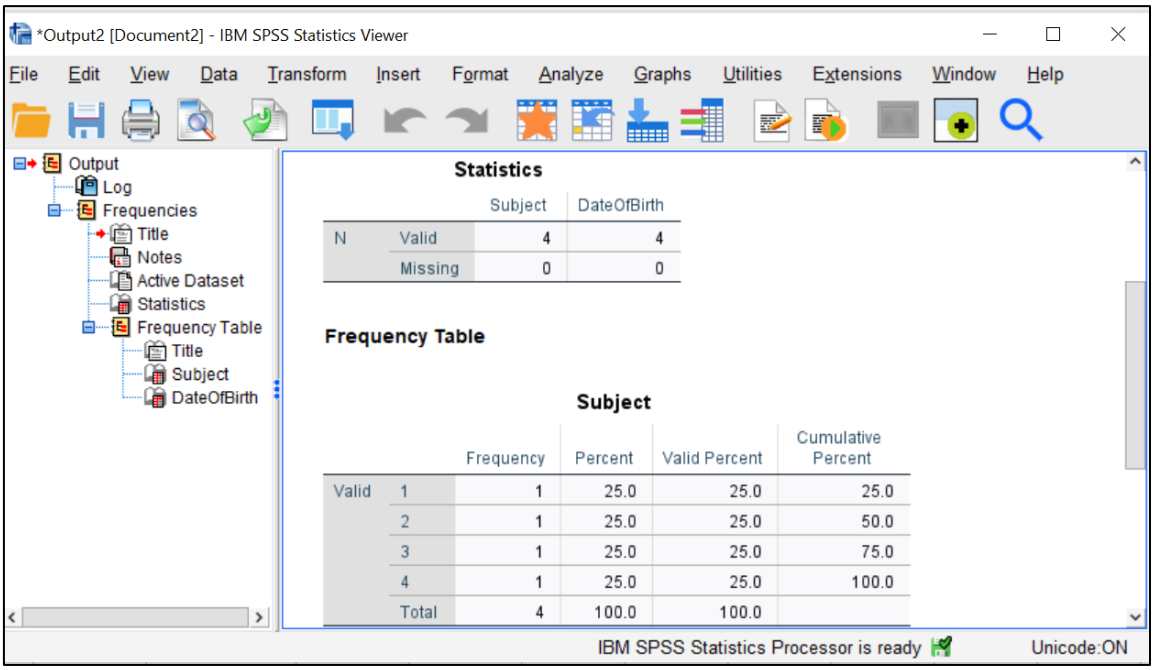
Data Editor Window

The **Data Editor** window is where you enter your data into rows and columns. It looks much like a spreadsheet and you enter data in a similar way too. **However, it does not connect data in cells the same way as spreadsheets do**: if you change data in a cell referenced by a calculation in another cell, it does not automatically change the result. *You must command SPSS to run the calculation a second time to update the result*.

Navigation around the **Data Editor** window is by pointing and clicking with the mouse; using the arrow keys on your keyboard; pressing the **Enter** key after typing in a value (which moves to the cell immediately below). This can be useful if you have a string of values to enter in the same column.

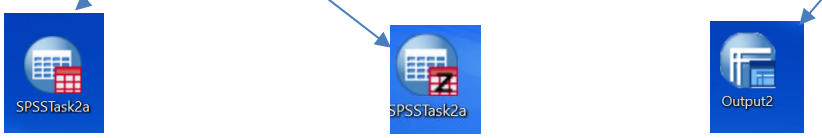
SPSS Output Viewer Window

The **Output Viewer** window **displays the results** of the functions SPSS has performed and displays and keeps a record of all the commands which you have given to SPSS. The **Output Viewer** window has its own set of menus and toolbar buttons some which duplicate the **Data Editor**, some having functions specific to the **Output Viewer**. Note the side panel in the viewer has a 'tree' like listing of all its items. You can use this to go directly to an item by clicking on the item name.



Saving Files

You can save (and should save) both output and data files regularly. Data files are saved in SPSS (**.sav**) format. Output files are saved as Output files (**.spv**). Saving the output file means that, when you re-open your file, in addition to loading the data again, you will be able to review your previous work to remind yourself of what tests you have performed and the results you obtained. A new feature with SPSS is that files can be compressed in new **.zsav** format.



Using Help

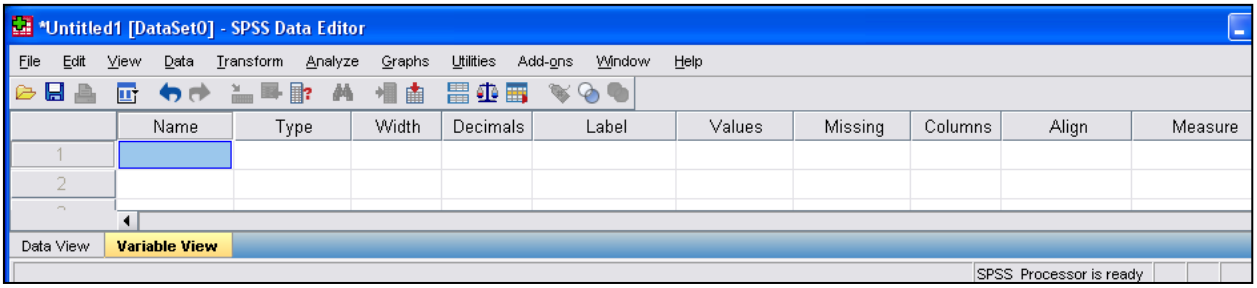
The SPSS **Help** window offers a **Topics** option which has index and search features. There are direct links in the **Help** menu to guidance on statistics. Other ways to get help:

- ☞ Press the **F1** function key on the keyboard (context sensitive).
- ☞ A **Help** button is often available in some of the dialog boxes that open when you perform tasks. This opens **Help** directly to the command you are working with.
- ☞ You can access help in the form of Case Studies, a Statistics Coach, Algorithms, etc directly from the **Help** menu.

Assigning Variables

Variables

SPSS organises its information in what are called variables. Each variable contains the answers to one question in a questionnaire, the measurements of one type such as height or weight, or an attribute such as an identification number or name for each person. Variables are arranged as the *columns* in the SPSS data editor. The data itself is sometimes referred to as *Microdata* or *Raw Data*. You also need to store information such as the name of the variable and what the categories (types) of categorical variables represent. This latter information is sometimes referred to as Metadata.



In **Variable View** you can define each variable by setting its attributes in each column for each of the different aspects of variable definition - each single represents an individual variable. The different attributes are each described in the table below.

