COORDINATES OF STANDARD OF LIVING IN ROMANIAN RURAL A REAS, AT THE END OF 2005

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Overall, it is well known now that Romanian population from rural areas has a lower standard of living than people from urban localities. This paper aims to realize a deeper analysis of rural living conditions in Romania, trying to identify their specific coordinates at the end of 2005. A set of 35 categorical indicators describing various aspects of living conditions are used in order to characterize this multidimensional concept. Aggregation of the primary indicators of living conditions is done with the help of a non-arbitrary technique, multiple correspondence analysis (MCA). According to MCA results, variables which differentiate the most between rural households in terms of their standard of living are about the access to running water, toilet and sewerage. Significant roles in discriminating between rural households have also the variables describing their endowment with poultries, bovines and agricultural field.

Key words: *standard of living, rural households, multiple correspondence analysis*

Living conditions have a great influence on people's quality of life since the households' standard of living interacts with individuals' health, leisure, social relations and, of course, with their happiness. There are a lot of indicators that describe the living conditions but none of them could express this concept by itself.

The present research focuses on the analysis of rural households' standard of living (case of Romania) using a multivariate technique called Multiple Correspondence Analysis (MCA) to synthesize the information comprised in the original set of 35 indicators of living conditions, selected for this study.

MATERIAL AND METHOD

Multiple correspondence analysis (MCA), also called Homogeneity Analysis, is an extension of correspondence analysis to more than two variables. It allows one to analyze the pattern of relationships of several categorical dependent variables [1].

Each nominal variable comprises several levels, and each of these levels is coded as a binary variable, taking the value 1 when the unit (household) has the category and 0 when it doesn't [2].

MCA results allow one to synthesize the information comprised in data in a graphical representation called correspondences map. The interpretation of MCA map is often based upon proximities between points represented on it [5].

Specifically, when two row points are closed to each other they tend to select the same levels of the nominal variables. For the proximity between variables we need to distinguish two cases. First, the proximity between levels of different nominal variables means that these levels tend to appear together in the observations. Second, because the levels of the same nominal variable cannot occur together, we need a different type of interpretation for this case. Here the proximity between levels means that the groups of observations associated with these two levels are themselves similar [1].

In the context of this study, MCA is used to generate a map of rural households' characteristics according to the coordinates of their standard of living.

The data used in the study are drawn from the Rural EuroBarometer survey conducted in November - December 2005 at the initiative of Soros Foundation Romania [3]. From this survey questionnaire, a first subset of 35 indicators describing various aspects of living conditions was extracted. The selected indicators refer to: health; education and access to information; public utilities infrastructure; transport infrastructure; housing equipments and elements of comfort; household's endowment with agricultural capital, household's interaction with business environment. Both the questionnaire and the data base in SPSS format are available on-line on www.osf.ro [8]. Variables included in this research were recoded and re-labeled (their labels and their values' labels) so as to adapt at the study's requests.

RESULTS AND DISCUSSIONS

The first step in analysis of the data is to explore them with a first data reduction analysis as MCA in order to identify some structure in the large set of categorical indicators.

The MCA eigenvalues highlight the distinction of the first factorial axis as it explains 19.9% of the total inertia of the variables group, whereas the other axes show a much lower explanatory power (each with less than 10% of the inertia explained.

By ordering the discrimination measures (the variances of the factorial scores obtained by the set of categories associated to each indicator [2]) in the first two factorial axis, we identified two variables to be excluded from further analysis because of their much lower discriminatory power on both factorial axis: *Is your household registered to a family doctor?*, *Does your household have any beehives?*.

A final MCA run on the 33 indicators retained for the final analysis has resulted in an increase in the explanatory power of the first two axes, which has risen from 29.6% to 31.3%. Thus, the average discrimination measures of the remaining 33 indicators are higher and the first two axes appear stronger.

According to discrimination measures, variables that have contributed the most to the construction of the first axis were: *Water supply* (0.644), *Toilet* (0.629), *Sewerage* (0.560) and *Does your household have automatic washing machine?* (0.493). Variables that contributed the most to the formation of the second axis were: *Has poultries*? (0.326), *Surface (ha) of the owned agricultural field* (0.251) and *Has bovines?* (0.248).

