

Instructions for carrying out statistical procedures and tests using SPSS

These instructions are closely linked to the author's book:

Essential Statistics for the Pharmaceutical Sciences
John Wiley & Sons Ltd <http://eu.wiley.com>
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For all references to chapters or tables, see the above book.

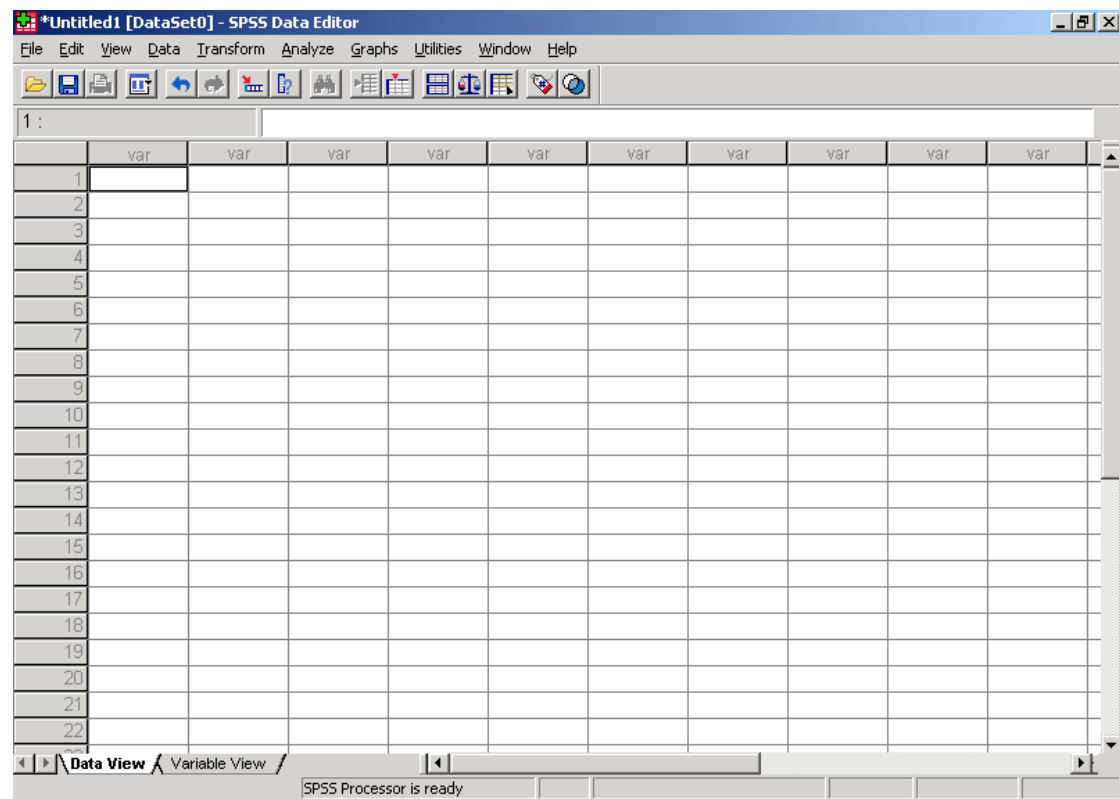
Using SPSS to obtain descriptive statistics

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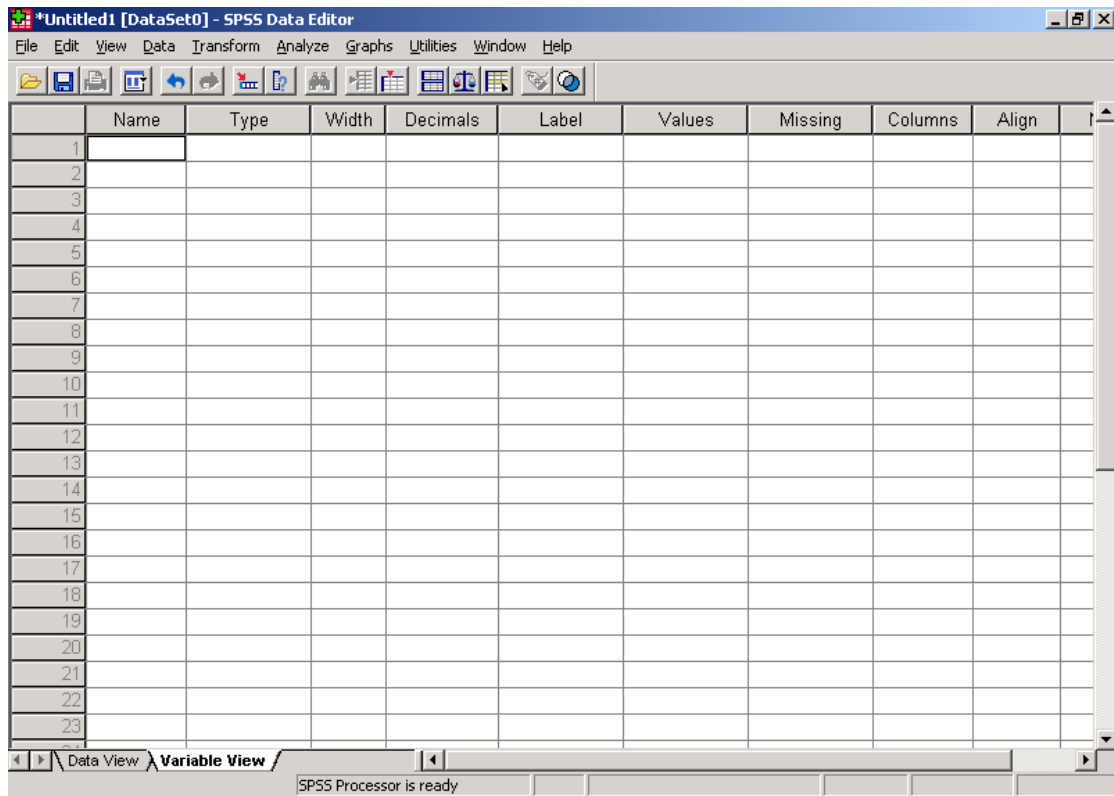
Example: Table 2.1 Potencies of 10 batches of vaccine (Units/ml)