Column	Attribute	Details
Name	Variable name	Must begin with a letter. Other characters can be letter, digit, period, or the symbols @, #, _, $.
Type	Variable type	Numeric, Date, String
Width	Variable width	Number of characters or digits
Decimals	No of decimal places	e.g. 0, 3
Label	Variable label	Maximum 256 characters
Values	Value labels	Maximum 60 characters
Missing	User-missing values	e.g. -1, 9, -99, 99, …
Columns	Cell width	e.g. 8
Align	Cell alignment	Left, Centre, Right
Measurement*	Measurement level	Nominal, Ordinal, Scale*
Role	Variable role	Role played by the variable in analysis

Note*: Measurement types have the following meanings.

Nominal is data with no inherent order (i.e. where one value is higher or lower than another), they are simply names.

Ordinal are named values with an order but no distance – e.g. “high”, “medium” and “low” have order but no distance can be calculated between them.

Scale data has order and distance – basically it is proper numeric data.

Defining variables

To enter your variable names, click on the tab to see **Variable view**. Once you have defined your variables you can then enter the actual data. *You should always define the variable types first* as this can affect how the data is treated by SPSS.

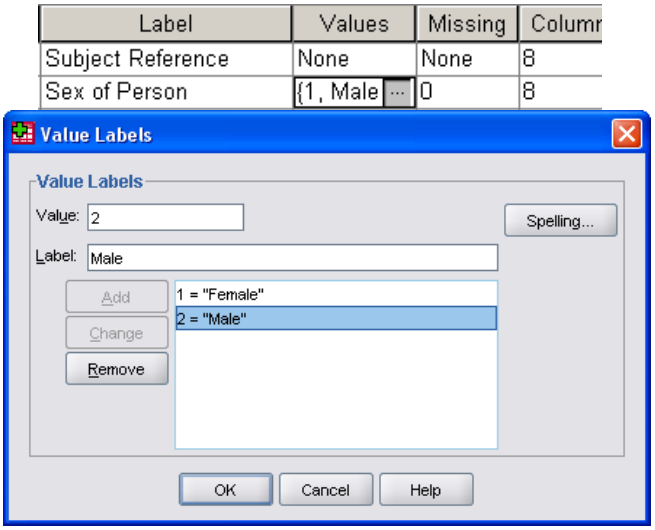
In most cells in **Variable View** a miniature button will appear – one of three types:

 Opens dialog box  Increment  Drop-down list

The increment button allows you to set an integer number from 0-40 for width and 0-16 for decimal places. You can set width and decimal places in the dialog box too. Each variable type you select allows you to set a format for it, e.g. date style.

Value Labels

Some categories, although represented by a number, will have a name or phrase associated with it. A variable **Sex** may have two categories **1** and **2** but these are actually ***Male*** and ***Female***.

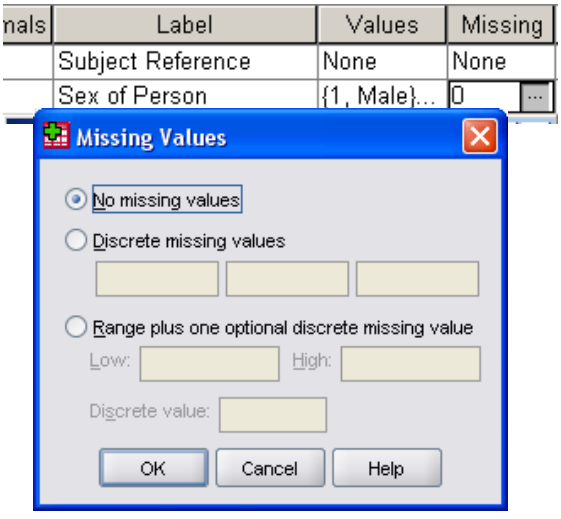


It is desirable to make the association between the numbers and names, by *defining value labels*. Clicking on the appropriate cell in the **Values** column will open a dialog box like the one shown here.

Value Labels are defined by filling in the **Value** box and the **Value Label** box and then clicking on the **Add** button. This procedure is repeated for each value and the resulting definitions are added to the list on the right.

Missing Values

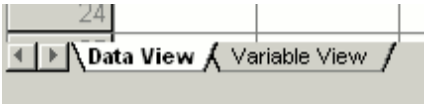
When collecting data, there are often questionnaires which are not filled in completely. Some questions will be left unanswered whilst others may be filled in with invalid or silly answers.



For each variable you should define a value or range of values which may be used to represent any cases where a value is not available for any reason.

If there are multiple reasons why the value might not be present, you may define up to three different values for missing values (e.g. 7, 8, 9), or you may define a range (e.g. 3 - 9).

Remember: at the bottom left corner of the **Data Editor** window, there are two tabs. By default, you should be seeing the **Data View** and it is here that you enter your actual data.



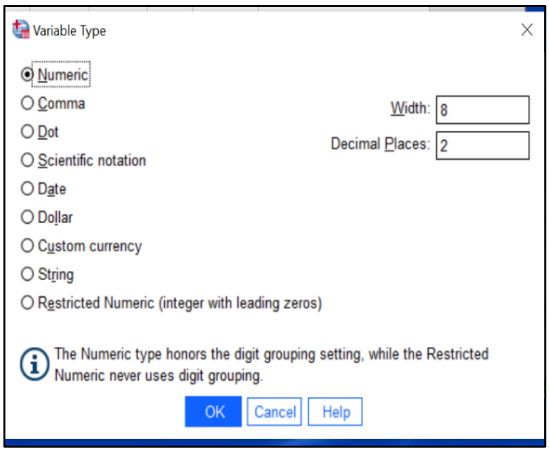
The other tab lets you select **Variable View** and it is in this view that you define your variables.

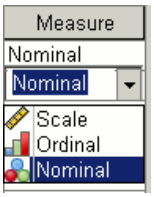
Before typing in anything, you should expand the size of your **Data Editor Window**. You can do this in a number of ways. Either maximise the window or click and drag the corner of the window to the size you wish. In this case you want to be able to see at least **ten rows** and **ten columns** of the **Data Editor Window**.

Task 1

a) In the **Data Editor** window, select **Variable View**. In the first row, under **Name**, enter "*ID*". Move to the next column (**Type**) and choose "*Numeric*" – this is the default. Now:

Set **Decimals** to "*0*"; Set **Width** to "*3*"; (*Why did we do these two in this order?);* Set **Label** as "*Subject*" and leave **Values** and **Missing** as "*None*". Leave the **Columns** and **Align** cells as they are and make sure Measure ="*Nominal*".