Figure 1 presents the joint plot of category points corresponding to modalities' scores on the first two axes. The factorial map provided by MCA

highlights the fact that, according to the first axis, the modalities which express precarious living conditions are represented on the left side of the plane, while those indicating a high standard of living appear in the right side.
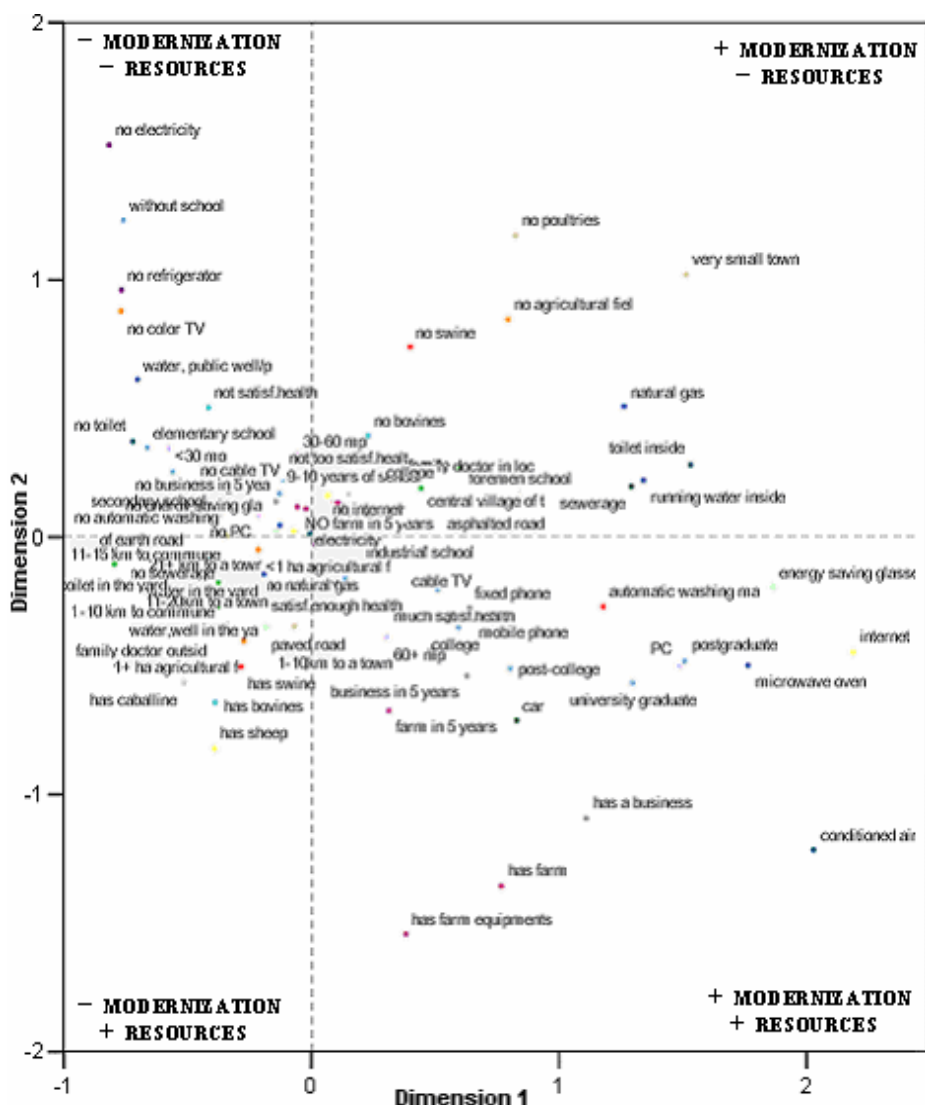

Figure 1 **Joint Plot of Category Points**

Thus, on the first axis, modalities with positive scores increase rural households' access to public utilities infrastructure, to transport infrastructure and also, to housing equipments and elements of comfort, while those with negative scores reduce it. We name this axis: *level of modernization in living conditions*.

