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Profile of the quality of life in Brazilian states

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Abstract

One of many definitions of Quality of life (QOL) is associated with the optimization of life conditions, within the personal as well as environmental restrictions, depending thus on the particularities of each individual and of his or her access to the necessary means in order to achieve his own purposes in life. This study was conducted to characterize the (QOL) of Brazilian States, as well as to group these states with different QOL levels. In the States, the general profile is the precariousness of the term used in this QOL research. Despite the regional differences, it was possible to find two clusters of States: the first one was composed by the Southern, Southeastern and Federal District which showed better QOL rate and the second one was composed by the other states which need more intensive and effective public policies in order to improve upon the population´s quality of life.

Keywords

Quality of life, Brazilian states, cluster analysis, factorial analysis, regional differences, public policies

Introduction

One of many definitions of Quality of life (QOL) is associated to the optimization of life conditions, within the personal as well as environmental restrictions, depending thus on the particularities of each individual and of his or her access to the necessary means in order to achieve his or her own purposes in life. According to Paschoal (2000), Hollar (2003) and Rahman *et al.* (2005), the search for quality of life has emerged in the last thirty years, thus it is considered an important attribute to the sector of health, generating the implementation of health public policies. These policies focus on objective indicators, for example morbidity and mortality, to mention two, as well as the subjective aspects such as people's perceptions regarding their well being and their quality of life. More recently, there has been a renewed interest in pursuing quality-of-life issues in a multitude of research in economics, child development, health care, business, rural

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development, among other fields (Hollar, 2003; Lamers *et al.*, 2005; Camfield *et al.*, 2009).

According to the World Health Organization (WHO) quality of life is the individual's perception concerning his or her position in life, according to cultural context and the value systems in which they live and regarding their objectives, expectations, patterns and preoccupations as well. (Fleck *et al.*, 1999b). Another approach to defining quality of life was the one used by Fleck *et al.* (2003), which defined the individual's perception of his or her position in life in the cultural context as well as in the value systems under which he or she lives, as well as his or her relationship with their objectives, expectations and preoccupations in order to value as well as standardize people's well-being.

Hollar (2003) and Rahman *et al*. (2005) explained that there are many institutions such as the World Bank as well as the United Nations (UN) that develop scientific researches and show the economical, demographic, cultural, educational and health indicators in the countries, using them, in many cases, as QOL indicators. Nowadays, the term quality of life has been in evidence all around and despite the fact that the expression has been in fashion, even today, we find very few researches that present quantitative results regarding this subject, due to the great complexity of the theme, especially when the methodology for its evaluation is concerned (Hollar, 2003; McGregor *et al.*, 2007).

Although widely spread, the understanding of the real meaning of the expression quality of life offers some difficulties due to the amplitude and complexity of the question, different foci allow different meanings as well as interpretations.

In Brazil, the situation becomes worse due to the inefficiency of the development policies, usually one aiming assistance, and the growing financial incapacity of the State, which means a great number of the population live in precarious situations of housing, health, education as well as leisure (Santos, 1999; Kageyama and Hoffman, 2006). Another important fact has to do with the huge regional disparities that were identified, with the consequent reproduction of distinct territorial realities.

In this context, this study aimed to characterize the Brazilian states, through indicators that were able to describe the level of the quality of life in the population, in a generic way. More specifically, it sought to outline the profile of the states in relation to the selected variables as well as to group the Brazilian states with different levels of quality of life.

Like this study, others were conducted to evaluate the QOL in different countries such as studies of Bloom *et al.* (2000) in Asia, Bloom *et al.* (2001) in Jamaica, Lamers *et al.* (2005) in the Netherlands, Distaso (2007) in the wider European Union, McGregor *et al*. (2007) in Bangladesh and Peru, Rehdanz and Maddsion (2008) in Germany and Berger *et al.* (2008) in Russia. Despite the fact that these studies do not use the same indicators they would be comparable in

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some aspects such as in the access to public services like health and education they refer to, for example.

Theoretical framework

Quality of life: concept and instrumentalisation

According to Fleck *et al.* (1999a), the term quality of life appeared in 1964, when for the first time, the then President of the United States, Lyndon Johnson, declared that the objectives cannot be measured through bank balances or through financial reports. They can only be measured through the quality of life that they provide to people; proposing then a qualitative instrumentalisation on the impact of development on the well-being and in the positive levels of people's lives. Other researchers support these ideas such as Becker *et al*. (2005), Rahman *et al*. (2005), Constanza *et al*. (2007), McGregor *et al*. (2007) and Soares e Quintella (2008).