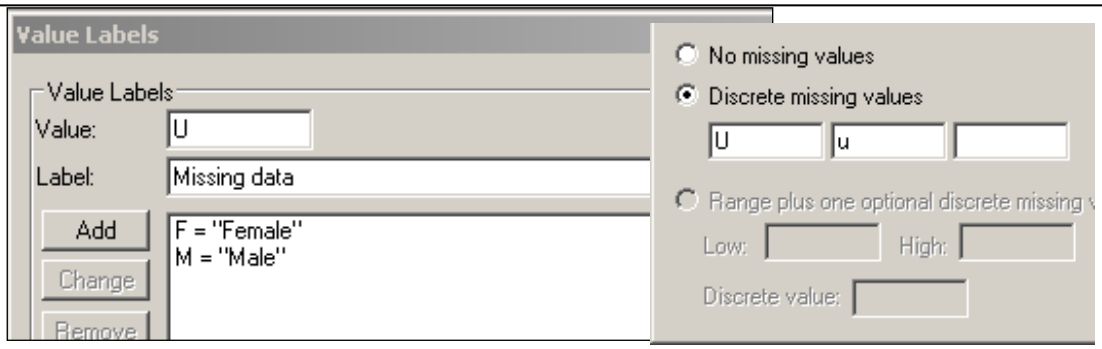
You've now created your first variable. There are a variety of different kinds of variable that you can define and use.

Note the options available in the **Variable Type** dialog box – some more information is given about this in the table on the following page.

Task 1 (continued)

b) In the *next row*, under **Name**, enter "*sex*". Move to **Type** and choose "*String*" and set the **Width** to "*1*". Now the decimal option will be greyed out and set to *0.* Enter the Label as "*Male=M, Female=F*". Now click on the **Values** button (at the side of the cell when you move into it.

c) In the **Value Labels** window, enter the value "*M*" and the label "*Male*", then click the **Add** button. Repeat this to set "*F*"="*Female*" and "*U*"="*Missing data*".



Task 1 (continued)

d) Now enter the following variables and define them in a logical way.
Age; Date of Birth; Smoker (yes/no variable); weight.

How do you set up a Yes/No option? You've already done one when you created the Sex variable. Anything that forces a choice of two options only is a Yes/No option. You can use "1/2" or "Y/N".

e) Save the file: give it a sensible name, e.g. *SPSS-workfile*.

Using the Data Editor

In the **Data View** in **Data Editor**, which looks like a spreadsheet;
each **column** = a **variable** (or **field**); each **row** = a **case** (or **record** or **observation**);
a **cell** is where a **row** and a **column** *intersect*; the **content of a cell** indicates the **attribute** (or **value**) recorded for that particular variable for that particular case.

After entering data in a cell, you can move to a new cell by clicking with the mouse or pressing the **Enter** key or using a cursor arrow. You can move left, right, up or down using the appropriate arrow key.

Now you will practice adding data to your file. Simply click on the **Data View** tab to access the data entry part of the **Data Editor**.

ID	Sex	Age	Birth Date	Smoker	Weight
1	F	44	11-06-64	1	66.8
2	M	20	23-04-88	2	130.5
3	M	35	02-09-73	2	84.8
4	F	43	17-05-65	2	53.3

Task 2

a) Now enter the data shown in the table opposite. *If you used "Y/N" for Yes/No enter Y for 1, N for 2.*

b) Save the file

Note: SPSS is case sensitive for *values entered* but not for variable names.

If you wish to insert a case (record) into a particular point in the data, select a cell on the row below where the case is to be inserted then choose **Insert Cases** from the **Edit** menu. Otherwise, add any new cases to the end rows of the data.

It would take a long time to enter a useful amount of data by hand so you will make use of some files which you can download from the IT Training web site (https://www.gla.ac.uk/myglasgow/it/training/courseresources/#minitabandspss). The files are named **cholest.sav**, **marketdata.sav** and **postcode.xls**. We will use these files in the tasks you will do during this course.

The first task will be to perform some calculations. First, we will look at working out Counts of data – i.e. how to find the totals of different variables. To do this we use the

Analyze menu and there are two ways of doing this: **Frequencies** (under the sub-menu **Descriptive Statistics**) and **Tables of Frequencies** (under the **Tables** sub-menu).

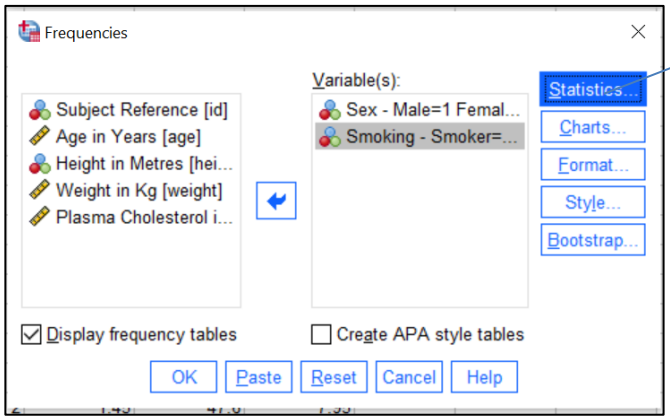
First, we want to find out how many people in our test group smoke with separate results shown for each sex.

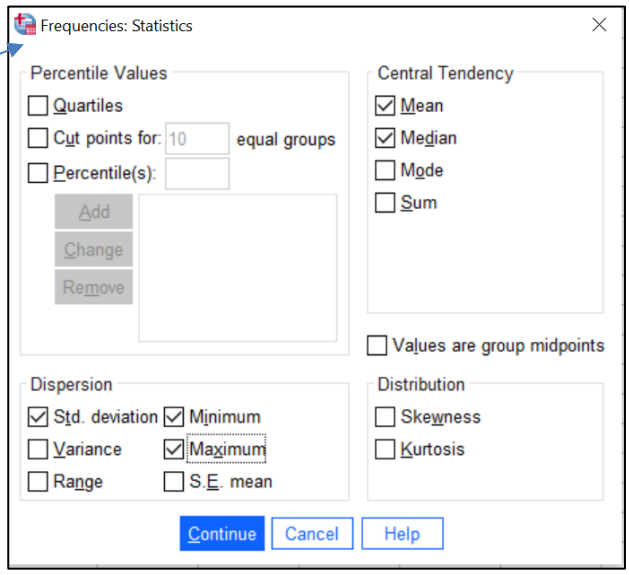
Task 3

a) Open the file named, **cholest.sav**. You will see this looks familiar but there are more variables and much more data than in the file you created yourself.

b) From the **Analyze** menu, select **Descriptive Statistics** then **Frequencies**. The window you see below will open.

c) Select **Sex** and **Smoking** and then move them into the variables box. (Click the button).