Highest positive scores are associated with goods and elements of comfort owned by a limited number of well-to-do households (microwave oven, access to Internet, energy saving glasses, conditioned air, running water installation and

toilet inside the dwelling). In the same time, important positive scores are specific to high educated persons (with graduate and postgraduate studies). Greater the negative scores are on the first axis, lesser the households possess such goods and their access to education is more limited. This is the case of the households that live far away from a town and/or from the centre of the commune, in very small spaces, which lack minimal comfort (running water and toilet inside the dwelling).

As for the village position, standard of living rise with the proximity to a town.

In rural areas, the quality of access roads to dwelling is a factor of great influence on the standard of living. Thus, the households that have a road made of earth passing in front of their houses usually confront with worse living conditions than those that benefit of an asphalted or paved access road to their houses.

On the second axis, high negative scores show a much significant endowment of the households with agricultural capital (domestic animals, poultries, farm equipments, agricultural field, and ownership of a farm or agricultural exploitation). We call this axis: *availability of agricultural resources*.

If we analyze the households' interaction with business environment, it can be seen that having or starting a business depend almost equally of both factors: modernization in living conditions and availability of agricultural capital. On the other hand, decision of having a farm or an agricultural exploitation is influenced in a greater extent by households' agricultural resources.

Analysis of the relationships between objects scores on the first two axes and a few illustrative socio-demographical characteristics of the households involved in this study allowed us to identify some additional coordinates for the standard of living of Romanian rural households.

According to their location (*fig. 2 a, b*), the best living conditions can be found in the households located in rural mountainous and sub mountainous areas as those from districts Covasna, Sibiu, Alba, Vâlcea. The lowest standard of living is specific to plain-hill rural areas located in districts as Vaslui, Buzău, Iaşi, Bacău, Olt.
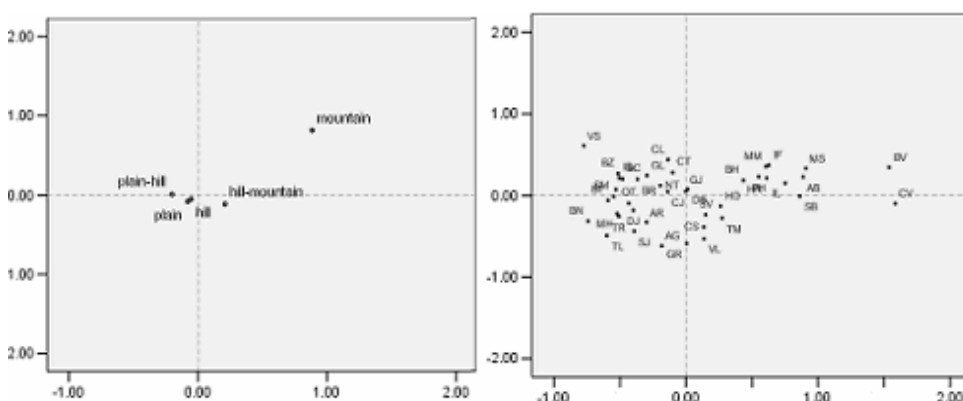

Figure 2 **Relationship between standard of living and: a) relief; b) district**

It can be noticed that the gypsies have the poorest living conditions. At the opposite position, there are German and Magyar households which enjoy the highest standard of living. In accordance with the results obtained for nationality (*fig. 3 a, b*), the most well-to-do households are those that embrace Protestant or Romano-catholic religions. Given the great spreading of Orthodox religion among Romanians, the average scores for people of Romanian nationality and for those of Orthodox religion are much closed and approximate zero value, meaning an average standard of living. The most precarious living conditions affect especially the households whose members don't have any religious orientation.
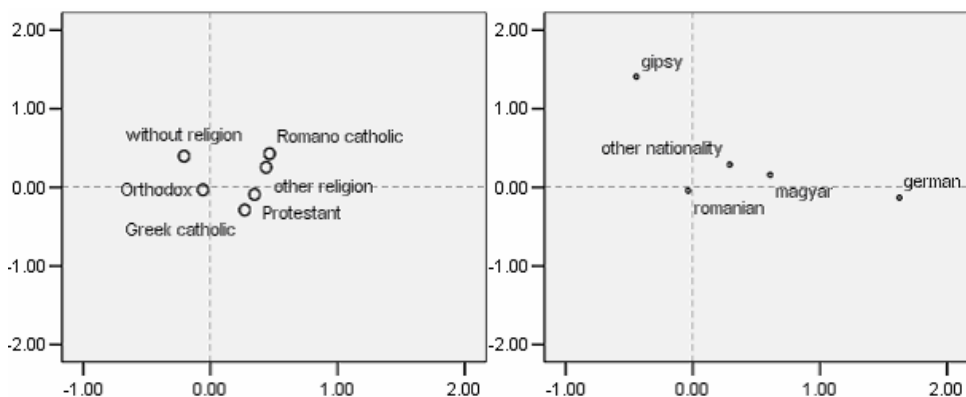