In this study we come to understand one's quality of life as Erikson (1993) has suggested:

> "Quality-of-life frameworks and models allow us to view someone's situation holistically. Examining the quality of life of an individual or a group requires that we know about the resources of beneficiaries and their conditions of life from various perspectives. Knowing about economic conditions is not enough; instead, we need to strive for greater understanding about the aspects of people's lives that create the whole person—aspects such as health, knowledge and skills, social relations, conditions of work, and so forth (Erikson, 1993)"

The concept was enlarged in order to measure how much a society had economically developed, not being important whether such wealth was well distributed or not. Economical indicators appeared and became important instruments to measure and compare quality of life among different cities, regions, countries and cultures. The Gross Domestic Product (GDP), the *per capita* income, and the unemployment rate among other requirements started to be used.

It was inferred that in countries where economical indicators were the best, meant that the population enjoyed a better quality of life. The years passed by and the concept enlarged in order to mean, not only economical growth, but the social development, instrumented by health, education, housing, transport, leisure, work, individual growth among other factors as well. The indicators also enlarged: infantile mortality, life expectancy, rate of school drop-outs, schooling level, violence rate (suicides, homicides, accidents), basic sanitation, pollution level,

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housing and working conditions, transport quality, leisure etc. Thus, the quantity of indicators was potentially infinite (Paschol, 2000; Hollar, 2003; Lamers *et al*., 2005; Tang, 2007).

However, one should realize the multidimensional character for building quality of life. For instance, when we take the dimension of health as our reference, it is important to emphasize that it evaluates the quality of life in different domains, such as the physical, psychological, social relationships and with the environment as well. Towards this direction are the objectives, the expectations, the patterns and the worries of the human being, associated with their socio-economical conditions, the factors that are able to maintain the well being and the quality of life (Cobb, 2000; Fleck *et al*., 2003; Camfield *et al*., 2009).

For Hollar (2003) and Camfield *et al*. (2009), a good quality of life is the one that offers the minimum conditions so that the individuals are able to develop their potential, that is, to have a worthy life. Therefore, the studies have nowadays emphasized the quality of life associated with the actions of Public Policy. Regarding this, Rocha *et al*. (2000) have measured quality of life, in Curitiba, in the State of Paraná, South of Brazil, starting from a management of public policies and the evaluation of urban development composed by social-environmental determinants. They have adopted intra-urban concepts regarding the good use of spaces, in order to decrease the inequalities and the urban problems, trying to privilege the condition of the individual as well as collective lives in the healthy societies.

Westphal (2000) and Kageyama and Hoffmann (2006), on the other hand, have verified the social product as well as the quality of life within the population, emphasizing the differences in Brazil when compared to the wealthy countries. Adriano *et al.* (2000) and Berger *et al.* (2008) discuss the importance of building healthy cities as a viable strategy to improve the quality of life of the population, taking as a basic presupposition the interdisciplinarity, the intersectorality, the service assets and the planning to face situational problems. In this way, political, cultural, social and economical action should be followed due to outline a new focus for the public health constituted by the main elements: human biology, the environment, the habits, life style and the organization of the health services.

Trevisan (2000) has discussed science, technology, education and health as references for social change as well as improvement of the quality of life, understood as life conditions and an interdisciplinary focus in the social-environmental context. It is possible to notice that the works associated with the public interventions have gained notoriety, even in the field of Applied Social Sciences, such as Business Management and Economics. Little has been methodologically evolved in the attempt to measure quantity levels of QOL among the regions, which is important due to the continental dimensions of the Brazilian territory. Such facts motivate the execution of works that have as the

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main focus the generation of subsidies for public and private interventions that respect the regional dissimilarities.