Sex - Male=1 Female=2

		Frequency	Percent	Valid Percent	Cumulative
Valid	Male	87	49.4	49.4	
	Female	89	50.6	50.6	
	Total	176	100.0	100.0	

Smoking - Smoker=1 NonSmoker=2

		Frequency	Percent	Valid Percent
Valid	Yes	79	44.9	44.9
	No	97	55.1	55.1
	Total	176	100.0	100.0

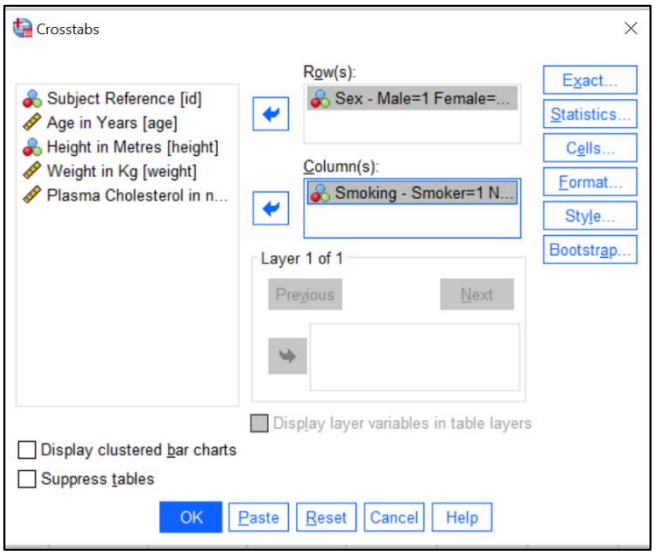
Task 3 (continued)

d) Click the **Statistics** button and select some options (e.g. Std. deviation, Mean, Mode). Click **Continue**.

e) Make sure **Display frequency tables** is selected then click **OK**. The results will be displayed in the **Output Viewer**. There will be two tables, one for **Sex** and one for **Smoking**.

Note there is no cross tabulation with this method: what it does is allow you find totals for several variables at once rather than doing each calculation separately.

Now we'll do a cross tabulation exercise. This will mean comparing one factor against another: we'll use Sex and Smoking again.



Task 4

a) Activate the **Data Editor** window again and choose **Analyze ➔ Descriptive Statistics ➔ Crosstabs**.

b) In the **Crosstabs** dialog box, move **Sex** to the **Row** box and **Smoking** to the **Column** box. Click **OK**.

c) The results will be shown in the **Output Viewer**. You can see how this will display in the diagram below.

		Smoking - Smoker=1 NonSmoker=2		
		Yes	No	Total
Sex - Male=1 Female=2	Male	46	41	87
	Female	33	56	89
Total		79	97	176

You can edit a table in **Output** view: select the table, double click and then right click and choose **Pivoting Trays**. Altering the order and position of the various coloured icons around the edge of the sample table alters the position of the statistics in your own table. To move an icon, click on it and drag it to the desired location.

To reverse the column and rows in the table, from the **Pivot** menu, select **Transpose Rows and Columns**.

Task 5

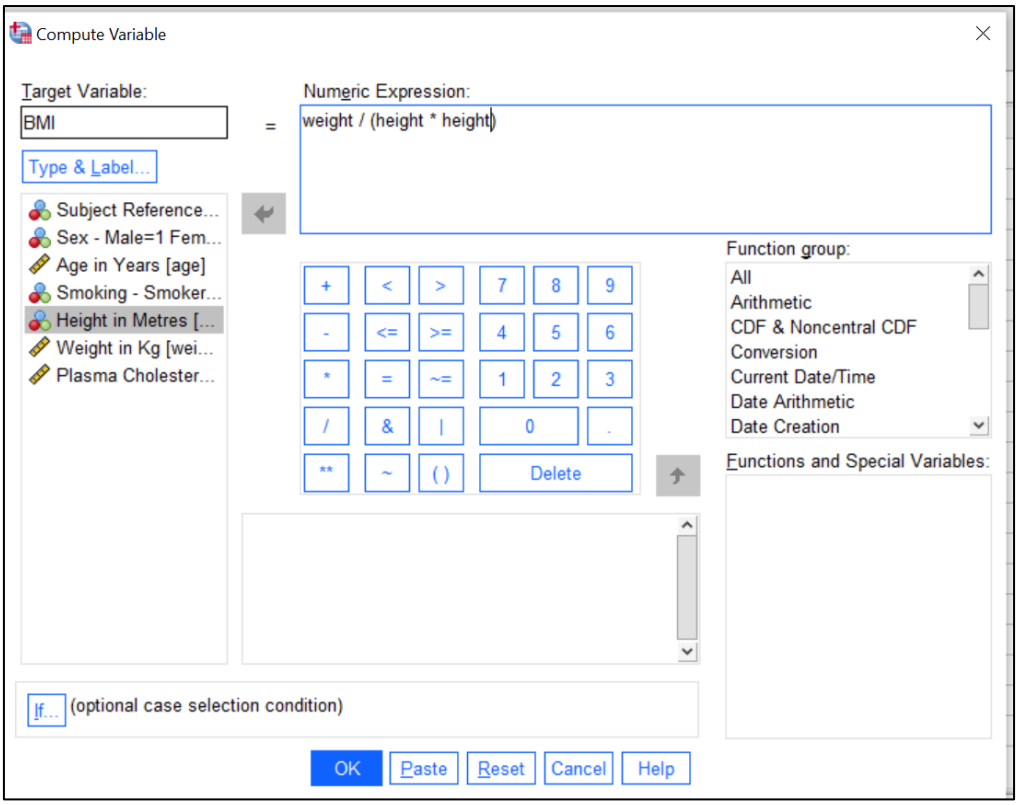
a) Select your newly created table and transpose the rows and columns.

b) Now, using the **Pivot Tray**, restore the table to its initial state.

c) Save the output file.

Computing New Variables

When you enter data into SPSS, it will usually be the answers to questions in a questionnaire or survey. You first analyses will usually be with these variables as they were entered, but later you may want to work with additional variables such as ratios calculated from your original questionnaire answers. You might for instance wish to work with the ratio of income to expenditure, or the total expenditure on several items which appear in the questionnaire. SPSS has facilities to calculate new variables, which can be found as the **Compute Variable** option under the **Transform** menu.



To calculate a new variable, you fill in the **Target Variable** box with the name of the new variable which you wish to create and then construct a numeric expression involving existing variable, functions, numbers and operators.