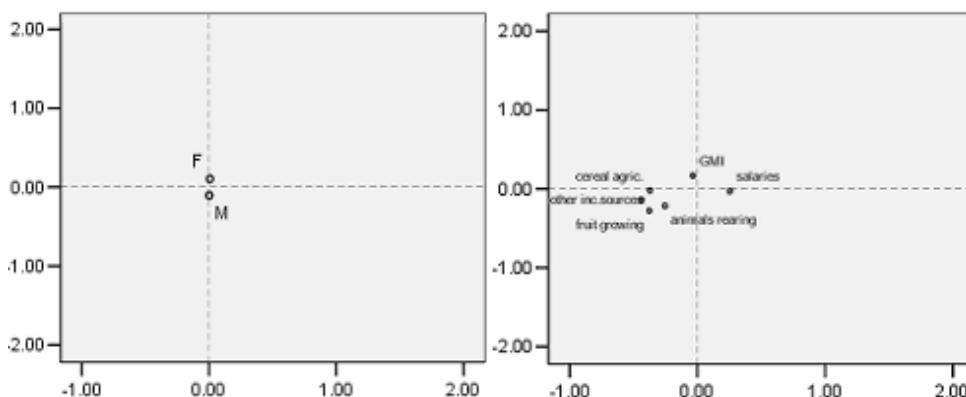Figure 3 **Relationship between standard of living and: a) religion; b) nationality**

Figure 4 **Relationship between standard of living and: a) gender; b) main source of income**

There are very little differences between women's and men's standard of living in rural areas (*fig. 4 a*). Looking at the main source of households' income, we can notice that salaries and incomes from animals rearing correspond to higher standards of living, while precarious living conditions are specific to those who live from guaranteed minimum income (GMI) and from cereal agriculture (*fig. 4 b*).

170

CONCLUSIONS

In the context of this study the MCA mainly centers on the first two factorial axes in order to characterize the standard of living. The first axis describes rural households' access to public utilities infrastructure, to transport infrastructure, to housing equipments and elements of comfort and to education. The second axis expresses rural households' endowment with agricultural capital (domestic animals, poultries, agricultural field, and agricultural equipments).

We identified, on the correspondences map, four categories of living conditions specific to Romanian rural areas in terms of the nature of the relationships with the two factors that influence rural households' standard of living (level of modernization and agricultural resources). Variables which differentiate the most between rural households according to their standard of living are about the access to running water, toilet and sewerage. Significant roles in discriminating between rural households have also the variables describing their endowment with poultries, bovines and agricultural field.

Examination of the relationships between objects scores on the first two axis and a few illustrative socio-demographical rural households' characteristics shows up additional conclusions. According to their location, the best living conditions can be found in the households located in rural mountainous and sub mountainous areas. Plain-hill rural areas characterize the lowest standard of living of a rural household. Highest standard of living corresponds to German and Magyar ethnicity and to Protestant and Romano-catholic religions. People of Romanian nationality and those of Orthodox religion have an average standard of living. The most precarious living conditions affect especially Gypsy nationality and the households whose members don't have any religious orientation. Lesser educated the members of the households are, the most they confront with poor living conditions. Salaries and incomes from animals rearing are associated with the best living conditions, while the lowest standard of living characterizes households whose main sources of income are the guaranteed minimum income and the cereal agriculture.

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