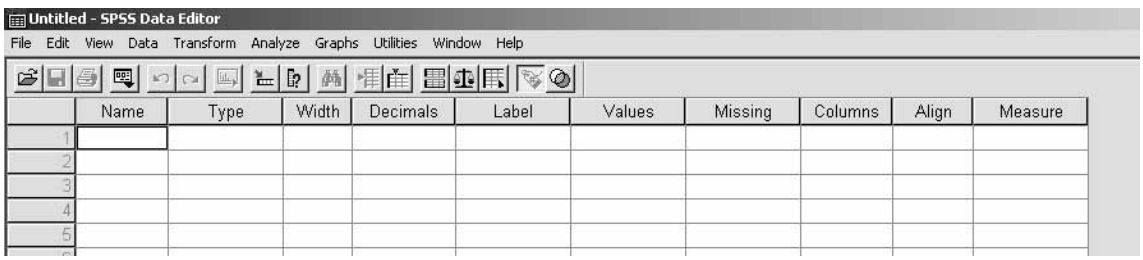
6.3. Pearson's product moment correlation

EXAMPLE 6.1. The hardness of egg shells in pullets

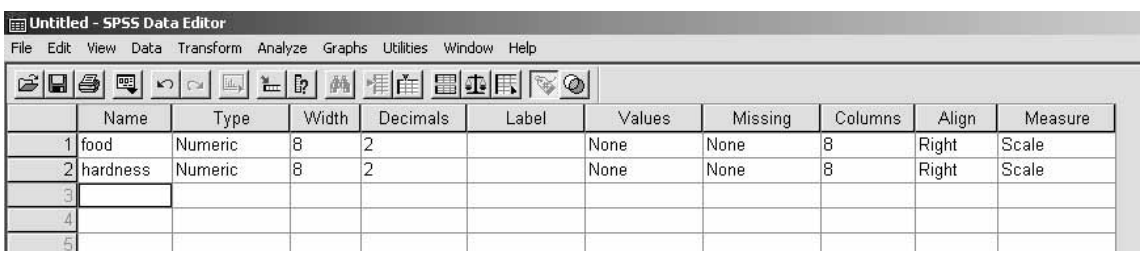
BOX 6.2. How to carry out a Pearson's product moment correlation

Step 1. Set up the variables.

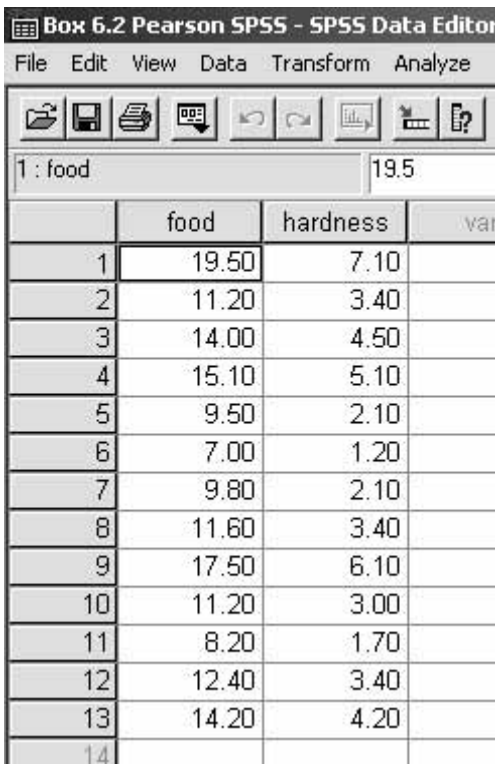
When SPSS starts up, select 'Variable View' using the tabs at the bottom left. You should get something like this:



For the first variable name, type in 'food' (variable names in SPSS have to be eight characters or less), and for the second 'hardness'. Default properties are set for each variable.



