

SPSS24 HELP SHEET: One-Way Chi-Square (using legacy dialogs)

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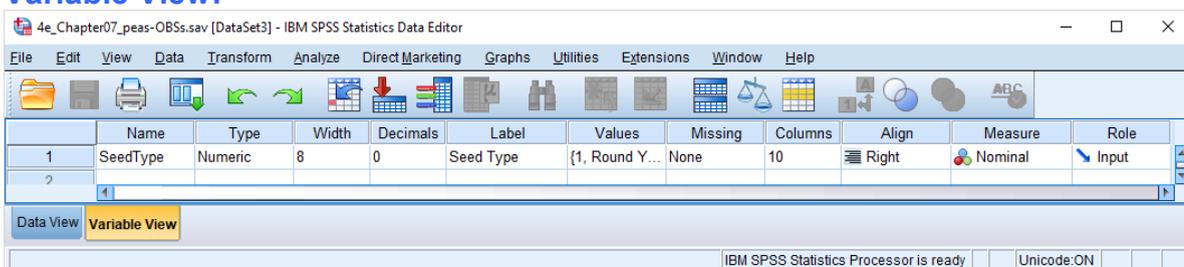
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1. How to enter data to do a One-way Chi-square.

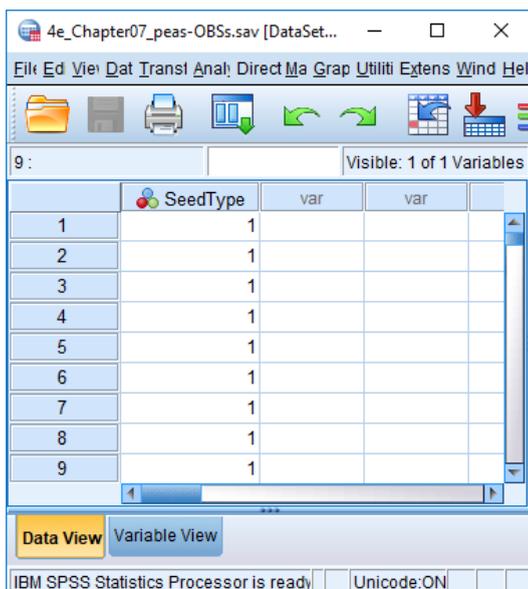
For general advice on data entry see the “How to enter data into SPSS” help sheet. The way you enter data into SPSS depends on whether it is raw observations or frequencies.

1a. For data as raw observations

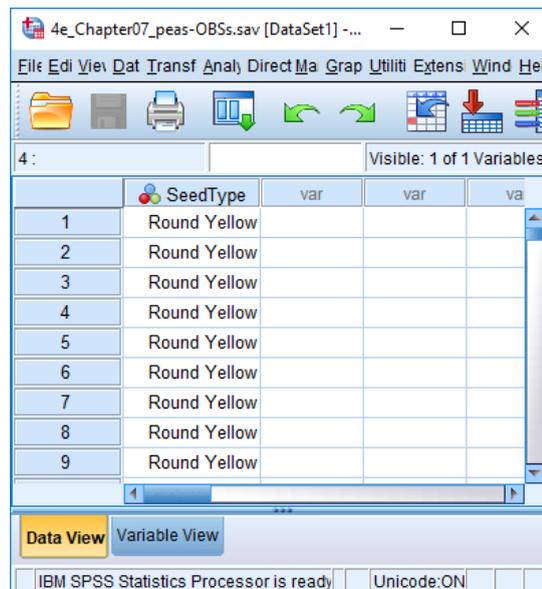
Variable View:



Data View (View – Value Labels off)