The initial appearance of SPSS (Version 14) is shown below (Fig 1):

Fig 1: Initial appearance of SPSS



The programme opens with the 'Data editor' window. This is used to store data. Each variable will be stored in one column of the Data editor. Before entering any data, each column must be set up to store the appropriate type of data. Notice that there are two tabs near the bottom of the screen labelled 'Data view' and 'Variable view'. We are currently in Data view. Click on the other tab to switch to Variable view and the screen will change to:



Each variable we will use has a number of properties which are listed across the top of the screen (Name, Type, Width, Decimals etc). We will only concern ourselves with these four properties – the rest are advanced and are not essential for current purposes.

If you want to store a numeric piece of data, you will need to define:

Name: A descriptive name for the variable.

Type: Numeric.

Width: Physical space (Number of characters) occupied on the screen.

Decimals: Decimal places to be displayed.

To store a piece of text, you will have to define:

Name: (As above)

Type: String

Width: (As above)

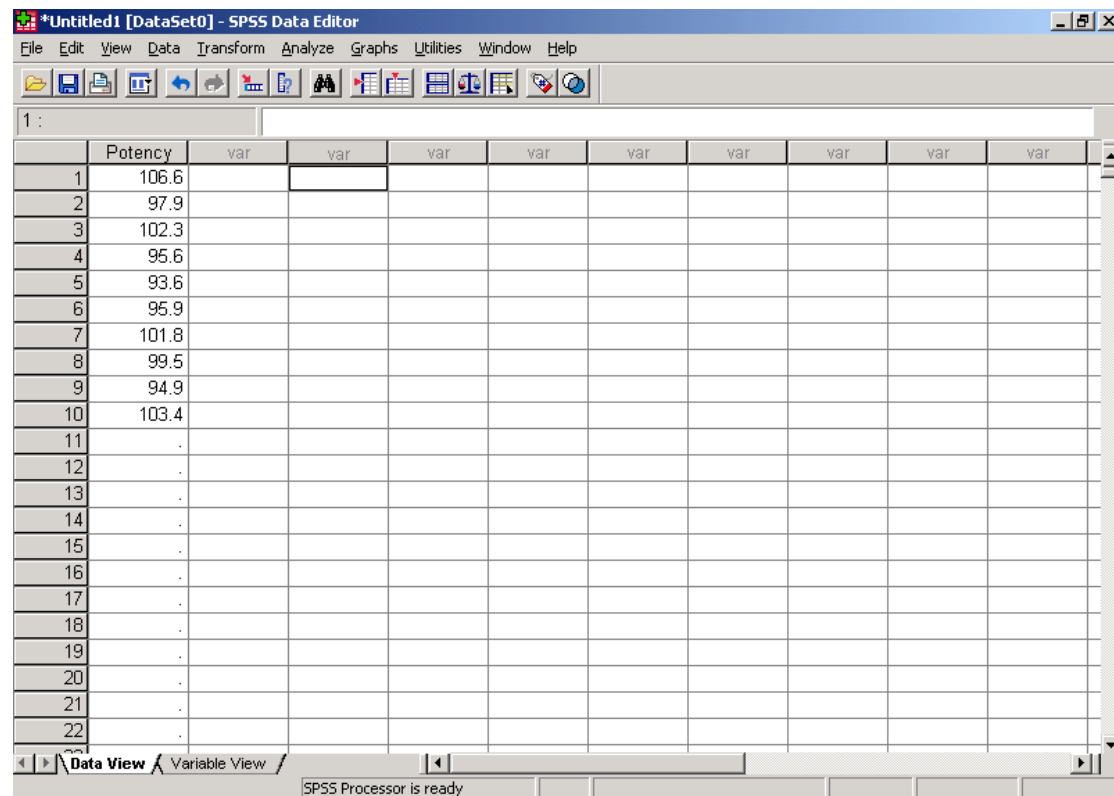
Characters: Maximum number of characters

The data we want to store (Vaccine potencies) is numeric, so type Potency as the name of the first variable. SPSS will then assume it is numeric and provide default values for all the other properties:

Click the 'Data view' tab and the screen will now be ready for data entry into the Potency column. Notice that as you have declared this to be a numeric variable, you will not be able to enter anything that is not a valid number.