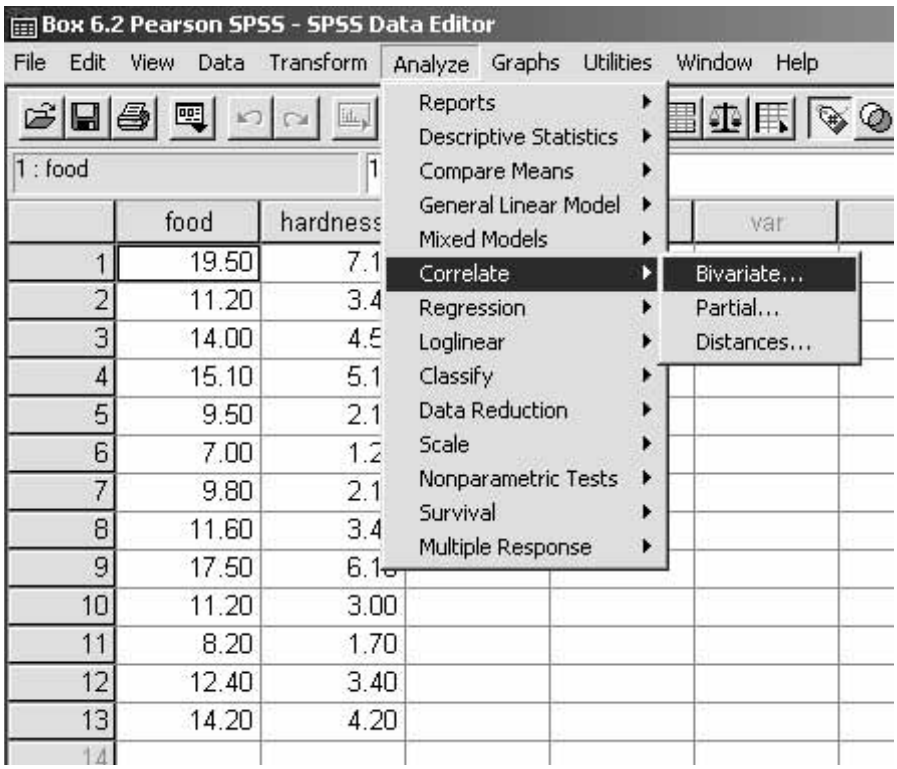
Transfer to data view using the tabs at the bottom left, and enter the data.



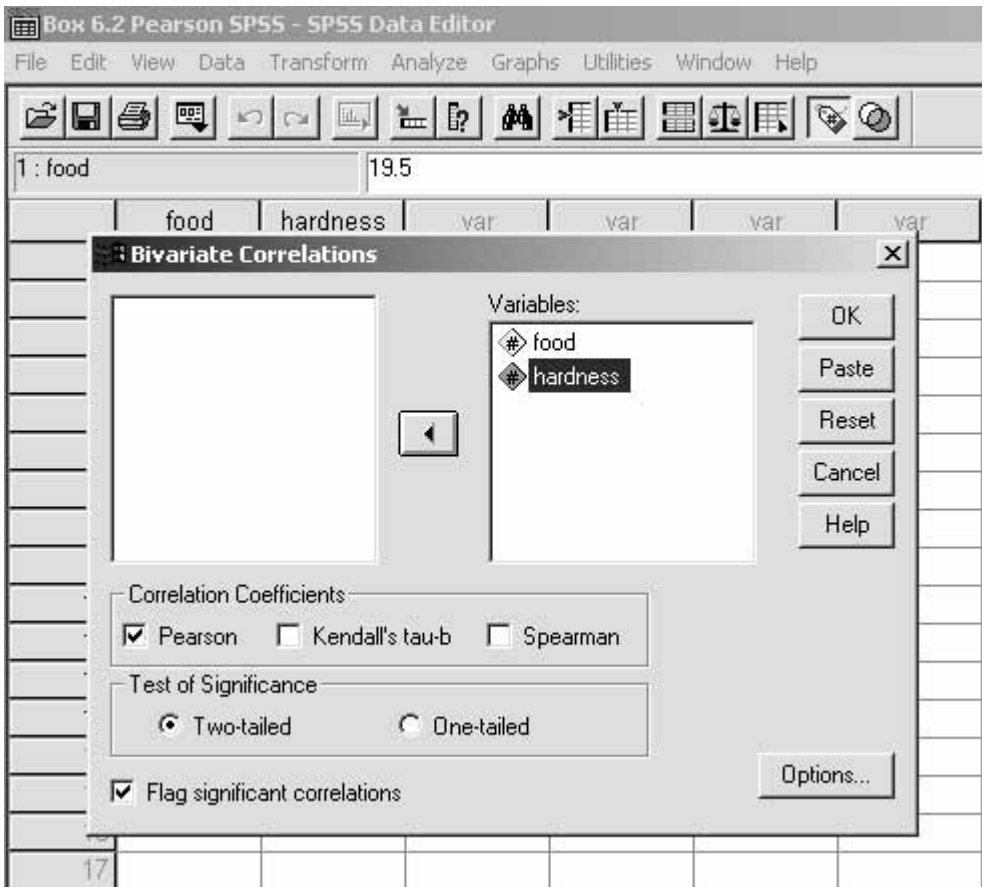
	food	hardness
1	19.50	7.10
2	11.20	3.40
3	14.00	4.50
4	15.10	5.10
5	9.50	2.10
6	7.00	1.20
7	9.80	2.10
8	11.60	3.40
9	17.50	6.10
10	11.20	3.00
11	8.20	1.70
12	12.40	3.40
13	14.20	4.20
14		

