Some Concepts of CA:



Total inertia of all points (Total variation) = $\sum\_{i}^{}r\_{i }d\_{i}^{2} = \sum\_{i}^{}r\_{i } \sum\_{k}^{}f\_{ik}^{2}= \sum\_{k}^{}λ\_{k} $

Inertia is the weighted average of the squared χ2-distances between the row profiles and their average profile, where the weights are the row masses.

Inertia of point i = $ r\_{i }d\_{i}^{2} = r\_{i }\sum\_{k}^{}f\_{ik}^{2} $

Inertia contribution of point i to k-axis= $r\_{i }f\_{ik}^{2} $

Contribution, ctr = $\frac{r\_{i} f\_{ik}^{2}}{λ\_{k} }$

 The contribution of the row along axis k.

Squared correlation, squared cosine, is $\frac{r\_{i} f\_{ik}^{2}}{r\_{i} d\_{i}^{2} }$ = $ \frac{ f\_{ik}^{2}}{ d\_{i}^{2} }$

Squared correlation: the contribution of axis k to the corresponding inertia of point i.

**Quality of representation**: The sum of squared correlations for a point.