Multidecomposition for Fuzzy Poverty Indices

The Source for Gauss

Mussard S.[1] and Pi Alperin M.N.[2]

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This note briefly explains how to introduce the database information on this program which calculates multidimensional poverty indices based on the fuzzy set approach to the study of deprivation. It also computes all decomposition possibilities in the multidimensional context.

Input Database

The user must construct two input databases and save them in .txt format. Table 1 presents an example of the first database which contains the selected dimensions to study multidimensional poverty which have been transformed using fuzzy set theory.

Table 1: *The first input database*

0	0	…	0.4
0	0.3	…	0.4
0	0.3	…	0
0	0.3	…	0.4
0	0	…	0.4
0	0.3	…	0.4

Table 2 presents the second input database. It is an unitary vector having the sample weights, i.e. the number of observations in the total population statistically represented by each sample observation which is given by the survey.

Table 2: *The second input database*

134
654
76
34
123
456

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[3] For formulas: see Mussard S. and Pi Alperin M.N., 2007.

The information

- **Step 1:** You must introduce the file's path containing the first input database.

load x[]=c:\Gauss\mydata\Fuzzy\region1.txt ;   /* Matrix (n*m) xij   */

- **Step 2:** You must introduce the file's path containing the second input database.

load z[]=c:\Gauss\mydata\Fuzzy\zi-reg1.txt ;   /* Vector (n*1) g(ai) */

- **Step 3:** You must introduce the number of studied households.

n=1319 ;   /* Number of households   */

- **Step 4:** You must introduce the number of selected dimensions.

m=12 ;   /* Number of attributes   */

In the following steps, information about the partitions of the population must be introduced. This program allows only working with two partitions. That is, groups and subgroups.

- **Step 5:** You must introduce the number of final groups after the first partition of the population. For example, the first partition is by gender, so k=2 (man, woman).

k=2 ;   /* Number of groups */

- **Step 6:** You must introduce the number of households belonging to each group. It must be equal to the number of households in Step 3 (that is 198+1121=1319). It is important to notice that when the user writes 198, 1121, the program will consider that the first 198 households belong to the first group and 1121 to the second one.

nn={198,1121} ;   /* size of the k's groups */

- **Step 7:** You must introduce the number of final subgroups in the second partition of the population. That means, in this example, that each group of the first partition must be partitioned into three subgroups. For example, the second partition is by age: less than 25 years old, between 26 and 50, and more that 50 years old.

b=3 ;   /* Number of subgroups   */

- Step 8: In this final step, you must introduce the number of households belonging to each subgroup. In this example the first 60 households are men less than 25 years old, and so on. Important: (60+40+98(=198)+100+900+121(=1121)=1319).

bb={60,40,98,100,900,121};   /* Subgroup's size */

Important

This program only calculates the system of weights, attached to each attribute, proposed by Cerioli and Zani (1990).

References

Cerioli A. et Zani S., (1990), « A Fuzzy Approach to the Measurement of Poverty », in Dagum C. and Zenga M. (eds.), *Income and Wealth Distribution, Inequality and Poverty*, Springer Verlag, Berlin, pp. 272-284.

Mussard S. and Pi Alperin M.N. (2007), « Multidimensional Poverty Decomposition: A Fuzzy Set Approach », *Satistica & Applicazioni*, Vol. V, n. 1, pp. 29-52.

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Liability waiver

The program should work as advertised, but it is freely offered `as-is' to the research community and may contain bugs. Use at your own risk! Bug reports, as well as comments and suggestions are welcome (mussard@lameta.univ-montp1.fr).