To give a simple example, suppose that you have temperatures in degrees Fahrenheit in a variable **TEMP** and you wish to create a new variable **TEMPC** which has the temperatures in degrees Centigrade, the following expression could be used.

(TEMP - 32) * 5 / 9 (Note, do **not** begin the expression with "=").

Task 6

a) View the **cholest.sav** file once more. Now choose **Compute Variable** from the **Transform** menu.

b) In the **Compute Variable** dialog box, enter the name **BMI** in the **Target variable** box.

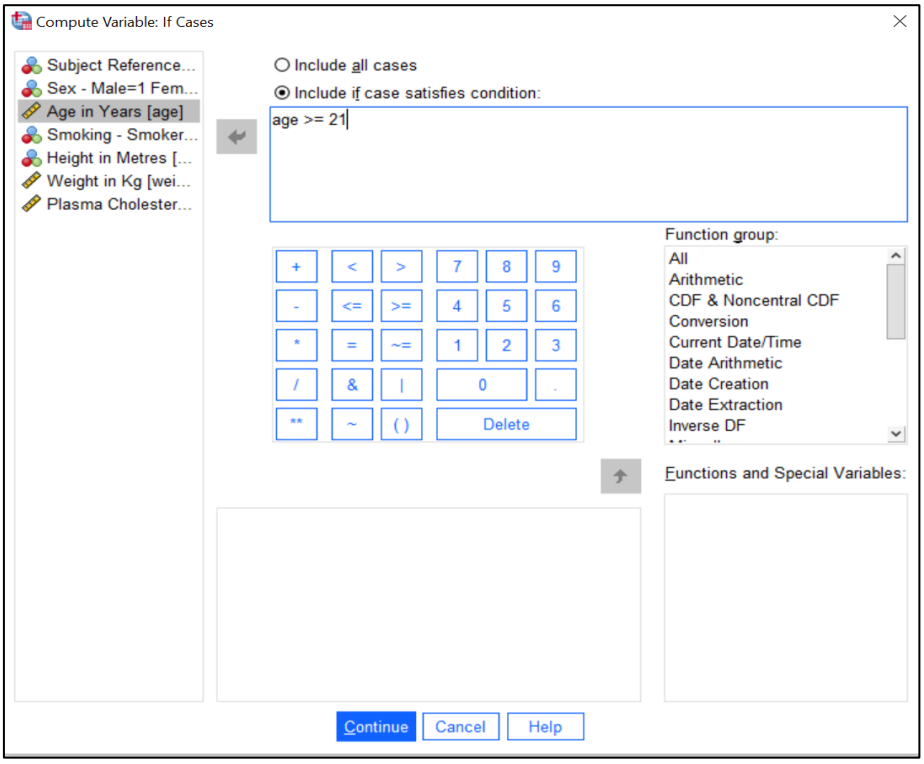
c) Now enter a formula to calculate **BMI** (this is **weight** divided by **height²**) selecting these items from the list of variables. Click **OK**.

d) Save the amended file, renaming it **cholest_bmi.sav**.

Conditional Computation

Sometimes the calculation which you wish to do is different for different groups of people or cases. Under these conditions, you can carry out your calculations depending on evaluation of a criterion.

You fill in the boxes as for unconditional calculations above, but before you click on the **OK** button, you click on the **IF** button. This brings up a further dialog box in which you define the conditions necessary for the calculation to be carried out.



Click on the **Include if case satisfies condition** button and specify the criterion which must be satisfied for the calculation to be carried out. Let us say that we only wish to carry out the calculation for Females, who are coded **2** in the variable **SEX**, the criterion might look like this:-

SEX = 2
or if you wish to carry out the calculation only if the cases are male aged less than 25 then it might look like this:-

SEX = 1 & AGE < 25

When you have completed the criterion, click on the **Continue** button to return to the **Compute** dialog.

Task 7

e) View the **cholest_bmi.sav** file once more. Now choose **Compute Variable** from the **Transform** menu.

f) In the **Compute Variable** dialog box, enter the name **MaleOlder** in the **Target variable** box.

g) Leave the BMI formula in the **Numeric Expression** box and click on the **If…** button.

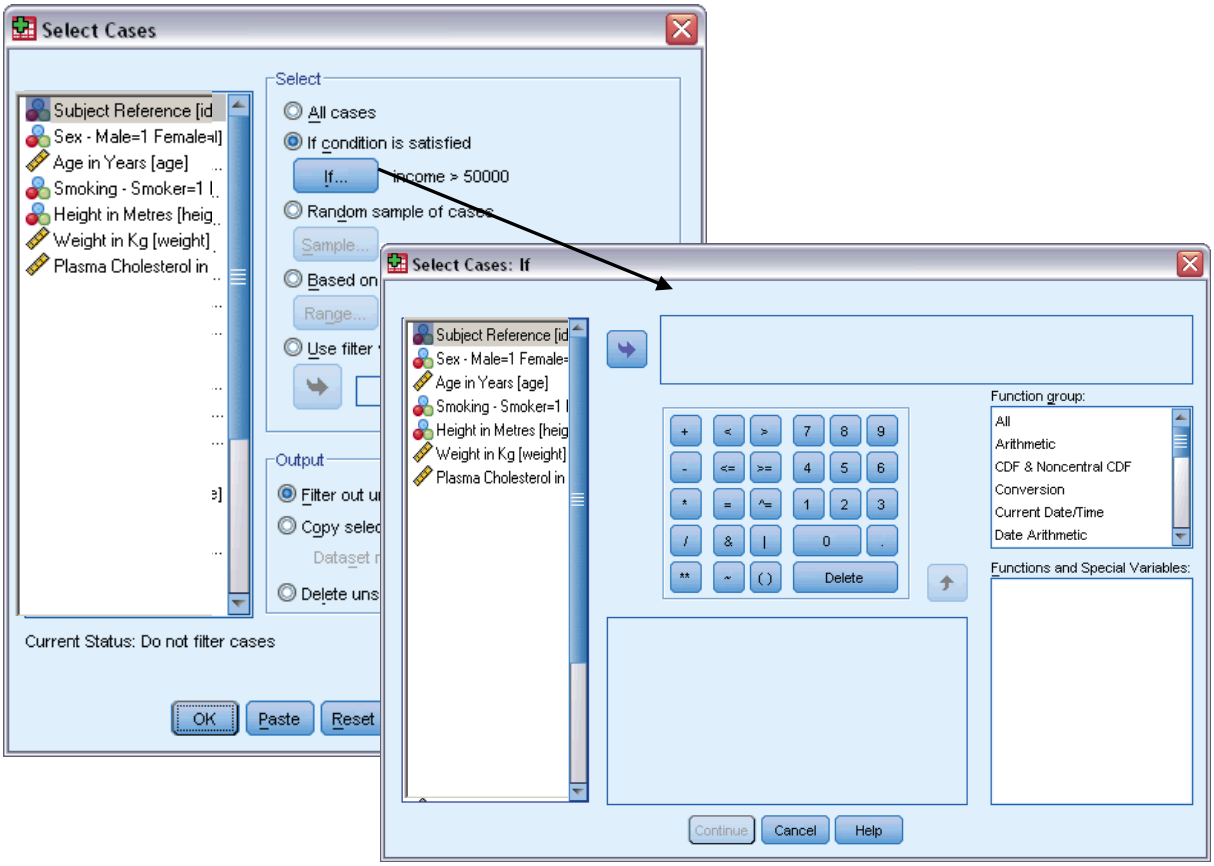
h) Activate the **Include if case satisfies condition** box (click the radio button) and enter an expression to choose **male** *sex* **&** *age* **greater than 40**.

