

How to Use SPSS for Contingency Table, Relative Risk, Odds Ratio and Chi-Square Test

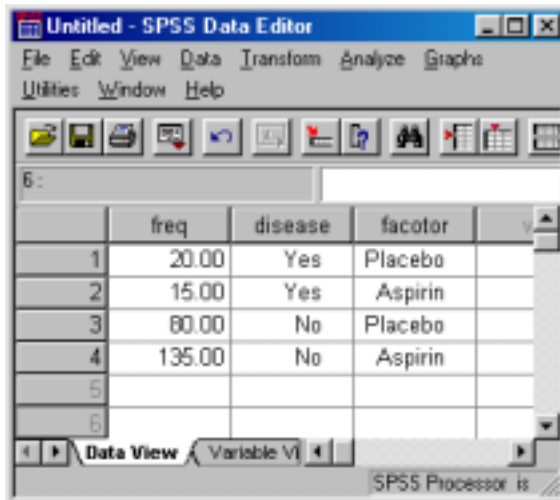
Example: Suppose we conducted a prospective cohort study to investigate the effect of aspirin on heart disease. A group of patients who are at risk for a heart attack are randomly assigned to either a placebo or aspirin. At the end of one year, the number of patients suffering a heart attack is recorded.

| Group | Heart Disease | | Total |
|---------|---------------|------|-------|
| | Yes + | No - | |
| Placebo | 20 | 80 | 35 |
| Aspirin | 15 | 135 | 215 |
| Total | 100 | 150 | 250 |

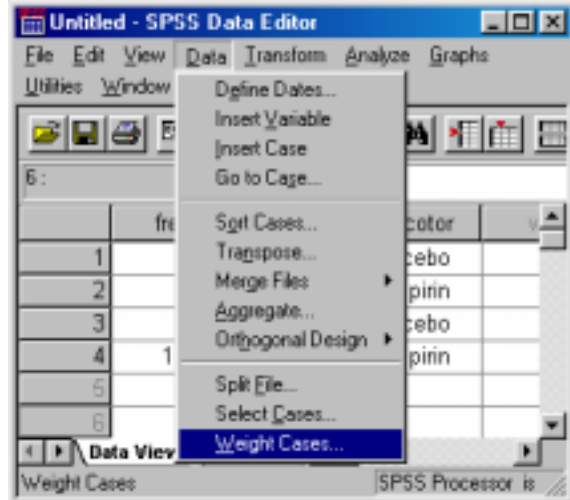
Odds ratio (of having heart disease for placebo v.s. Aspirin) = $(20 \times 135) / (80 \times 15) = 2.25$

Relative risk (of having heart disease for placebo v.s. Aspirin) = $(20/100) / (15/150) = .2 / .1 = 2$
 (The risk of a heart attack for people on placebo is twice that of people on aspirin.)

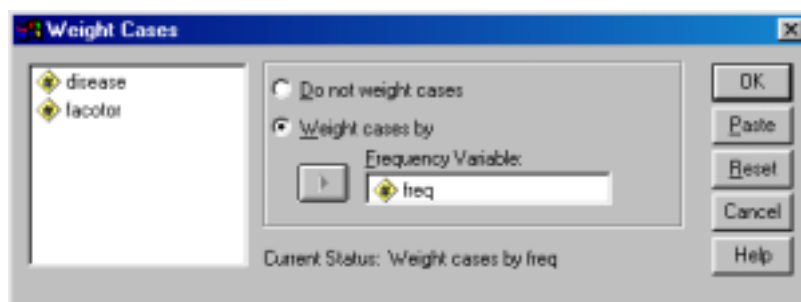
Step 1: (Go to Step 2 if data is raw data and not organized frequencies as in figure (a).) First, create the data in SPSS Data Editor as in (a), and then weight the cases entered in the Data Editor by click **Data** and select **Weight Cases** as in (b). In the Weight Cases dialog box select freq variable for weighting the cases. Weight Cases will allow users to be able to make a contingency table with the joint frequency distribution entered in (a) and each associate with a joint class. For example, 20 is the frequency for “Yes” and “Placebo”. The **disease** variable has internal values 0 and 1 (0 is labeled as Yes and 1 is labeled as No). The **factor** variable has internal values 0 and 1 (0 is labeled as Placebo and 1 is labeled as Aspirin).