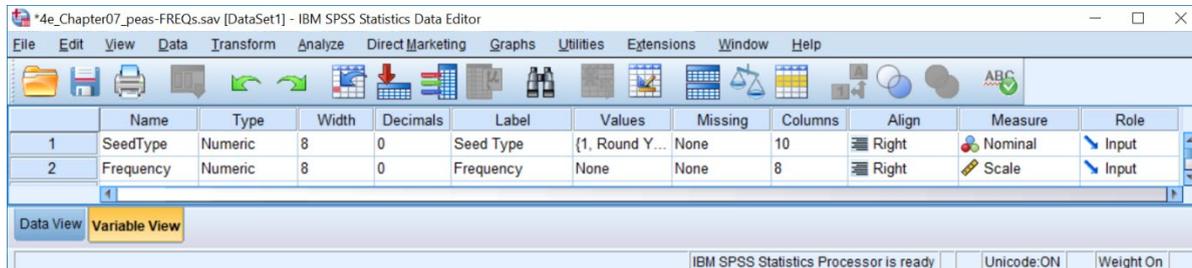


Data View (View – Value Labels on)

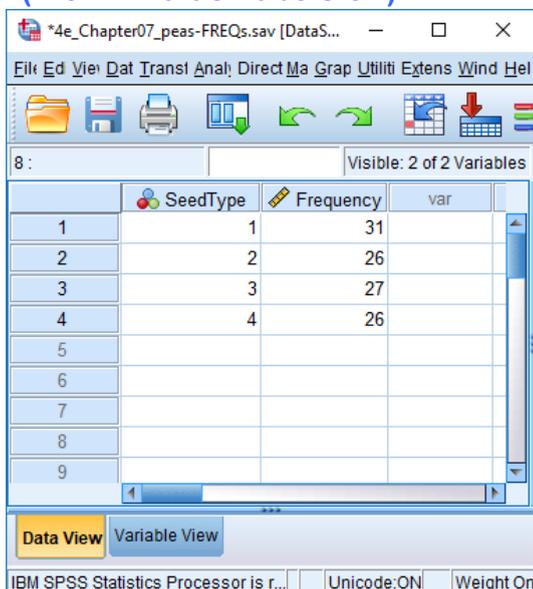


1a. For data as frequencies

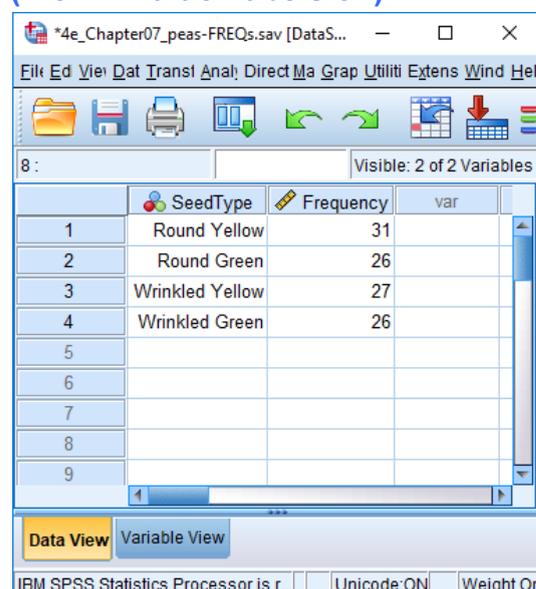
Variable View:



Data View (View – Value Labels off)



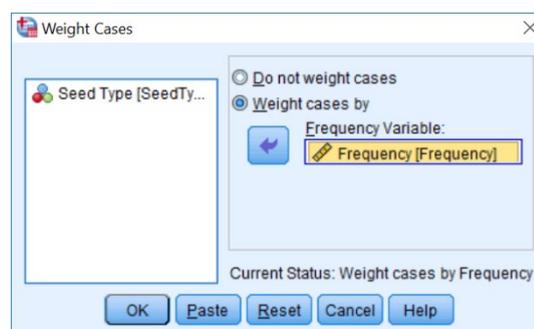
Data View (View – Value Labels on)



When data are entered as frequencies the following additional step is needed before starting the analyses.

Select: Data - Weight Cases . . .

In the **Weight Cases** dialogue window select the **Weight cases by** option. Then, select the variable from the list on the left, which contains the frequencies, and send it to the **Frequency Variable** box. Click **OK**.