i) Click the **Continue** button and then click **OK**. Save your file.

Selecting Sub-Groups of Data to Analyse

We need to think about how we're going to extract useful information when we have a very large number of different values for our variables.

First, we set up a filter to filter out some results. From the **Data** menu, chose the **Select Cases** option – the following window will open.



Task 8

a) Return to the **cholest.sav** file. In the **Select Cases** window, which opens from the **Data** menu, click on the **If condition is satisfied** radio button. This activates the **If...** button: click on this.

b) In the **Select Cases: If** window, choose **Weight** and move this into the selection box. Click on the **>=** button and enter **80**. Click on **Continue**.

c) Click on **OK** and view the **Data Editor** window once more.

You will see that a new column has been added named **filter_$.** The cells in this are marked **0** or **1** - **0** for false and **1** for true – and the row numbers where this value is false are scored through. So, all the rows where the weight value is **>=80** are differentiated.

Task 9

a) **Select Analyze ➔ Descriptive Statistics ➔ Crosstabs** once more. Move **Age** into the **Row** box and the (now visible) **weight >= 80** filter into the **Column** box. Click **OK**.

b) Now view the results in the **Output Viewer**. It's much easier to see some relationships between data now

However, other factors need to be considered for interpretation, for instance we might want to look at height against weight.

Task 10

a) Use **Select Cases** to set up this filter: **height >=1.6**. Now open the **Crosstabs** window once again. Move **Weight** into the **Row** box and **height >=1.6** filter into the **Column** box.

b) This time we'll add something: click to select the **Display clustered bar charts** option. Click **OK**.

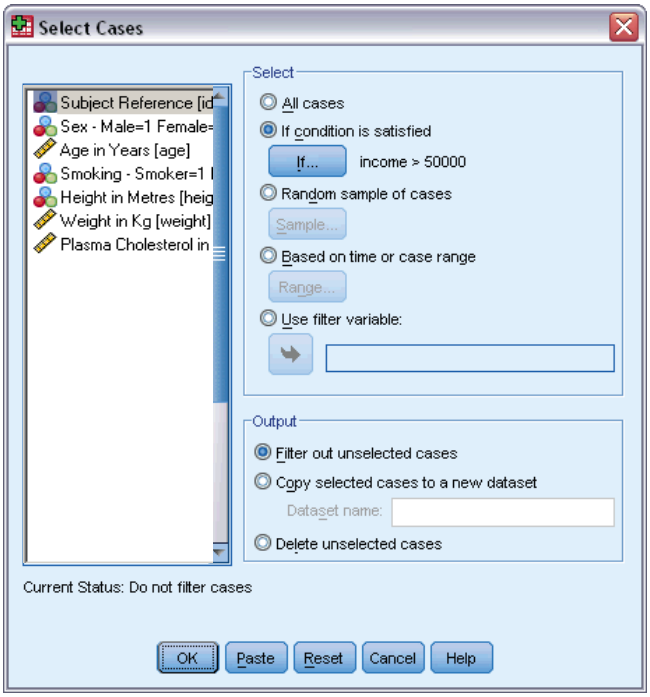
c) Now view the results in the **Output Viewer**. You will see that at the bottom of the screen, after your table, there is a bar chart giving a visual analogy of the result.

d) It is also useful sometimes to be able to **Sort** cases. To do this, place the cursor in the column you wish to sort on and then select **Sort Cases** from the **Data** menu.

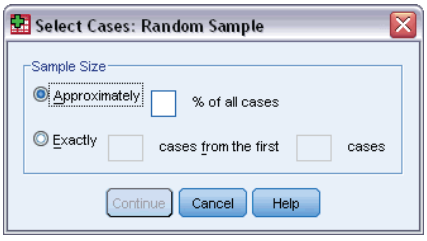
Generation of Random Data

Most statistical methods in SPSS use data to try to answer questions. The data may come from a specially conducted survey, from a carefully described experiment, from a large databank or is just incidental. In almost all instances, there is variability in data. Perhaps simply due to measurement error, or sampling error, changes in environmental conditions or variability is just inherent in the process (tossing a coin sometimes comes up heads, sometimes tails).

To use statistical methods wisely, you need an appreciation of random variability and the concept will be described in more detail during your statistics course.



SPSS offers the facility to select random data using **Select Cases** from the **Data** menu. The dialog box (which you used earlier to set an **IF** condition for selecting data) also contains a button named **Sample**, which is activated when you click on the **Random sample of cases** option.



Clicking on **Sample** opens a dialog box which lets you set your sample size. You can set a percentage of the sample or several cases which will be randomly sampled.

Task 11

a) Select **Random Number Generators** from the **Transform** menu. Click on the **Active Generator** tick box and select the **Mersenne Twister** option.

b) Tick also in the **Set Starting Point** tick box, under **Active Generator Initialization** and select **Random**. Click **OK** to set a *new random filter*. (Don't worry that nothing seems to happen).

c) Open the **Select Cases** dialog box. Select the **Random sample of cases** option and click on **Sample**.

d) In the smaller dialog box which opens, set a percentage of cases to be sampled: make it a reasonably high percent as the data file is not very large.

e) View the **Data Editor** once more: you will see that a new filter has appeared after the final column showing the data randomly selected.

You can delete this filter any time that you wish (select the filter column and press **Delete**) or you can change to a new random data filter. **Note**: although the cases in our sample data may seem a lot, serious studies will often be made using far larger data samples. Your percentage of random cases could then be smaller than would be required to get meaningful results with the current data. This kind of data selection will be discussed in your statistics course.