(a)

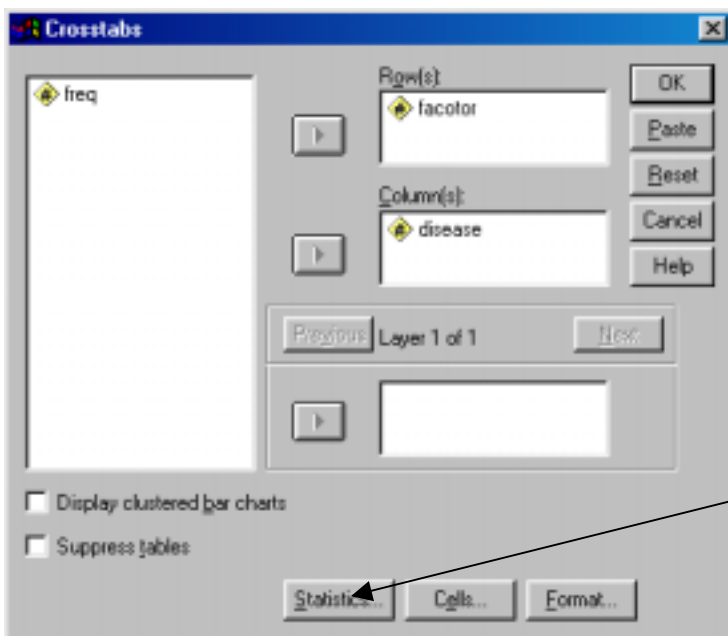
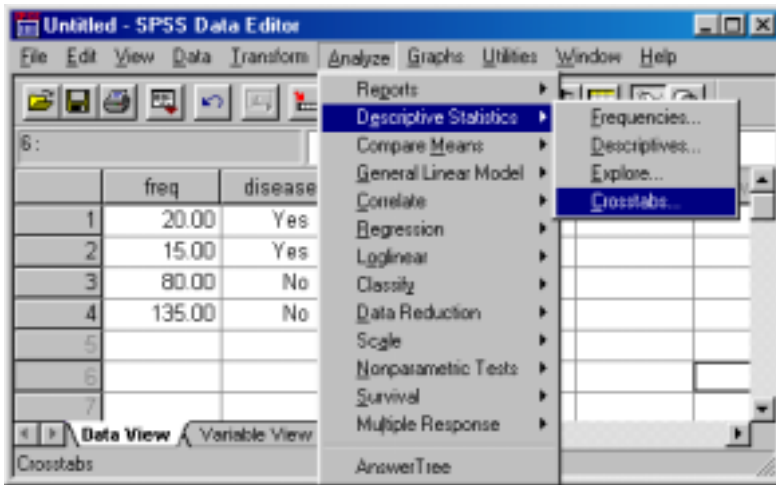


(b)

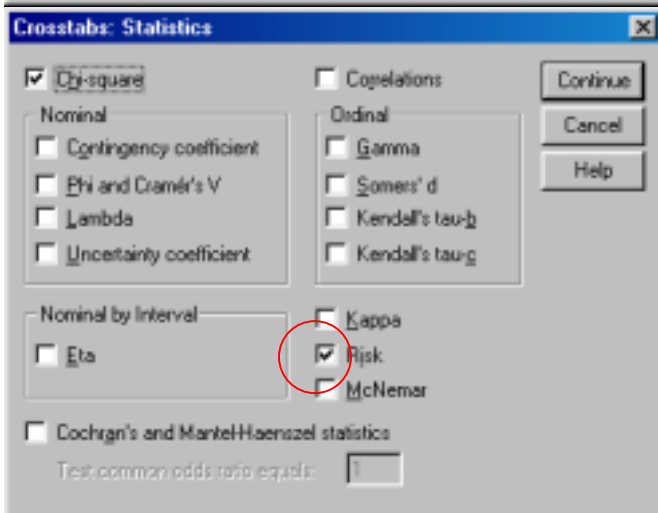


(c)

Step 2: Following the procedure below (Analyze/Descriptive Statistics/Crosstabs) to make the contingency table. In SPSS, the row variable is risk factor and column variable is outcome variable.



Click **Statistics** and check the **Risk** box in the **Crosstabs: Statistics** dialog window to obtain risk measurement for obtaining the following Risk Estimate table.



| | Risk Estimate | | |
|--|---------------|-------|-------|
| | Value | Lower | Upper |
| Odds Ratio for FACOTOR (Placebo / Aspirin) | 2.250 | 1.090 | 4.643 |
| For cohort DISEASE = Yes | 2.000 | 1.076 | 3.717 |
| For cohort DISEASE = No | .889 | .795 | .994 |
| N of Valid Cases | 250 | | |

FACTOR * DISEASE Crosstabulation

Count

| | | DISEASE | | Total |
|--------|---------|---------|-----|-------|
| | | Yes | No | |
| FACTOR | Placebo | 20 | 80 | 100 |
| | Aspirin | 15 | 135 | 150 |
| Total | | 35 | 215 | 250 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|------------------------------------|--------------------|----|-----------------------|----------------------|----------------------|
| Pearson Chi-Square | 4.983 ^b | 1 | .026 | | |
| Continuity Correction ^a | 4.187 | 1 | .041 | | |
| Likelihood Ratio | 4.876 | 1 | .027 | | |
| Fisher's Exact Test | | | | .039 | .021 |
| Linear-by-Linear Association | 4.963 | 1 | .026 | | |
| N of Valid Cases | 250 | | | | |

p-values less than 0.05 implies significant relation

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.00.