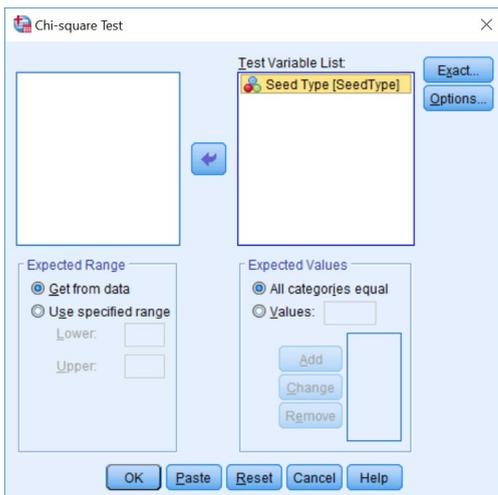
2. How to do a One-way Chi-square test with equal expected values.

To get SPSS to conduct a one-way chi-square test on your data when expected values are equal (Test of Homogeneity):

Open your data file.

Select: Analyze – Nonparametric Tests – Legacy Dialogs - Chi-Square...

This will bring up the **Chi-Square Test** window:



Select the variable that you want to analyse, and send it to the **Test Variable List** box (in the example above this is *SeedType*).

Under **Expected Range** check that the option **Get from data** is selected. Under **Expected Values** the **All categories equal** is the option that should be selected for a test of homogeneity. Click **OK**.

This will produce the following in the **Output** window.

Seed Type			
	Observed N	Expected N	Residual
Round Yellow	31	27.5	3.5
Round Green	26	27.5	-1.5
Wrinkled Yellow	27	27.5	-.5
Wrinkled Green	26	27.5	-1.5
Total	110		

← Total sample size (N)

Test Statistics	
Seed Type	
Chi-Square	.618 ^a
df	3
Asymp. Sig.	.892

Statistic (X^2)
Degrees of Freedom
P

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 27.5.

← This footnote is useful for evaluating if you have a problem with small expected values.

In summary the key information from the test is

one-way classification chi-square: $X^2_3 = 0.618$, $N = 110$, $P = 0.892$

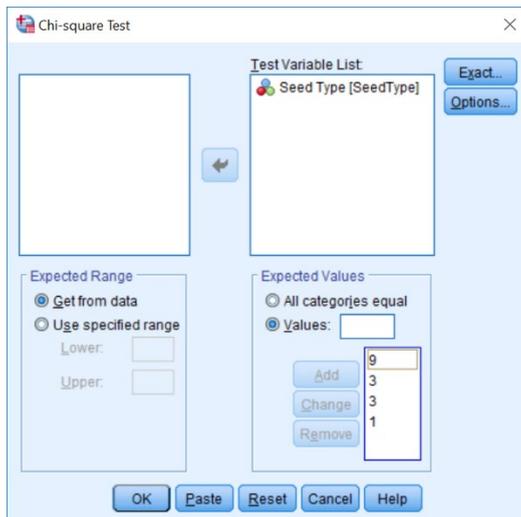
3. How to do a One-Way Chi-square test with unequal expected values.

To get SPSS to conduct a one-way chi-square test on your data when expected values are unequal:

Open your data file.

Select: Analyze – Nonparametric Tests – Legacy Dialogs - Chi-Square...

This will bring up the **Chi-Square Test** window:



Select the variable that you want to analyse, and send it to the **Test Variable List** box (in the example above this is *SeedType*).

Under **Expected Range** check that the option **Get from data** is selected. Under **Expected Values** you have to tell SPSS what the expected ratio. To do this, for example, for a 9:3:3:1 type 9 in the adjacent box then click **Add**. Repeat this procedure for the numbers 3, 3, and 1. The order of the values is important: you have to add the ratio values in ascending order of the category-number codes, with the first value in the list corresponding to the category with the lowest-number code. Click **OK**.

This will produce the following in the **Output** window.

Seed Type			
	Observed N	Expected N	Residual
Round Yellow	31	61.9	-30.9
Round Green	26	20.6	5.4
Wrinkled Yellow	27	20.6	6.4
Wrinkled Green	26	6.9	19.1
Total	110		

Total sample size (N)

Test Statistics

	Seed Type
Chi-Square	71.980 ^a
df	3
Asymp. Sig.	.000

Statistic (χ^2)

Degrees of Freedom

P

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 6.9.

This footnote is useful for evaluating if you have a problem with small expected values.

In summary the key information from the test is

one-way classification chi-square: $\chi^2_3 = 71.980$, $N = 110$, $P = 0.000$