Task 12

a) Now we'll repeat the second part of **Task 3** and compare the results with the earlier exercise to see how the random selection filter affects the result.

b) In the **Crosstabs** dialog box, move **Sex** to the **Row** box and **Smoking** to the **Column** box. Click **OK**.

c) Examine your results in the **Output Viewer** and compare them with the earlier Task 3 results.

d) If the results seem very different form the original ones, change the Random generator to sample a larger percentage of the data and repeat the task.

Importing data from a spreadsheet (E.G. *Excel*)

You can get data not only from SPSS worksheets, but from files created by other applications. You can open and save data files in the formats of *Excel* and *Lotus 1-2-3* for example. SPSS can also open plain text (ASCII) files, which usually have an extension of **.txt** (for text) or **.dat** (for data).

Files created by other applications may have data arranged in ways different from the row and column format used by SPSS worksheets. For example, the data may not appear until the third row of the file, or the fifteenth column. Variable names may not always be in the first row or be present at all. Although you may be able to clean it up in SPSS, it is best if you make sure the data is prepared first in the other application and laid out in a database format (clear rows and columns with proper headings).

To open files from other applications, you use the same menu command you use to open SPSS data, the **File ➔ Open ➔ Data** command. In the **Open Data** dialog box, using the **Files of type** drop-down menu, you can choose the type of file you wish to open e.g. Excel, Text, etc.

Note: if you open an *Excel Workbook*, SPSS will allow you to select an individual worksheet from the workbook.

Task 13

a) Choose **File ➔ Open ➔ Data**. In **Files of type**, choose the type of file you are looking for: in this case *Excel*.

b) Select the folder where you stored the *postcode.xls* file. Select this file and click **Open**.

c) Examine the data – all the original headings from the spreadsheet file should be in place. Now examine the file in **Variable View**. You will see that SPSS has made a 'best guess' about the variable properties.

d) In general, these are valid although you might wish to amend – e.g. from the numeric data here, you need only a width of 7 or 8 at the most. You might also want to add values for missing data (although there is none in this file).

e) Make a few amendments to the variables: e.g. width of numeric data, labels where a name is not clear. Save the data file.

Another way to import files into SPSS is to use **Copy** and **Paste**. To copy data from *Lotus*, *Excel*, or other spreadsheet packages to SPSS.

- Copy the data from your spreadsheet to the **Clipboard**.
- In a SPSS **Data Editor** window click the cell where you want to begin the paste, then choose **Edit ➔ Paste Cells**.

With this option, even with a well laid out data table format, you may encounter problems which will mean you will have to tidy up the data before it can be used.

Printing Data and Output (Tables, Charts)

Printing Data.

1. Make the **Data Editor** window active.
2. Choose **File ➔ Print**.
3. In the **Print** dialog box, click **OK**.

NB! To print a selected block of cells, first select the cells you want, then print as above first choosing **Selection** under **Print range** in the **Print** dialog box.

Printing Output

1. Make the **Output Viewer** window active.
2. Click **Page Attributes** to add a **Header/Footer** or (under the **Options** tab) set chart size, spaces between items and page numbers. Click **OK**.
3. Choose **File ➔ Print Preview**.
4. Use the buttons to scroll through the output to see what pages you want to print.
5. Click **Page Setup**: here you can set to **Landscape** if you wish.
6. Click **OK** to return to **Print Preview** and then click the **Print** button. Click **OK** to print.

Task 14

a) In the **Output Viewer** window **Page Setup Options** dialog box, add your name and student registration/ID number in the Header option.

Charts and graphs in SPSS

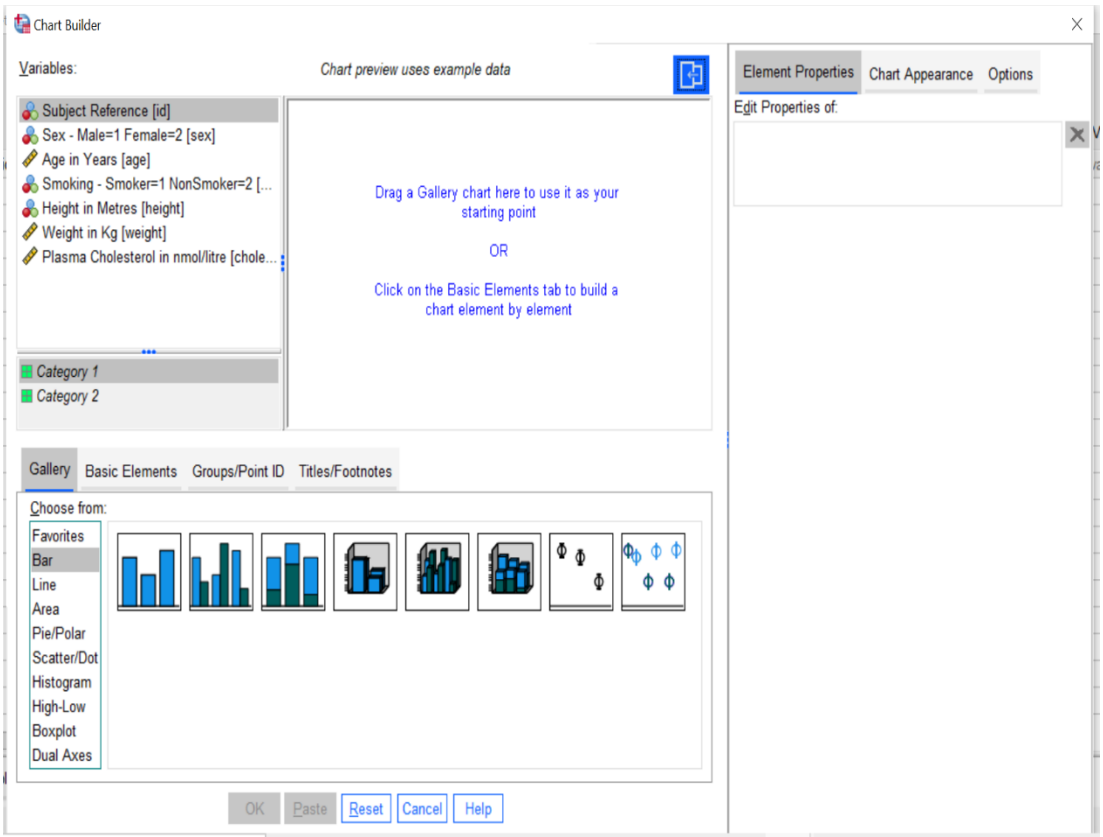
Very basic charts can be created when you do a frequency analysis, using the Charts button in the dialog box. We'll have quick look at this now.