If you want to store any text, you will use a 'String' variable. After typing in a suitable name, click on 'Numeric' and a variety of data types will be displayed. Select 'String' and set the number of characters to the maximum you will need.

Enter the data into the Potency column and the screen will appear as:

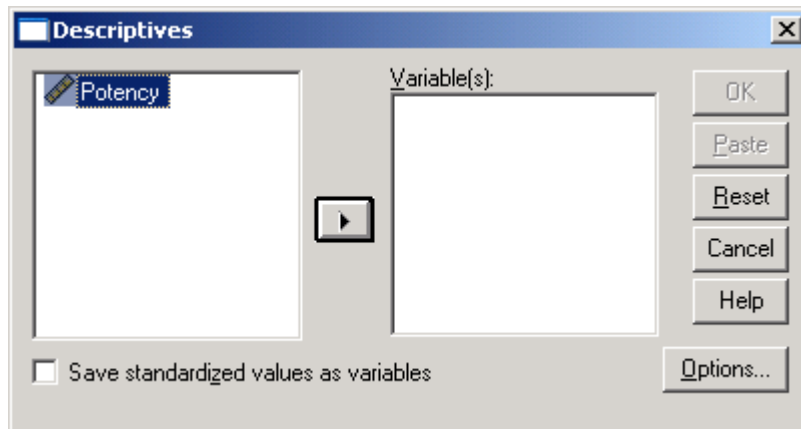


Click 'Analyze' on the menu bar. This opens up a menu of broad categories of statistical procedures. From this, select 'Descriptive Statistics'. That opens up a further menu of procedures. From this final menu, select 'Descriptives'

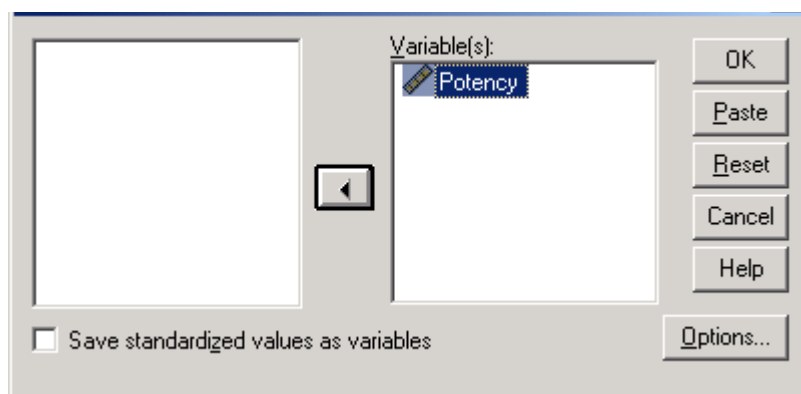
Generally, such a journey through a series of menus would be described by the shorthand: *Analyze / Descriptive Statistics / Descriptives*

This will open a 'Descriptives' window, as below (Fig 2):

Fig 2: SPSS ready to set up the descriptive statistics procedure.



The standard structure of such windows is that there is a box on the left containing the names of all columns that contain appropriate data and there is a box on the right, waiting to receive the name(s) of the column(s) we actually want to select. To tell SPSS that we want to analyse the data in the Potency column, click on 'Potency' to highlight it. This will activate a button with an arrow pointing to the right hand box. Clicking the arrow button will make 'Potency' disappear from the left hand box and re-appear in the right hand one, thus:



Clicking OK will activate the analysis. A new window (The Output window) will open and the results (as below) will appear in that window:

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Potency	10	93.6	106.6	99.150	4.2717
Valid N (listwise)	10				

The minimum, maximum, mean and standard deviation are reported.

Other statistics

Notice that, by default, SPSS does not include the quartile values (Section 2.4) or the SEM (Section 4.5).

To obtain the SEM, proceed as above, but before activating the analysis, click on the 'Options ...' button and check 'S.E. mean'. The SEM will then be added to the output seen above.

To obtain the quartile values, follow the menus:

Analyze / Descriptive Statistics / Frequencies ...'

Transfer 'Potency' into the 'Variable(s)' box. Then click on the 'Statistics ...' button and check for 'Quartiles'. Then click 'Continue' and 'OK'. The following will appear in the Output window:

Statistics

Potency

N	Valid	10
	Missing	0
Percentiles	25	95.425
	50	98.700
	75	102.575

The quartile values (Highlighted) are given as 95.425, 98.700 and 102.575