MODELLING THE COMPROMISE MATRIX IN STATIS

Aníbal Areia[1], Manuela M. Oliveira[2] and João T. Mexia[3]

1. College of Business Sciences, Setúbal Polytechnic Institute, Portugal

2. Department of Mathematics and CIMA, University of Évora, Portugal

3. Department of Mathematics and CMA, New University of Lisbon, Portugal

Abstract

STATIS methodology has three phases: Inter-structure, Compromise, and Intra-structure. In order to be able to carry out inference and simultaneously study several matched series of studies models were introduced for the first place, e. g. Areia et al. 2008 and Oliveira and Mexia 2007. In this poster we extend the models to the Compromise. We apply our approach to the results of local elections in Mainland Portugal.

In the last few decades, many authors have studied a series of double-entry tables, thus originating the Join Analysis of Tables (ACT).

We can considerer the STATIS methodology as na ACT method that uses Euclidian distances between configurations observed in k situations.

The STATIS method was introduced by Hermier des Plantes (1976) and developed by several authors, in particular by Lavit (1988) to analyse data organized in series of studies.

A study consiste of a matrix triplet

$$(\mathbf{X}_i, \mathbf{D}_{ni}, \mathbf{D}_{pi}), i=1,\ldots,k,$$

being a data array and $\mathbf{D}_{ni}$ and $\mathbf{D}_{pi}$ being two weight matrices for objects and variables.

To obtain a geometrical representation of the studies, Escoufier (1976), developed the operators

$$\mathbf{A}_i = \mathbf{X}_i \mathbf{D}_{mi} \mathbf{X}_i^t \mathbf{D}_n, i = 1,\ldots,k \qquad \text{(first type)}$$

$$\mathbf{B}_i = \mathbf{X}_i^t \mathbf{D}_{ni} \mathbf{X}_i \mathbf{D}_p, i = 1,\ldots,k \qquad \text{(second type)}$$

The compromise matrix **M**

with diagonal matrices $\mathbf{D}_n$ and $\mathbf{D}_p$ being two weight matrices for objects and variables.