Methodology

Factorial Analysis

According to Hair *et al.*, (2005, p. 91), the factorial analysis consists of gathering in facts as a set of variables according to their correlations. This means that variables that compose determined factors must be highly correlated among themselves and weakly correlated with the ones that make part of the composition of the other factor. What is intended is to identify the possible associations between the observational variables, so that the existence of a common (latent) factor can be defined among them. Thus, one can say that the factorial analysis has as a purpose to identify factors or constructs which will make the data analysis easier. The factorial analysis then refers to a set of statistical techniques which has as its objective to represent latent variables (Kim e Mueller, 1978; Costello and Osborne, 2005). According to Schilderinck (1970), the method of factorial analysis consists of the attempt to determine the quantitative relationships among the variables, so that the ones with similar patterns can be associated to the effect of a subjacent and specific causal factor.

To enable the comparison, the observations *N* from the *n* variables should be initially normalized. The normalization consists of expressing, through standard deviations, the deviations of the original observations in relation to its average. Each normalized variable z_i *(i = 1,2,...,n)* must be separately linked with the hypothetical variables or factors f_j *(j = 1,2...,m)*, (m < n, N). These relations are linear and assume in the basic model of factorial analysis the following analytical expression (Child, 2006):

$$z_i = a_{i1} f_1 + a_{i2} f_2 + \cdots + a_{im} f_m + d_i u_i$$

(1)

(i=1,2,...,n)

Each of the *n* variables is described, in linear terms, as a function of the m common factors f_j, to which they relate through the factorial charges or connection coefficient a_{ij}, which indicate in what measure and direction the variables z_i are related to the factor f_j and to a single factor u_i, that responds to the remaining variance.

In order to know if the general facts have caused determined relations among the variances of z_i, it is necessary that its total variance total (σ^2) be divided in three compounds:

- The common variance or communality, h_i^2, that is, the proportion of the total variance z_i is associated with the variance of the other variables or variable groups;

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- The specific variance or specificity, s_i^2 , that is, the proportion of the total variance that does not show any association with the variance from the other variances;
- The error e_i^2, which is the proportion of the variance due to the errors in the observations, or to variables that are relevant to the study, however not considered on it.

The single factors are always non-correlated with the common factors and, if the latter are not correlated among themselves, the total variance of z_i, σ_i^2 can be expressed by:

$$\sigma_i^2 = \sigma_{i\,1}^2 + \sigma_{i\,2}^2 + \ldots + \sigma_{i\,j}^2 + d_i^2 \quad (2)$$

The compounds a_{ij}^2 are denominated connection percentage and correspond to the proportion of the total variance of the normalized variable z_i, which is explained by the respective factors (Child, 2006). In (2), the term

$$h_i^2 = a_{i1}^2 + a_{i2}^2 + \cdots + a_{im}^2 \quad (3)$$

This is equal to the communality of the variable z_i, whereas the term d_i^2 corresponds to the unicity, that is the contribution to the single factor, indicating the extension to which the common factors fail in the explanation of the total variance of the variable.

The unicity can be decomposed in two parts. One due to the selection of the variables, denominated specificity (s_i^2), and another attributed to the non-reliability of the measures, denominated error (e_i^2):

$$d_i^2 = s_i^2 + e_i^2. \quad (4)$$

With this decomposition, the linear model (1) can be described like this:

$$z_i = a_{i1} f_1 + a_{i2} f_2 + \cdots + a_{im} f_m + s_i S_i + e_i S_i, \quad (5)$$

S_i and E_i are specific factors and error, respectively, and s_i and e_i, their coefficients.

To obtain the factors, the method of the main compounds will be used, which basic principle consists of extracting factors to maximize their contributions to the communality. Thus, a first factor is chosen in order to

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maximize the sum of the squares of the factorial charges in relation to it. Afterwards, a second factor is obtained, so that the sum of the squares of the factorial charges can also be maximized in relation to it, and so forth for the remaining factors.

Cluster analysis

The cluster analysis corresponds to a set of methods through which one aims to gather the several individuals in groups, types or classes, taking as information in order to classify the characteristics or attributes of each individual (Ketchen e Shook, 1993; Allefeld *et al.*, 2007). According to Allefeld *et al.* (2007), the purpose of this analysis is to determine starting from the individual characteristics, such sub-groups that each individual belongs to one and only one sub-group, and that the individuals that are grouped in the same sub-group are similar and the ones belonging to distinct groups, different.

