

Chi-square Test for Independence

For this example, we will perform a Chi-square Test of Independence using data in the following contingency table to see if there is correlation between treatment and outcome.

Is there a relationship between Treatment and Heart Disease?

Heart Disease Variable:
"Have the disease" or "Do not have the disease."

Treatment Variable:
"Placebo" or "Aspirin".

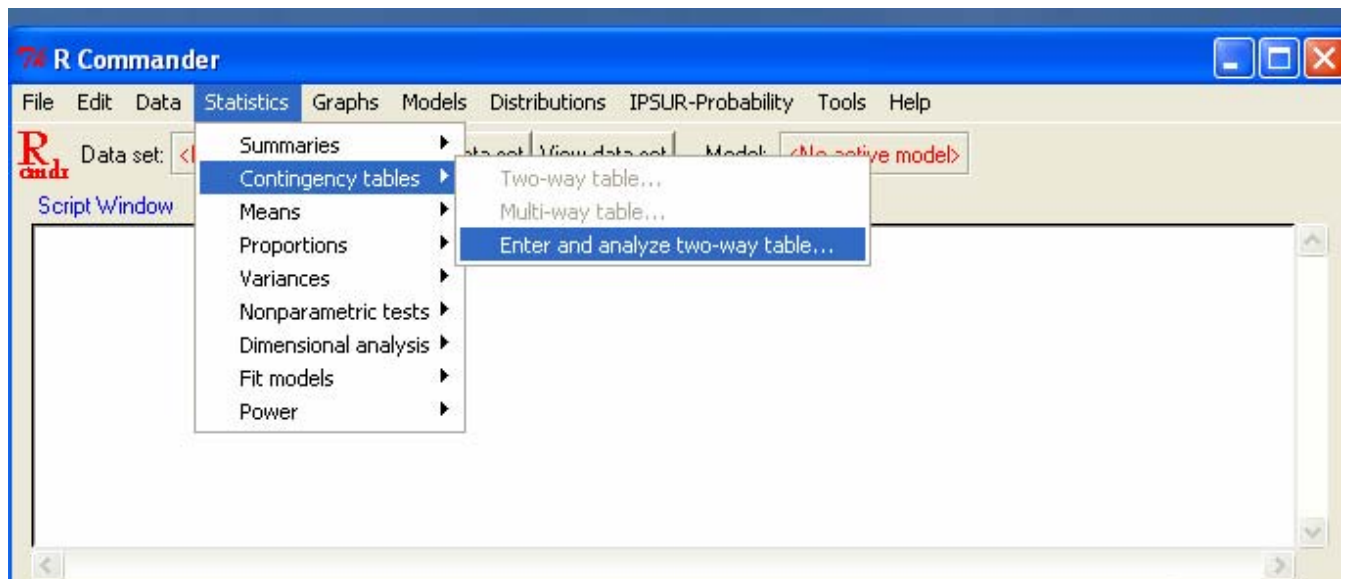
	Heart Disease		
Treatment	Yes +	No -	Total
Placebo	36	114	150
Aspirin	14	136	150
Total	50	250	300

2

1) To create a Table to represent the "Yes +" and "No -"

Statistics -> Contingency tables

-> Enter and analyze two-way table...



- 2) Enter the Data from the above chart to match the table in the R Commander window as shown below:

74 Enter Two-Way Table

Number of Rows: 2

Number of Columns: 2

Enter counts:

	1	2
1	36	114
2	14	136

Add Marginal Distributions

Compute Percentages

Row percentages

Column percentages

Percentages of total

No percentages

Hypothesis Tests

Chi-square test of independence

Components of chi-square statistic

Print expected frequencies

Fisher's exact test

Simulate p-value Iterations:

OK Cancel Help

Compute Percentages:

If one needs the percentages, it can be calculated by selecting the bullet next to the needed percentage. For example, No percentages is selected.

Hypothesis Tests:

Choose: Chi-square test of independence

And click OK button.

Interpret Results:

Pearson's Chi-squared test

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data: .Table  
X-squared = 11.616, df = 1, p-value = 0.0006539
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For this example: The resultant is a Chi-squared statistic = 11.616 and a p-value of 0.00065.

To test the hypothesis at 5% level of significance:

P-value Approach:

One would reject Null Hypothesis since the p-value: $0.00065 < 0.05$

Critical Value Approach:

Reject null hypothesis since Chi-squared: $11.616 > 3.84$