Fechner Correlation

The **FECHNER CORRELATION** command calculates the Fechner *signs correlation coefficient* between all the pairs of variables. Fechner correlation coefficient is used to check relationship for small samples.

How To

- ✓ Run**: STATISTICS->NONPARAMETRIC STATISTICS-> FECHNER CORRELATION...**
- ✓ Select the variables you want to correlate.
- ✓ **Pairwise** deletion is default for missing values removal (use the **MISSING VALUES** option in the **PREFERENCES** window to force casewise deletion).

Results

Matrix with Fechner correlation coefficients between each pair of variables is calculated.

Fechner correlation coefficient is defined by

$$F = \frac{N_+ - N_-}{N_+ + N_-}$$

where N_+ - number of matched signs for differences $x_i - \bar{x}$ and $y_i - \bar{y}$, N_- - number of unmatched signs; $\bar{x}, \bar{y}$ - are samples mean values.

$N_+ = |\{\text{sign}(x_i - \bar{x}) = \text{sign}(y_i - \bar{y}), i = 1..N\}|$,

$N_- = |\{\text{sign}(x_i - \bar{x}) \neq \text{sign}(y_i - \bar{y}), i = 1..N\}|$,

$|\cdot| - elements\ count.$

Similarly to Pearson correlation coefficient F takes values between - 1 and 1 : $-1 \leq F \leq 1$.