In order to group similar individuals, the algorithms that have as essential criterion, the search to maximize the differences among the groups related to the variation among the groups are used. The most used algorithms can be classified as hierarchical and non- hierarchical (Hair *et al*; 2005). The non-hierarchical procedures appoint the individuals for the groups in a process in which the number of groups should be previously defined. The hierarchical procedures, on the other hand, consist basically in the formation of a hierarchical structure and can come through agglomerative divisible procedures.

The most commonly used methods are classified in the group of agglomerative techniques, in which the individuals' classification is done through successive fusions of the *n* individuals in groups. The basic procedure consists of computing a matrix of distances or similarities among the individuals, from where a process of successive fusions takes place, based on the proximity or similarity among them. The result of this process is susceptible to representation in a dendrogram, that is nothing but a bi-dimensional diagram that exhibits fusions done in each level, culminating in a stage in which all the individuals are in a single group.

In 1963, Ward proposed a grouping method which is based in the variation change among the groups that are being formed in each step of the grouping. His procedure is also called Minimal Variance and it is based on the following principles:

(a) initially, each element is considered as a single cluster;

(b) in each step of the grouping algorithm the sum of the squares is calculated within each cluster. This some is the Euclidean square distance of each sample element that belongs to the cluster, in relation to the correspondent average vector of the cluster, that is,

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$$SS_i = \sum_{j=1}^{n} (X_{ij} - X_i)`(X_{ij} - X_i)$$
(6)

n_i is the number of elements in the cluster C_i, when it is on step k of the grouping; X_{ij}, vector of observation of the *j-th* sample element that belongs to the *i-th* cluster, it is the cluster centroids C_i;*e* SS_i, the sum of the squares correspondent to the cluster C_i. On the step k, the sum of the total squares within the groups is defined by:

$$SSR = \sum_{i=1}^{g_k} SS_i$$
(7)

g_k is the number of existing groups when it is on step k. The distance between the clusters C_l e C_i is thus defined by:

$$d(C_l, C_i) = \left[\frac{n_l n_i}{n_l + n_i}\right] (X_l - X_i)`(X_l - X_i)$$
(8)

This equates to the sum of the squares between the cluster C_l and C_i. In each step of the grouping algorithm, the two clusters which minimize the distance (equation 7) are combined.

It is possible to demonstrate that the distance measure (equation 7) is nothing but the difference between the SSR value, after and before combining the clusters C_l and C_i in a single cluster. Therefore, in each grouping step, the Ward method combines the two clusters which result in the smallest SSR value.

Variables and data sources

This research has taken place in Brazil which is the largest country in South America. It is the fifth largest country by geographical area in the world, occupying nearly half of South America, the fifth most populous country, and the fourth most populous democracy in the world. It is the world's tenth largest economy at market exchange rates and the ninth largest by purchasing power parity.

The Brazilian Federal Government is composed of 26 States plus the Federal District divided in four regions: South, Southeast, Center-West, North and Northeast. The variables were selected based on the definition by Medronho *et al.*, 2002, according to which the quality of life is defined according to three basic elements: a) the right to quality of life; b) access to service goods; and c) social space. The variables used in this study were collected from the data bank of the Instituto Brasileiro de Geografia e Estatística (IBGE – Brazilian Institute of

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Geography and Statistics), in the Pesquisa Nacional de Amostra de Domicílio (PNAD – National Survey of Home Sampling) and from the Justice Ministry Office (MJ).

In this sense, the variable school level (X_1) shows the percentage of children and teenagers that go to school regularly. This social-economical variable is correlated to the people's level of education. Another variable that was used was the Gini index (X_2). This indicator, which varies from 0 to 1, measures the income distribution from the states, and the one closer to 1 has the worse income distribution. Variables of structure were also used, such as the percentage of population that have water supply (X_3), sewage system (X_4), garbage collection (X_5) and energy (X_6), which are core to the well being and population health.

A proxy variable was also considered regarding public safety, in this case, the number of homicides per 100,000 (a hundred thousand) inhabitants (X_7). According to the World Health Organization, the acceptable index is about 10 homicides per 100,000 inhabitants.

Another important aspect has to do with the public health (X_{10}); in the present paper, the number of doctors per 1,000 inhabitants was considered an index that enables us to have an idea of the specialized workforce available in the area.

Furthermore, the life expectancy (X_9) was also a criterion adopted in this paper, since it is life maintenance and delay of death, direct consequences of the quality of life. At last, the percentage of poor people (X_8) was selected due to the expectation of a correlation between the purchasing power and access to service goods associated with the direct improvement in the quality of life, such as leisure, sports, health services, besides basic services that require expenditures due to the weakening and inefficiency of the state to provide certain services.