Task 15

a) Do a frequency analysis on **weight** and use the **Charts** button option to choose **Histograms**. Scroll down past the output to view the chart.

However, the SPSS **Graphs** menu allows you to build a range of different kinds of charts. You can use the **Chart Builder** from the **Graphs** menu to create a chart using a simple 'drag-and-drop' system or, if you know exactly what you want, you can choose it the option **Interactive**. Options include: Bar, Dot, Line, Area, Pie, Boxplot, Histogram, etc.

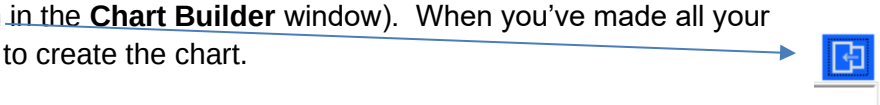
When the **Chart Builder** opens, a dialog box will ask you if you wish to define variables. As this is not a statistics course, ignore this and click **OK**. You will see this window.



This will initially open with the main pane blank. In the lower pane, choose your general chart type by clicking on one of the options (e.g. Bar, Line) and then drag a particular version – displayed as one of several icons – into the upper pane.

Next, from the list of **Variables** in the top, side pane, select the ones you require for the chart by dragging them into the appropriate boxes in the sample chart displayed. The number and labels for these will vary according to the type of chart chosen.

There will be a window beside this, called **Element Properties** (you can close or open this using the button in the **Chart Builder** window). When you've made all your selections, click **OK** to create the chart.



For the next task, you will make use of the file **Marketdata.sav**.

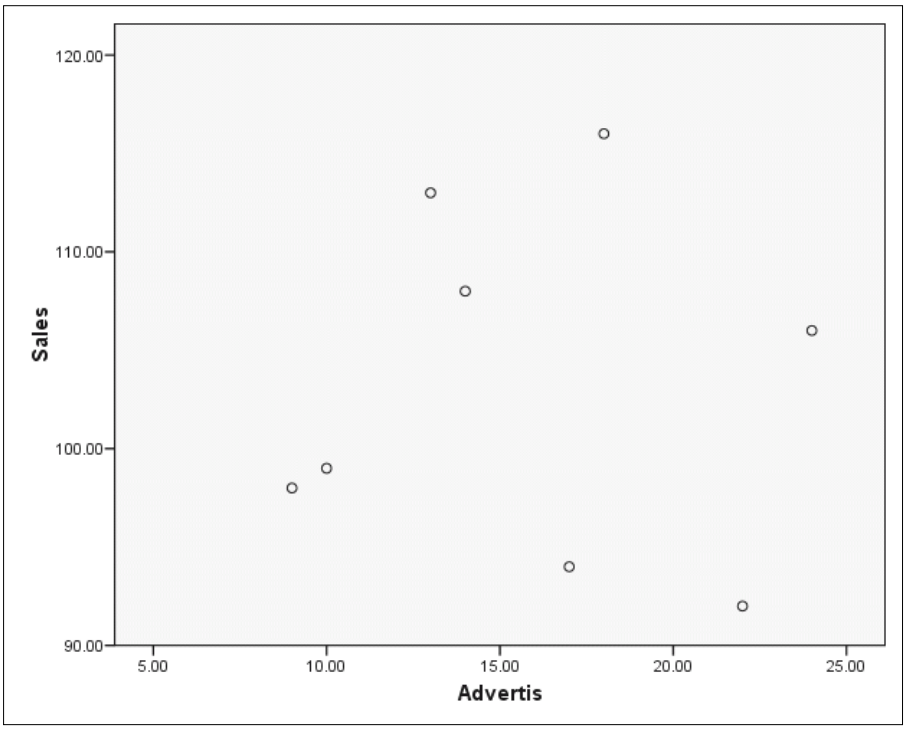
Task 16

a) In **Data Editor** choose **Chart Builder** from the **Graphs** menu (A warning message may appear. Just click **OK** to this).

b) In the main dialog box, select **Scatter/Dot** and then drag over the **Simple Scatter** option. Drag **Advertis** into the X-axis box and **Sales** into the Y-axis.

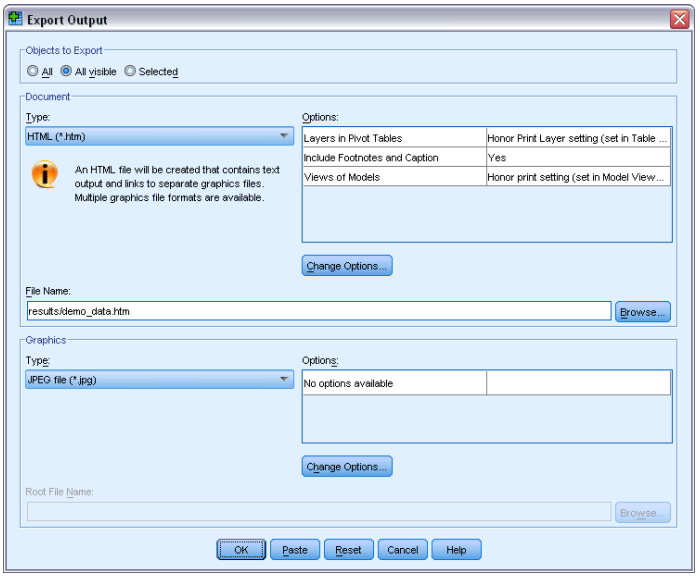
c) Now click **OK**. Save your output file.

When you switch to **Output Viewer** and scroll down to see the graph, it should look something like the image which follows.



Exporting pivot tables, graphs and text output.

One of the easiest ways to use SPSS graphs in another software package is to copy and paste them. In *Microsoft* applications (e.g. *Word*) it will be pasted as a metafile or a bitmap object.



Another option is to choose **Export** from the **File** menu. In the **Export Window** dialog box, under **Export**, you can choose to expert the document or the document without charts or charts only.

Under **Objects to Export** you can choose **All**, **All Visible** or **Selected**.

Under **Document - Type** you can choose to export the output in HTML, Text, Word, Excel, PowerPoint or PDF format.

Task 17

a) Export your **Output** file showing **no** graphs or charts. **Note**: save it as a *Text* document and rename the default "OUTPUT" to "SPSSExport".

b) Now use **Export** to save the graphs/charts as separate entities (save as *Word/RTF* or *PDF*). Now open your exported *Word* file and copy your charts into the document.

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