Step 2. Perform the test.

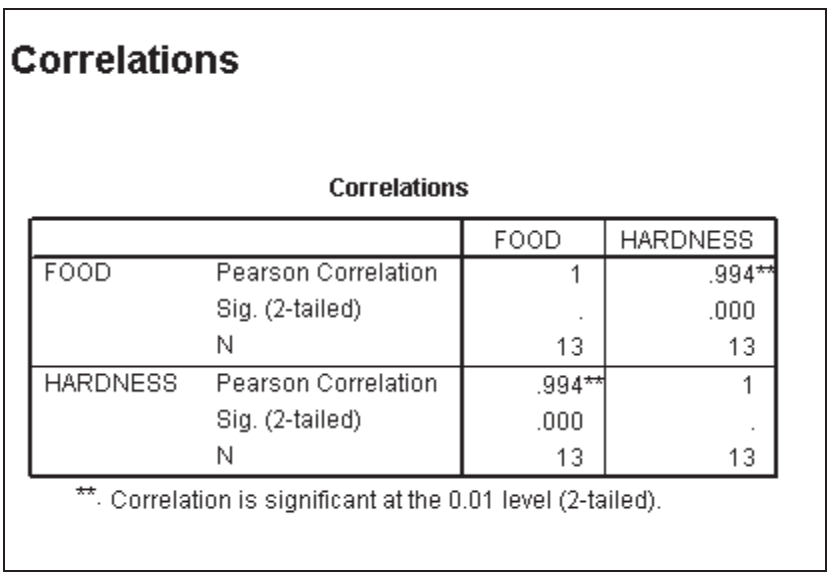
Go to 'Analyze', 'Correlate', 'Bivariate'.



Click on 'food' to highlight it, then click on the arrow to transfer it across to the 'Variables' box. Repeat for 'hardness'. Make sure that 'Pearson' is selected.



Click on 'OK'. The results will appear in a new window.



Correlations

Correlations

		FOOD	HARDNESS
FOOD	Pearson Correlation	1	.994**
	Sig. (2-tailed)	.	.000
	N	13	13
HARDNESS	Pearson Correlation	.994**	1
	Sig. (2-tailed)	.000	.
	N	13	13

**. Correlation is significant at the 0.01 level (2-tailed).

Step 3. Decide what the results mean.

SPSS computes a complete correlation matrix, so it includes rather meaningless things such as the correlation of 'food' with itself, and performs the correlations both ways ('food' correlated with 'hardness', and 'hardness' correlated with 'food'), which is a bit of a waste of effort for a Pearson test.

The important numbers here are the correlation coefficient of 0.994 for food and hardness (or hardness and food), which is large and positive (as food increases, so hardness increases), and the 'Sig. (2-tailed)', which is effectively zero: this is the p value, and gives the probability that there is no correlation between the test variables. We therefore conclude that there is a positive correlation between 'food' and 'hardness' at better than $p = 0.01$.