Thus, the following variables were used to describe the quality of life:

- X_1 = school level (Percentage of children and teenagers that go to school regularly);
- X_2= Gini index (It varies from 0 to 1);
- X_3 = water supply (percentage of population);
- X_4 = sewage system (percentage of population);
- X_5 = garbage collection (percentage of population);
- X_6 = electric energy supply (percentage of population);
- X_7 = homicide rate (number of homicides per 100.000 inhabitants)
- X_8 = poverty percentage;
- X_9 = life expectancy;
- X_{10} = number of doctors per 1,000 inhabitants.

In order to apply the model and to reach the proposed objectives the software SPSS 15.0, in licensed version was used.

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Results and discussion

Brazilian states' profile

A set of variables were used which combined forms a construct able to determine the level of quality of life of the Brazilian states. The nature of these variables is able to express the differences that exist among the states. Therefore, in order to better understand the peculiarities of the states a descriptive analysis of the variables was used, as can be observed in Table 1.

Table 1- Descriptive Analysis of the variables

Variable	Minimum	Maximum	Average
X1	27.20%	41.70%	33.237%
X2	0.46	0.63	0.5355
X3	35.50%	96.30%	74.4593%
X4	11.50%	95.90%	55.0222%
X5	50.0%	98.20%	78.5111%
X6	83.70%	99.90%	94.6963%
X7	7.20	44.40	21.9741
X8	11.98%	63.12%	38.8441
X9	65.50	74.60	70.8222
X10	0.50	3.30	1.2852

Source: research result.

What can be concluded, through Table 1, is that the variables present rough oscillation, which indicates that in Brazil there is a lot of regional inequality. In this direction, it seems to be appropriate, in the analysis of the QOL, the usage of a quantitative methodology capable of at once identifying the similarities and highlighting the dissimilarities among the states. This way, the construction of the Brazilian states profile was proposed, according to the selected variables, in which the factorial analysis was carried out, aiming the cited proposal, adding that to the observations made for the ten variables, in the twenty-seven considered states.

Initially, the matrix of simple correlations was calculated from the selected variables. The Bartlett's test of sphericity was done and the obtained factor (191.265) was significant at less than 1% of probability. This allows the rejection of the hypothesis that the correlation matrix is an identity-matrix, that is, that the variables are not correlated.

The Kaiser-Meyer-Olkim test presented value of 0.711, which indicates a good adaptation of the factorial analysis to the data group. However, both tests

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that were applied allowed the conclusion that the used sample was adjusted to the procedure of factorial analysis.

The analysis by the method of the main compounds generated two factors with characteristic roots bigger than 1, as can be observed in Table 2.

Table 2 – Factors obtained by the main compounds method

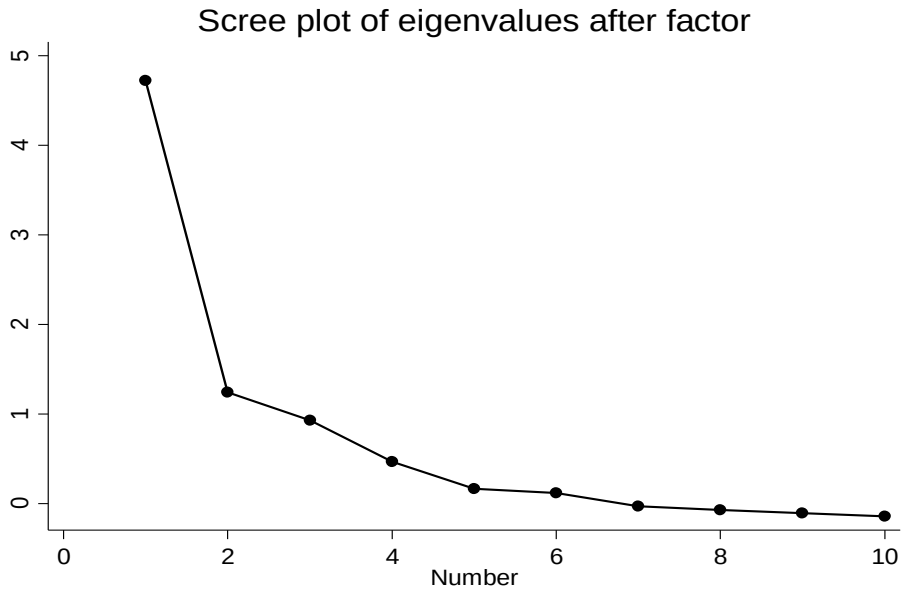
Factor	Characteristic Root	Variable explained by the factor	Accumulated Variable
1	4.72	64.71%	64.71%
2	1.24	17.02%	81.73%

Source : research result.

