

## Chapter 913

# Kappa Estimator

## Introduction

This tool calculates  $\kappa$  and  $SD(\kappa)$  from a table (matrix) of agreement frequencies. By experimenting with the table values, you can get a feel for the possible range of  $SD(\kappa)$  values that will be obtained.

## Technical Details

We begin with an example. Consider a study comparing the results of two raters on  $N$  subjects. Each subject will be tested by one rater and then retested by the other rater on a nominal scale with three categories. The spreadsheet would look something like this.

Table of Agreement Frequencies			
	Rater B		
Rater A	B1	B2	B3
A1	103	24	31
A2	21	187	19
A3	32	25	96

Each cell is divided by the total of all cells to provide the following table of agreement proportions.

Table of Agreement Proportions				
	Rater B			
Rater A	B1	B2	B3	Total
A1	0.19	0.04	0.06	0.29
A2	0.04	0.35	0.04	0.42
A3	0.06	0.05	0.18	0.28
Total	0.29	0.44	0.27	1.00

The values of  $\kappa$ , PE, PO, Fleiss's  $SD(\kappa)$ , and Cohen's  $SD(\kappa)$  are calculated from this table. In this case, the values are  $\kappa = 0.567062$ , PE = 0.347418, PO = 0.717472, Fleiss's  $SD(\kappa) = 0.678379$ , and Cohen's  $SD(\kappa) = 0.689919$ . One concept we learn is that there is little practical difference between the two measures of  $SD(\kappa)$  in this case.

Now you can begin changing the values in the first table and noting the corresponding change in the statistics at the bottom.

## Kappa Estimator

Once you have experience with the values of  $\kappa$  and  $SD(\kappa)$ , you can close this window and enter these values directly into the appropriate boxes.