The contribution of the factors 1 and 2, for the explanation of the total variable of the used variables is of 64.71% and 17.02%, respectively, and the accumulated contribution of both is equal to 81.73%.

Another way to select the number of factors was the scree-plot which is used to determine how many factors should be kept. That is a plot of the variance that is associated with each factor. Typically the plot shows a distinct break between the steep slope of the large factors and the gradual trailing of the rest (Figure 1).

Figure 1



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Source: research result.
Figure1 – Sketch of the number retention of latent factors.

In order to make the interpretation of the facts easier, these were submitted to a, orthogonal rotation by the Varimax method, suggested by Kim and Mueller (1978). With this procedure, the contribution of each factor to the total variance is altered, however, without modifying their group contribution. As advantage, the factors obtained after the rotation are more narrowly related to the variable groups, enabling a more logical interpretation of them.

Table 3 presents the factorial charges and the communalities for the two considered factors. In order to interpret each factor, absolute values, superior to 0.50 for the highlighted factorial charges were considered. The values that were found for the communalities evaluate the group explicative capacity of the two factors in relation to each indicator. This indicates that the two factors do not explain well either the variable X4 or the X7. However, the other variables have satisfactory level of variance explanation parcel.

Table 3 – Factorial charges after the orthogonal rotation and the communalities.

Indicators	F1	F2	Communalities
X1	-0.0502	-0.4989	0.659
X2	-0.1536	-0.3819	0.610
X3	**0.7893**	0.1416	0.722
X4	0.3454	0.3256	0.546
X5	**0.8219**	0.4598	0.859
X6	**0.8109**	0.2662	0.662
X7	0.1593	-0.0502	0.019
X8	-0.3655	**-0.8693**	0.833
X9	0.2942	**0.8733**	0.735
X10	**0.6474**	0.3568	0.854

Source: research result.

It can be perceived that the factor F1 is positively related to the indicators X3, X5 X6 and X10, which represent basic structure variables for a good level of quality of life. Thus, the nature of the variables that relate with F1 indicates that this represents an infra-structure proxy whose final objective is the rendering of a service.

If the state presents a basic infra-structure, it will be likely to have a good quality of life index. In Brazil, the regional differences are conflicting, since it is a country that has as one of its main characteristics the spatial diversity, for throughout its history regional economies were formed, all of them distinct among themselves, according to the way each was occupied and colonized.

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Factor F2 has positive relationship with X9 and negative with X8. These variables, life expectancy and poverty level show that the people live longer when they are over the poverty line. Thus, this factor can be characterized as representative of resource availability.

However, Brazil presents a great population mass of the excluded, that even today, have no access to the basic necessary services and this proportion of the excluded people is different in several states due to the great regional inequality. Therefore, it is not possible for these people to have life expectancy, that is, to think about the future, because for them, the future is the present.

Grouping analysis

There are many methods used for grouping, that is, the methods of simple, complete and of average link, which can be used for quantitative as well as qualitative variables contrary to the methods of the centroids and by Ward, which are appropriate only for the quantitative variables, since they are based on the comparison of average vectors. The method by Ward, used in this paper, tends to produce groups with approximately the same number of elements and has as its main base the principles of the variance analysis. Thus, this dendrogram (Figure 2) portraits the grouping produced by the method. In the attachment, the respective states corresponding to the numbers described in the graph can be seen.

Through the use of Ward grouping the grouping results as well as the corresponding dendogram are obtained. When the distances behaviour or the equivalent to the similarities during several grouping steps are observed, it seems reasonable to define it as the final value of 2 groups. In the grouping dendrogram presented in Figure 2, it is relatively easy to visualize the existence of two well defined groups.

Figure 2 – Dendrogram produced by the Ward method.

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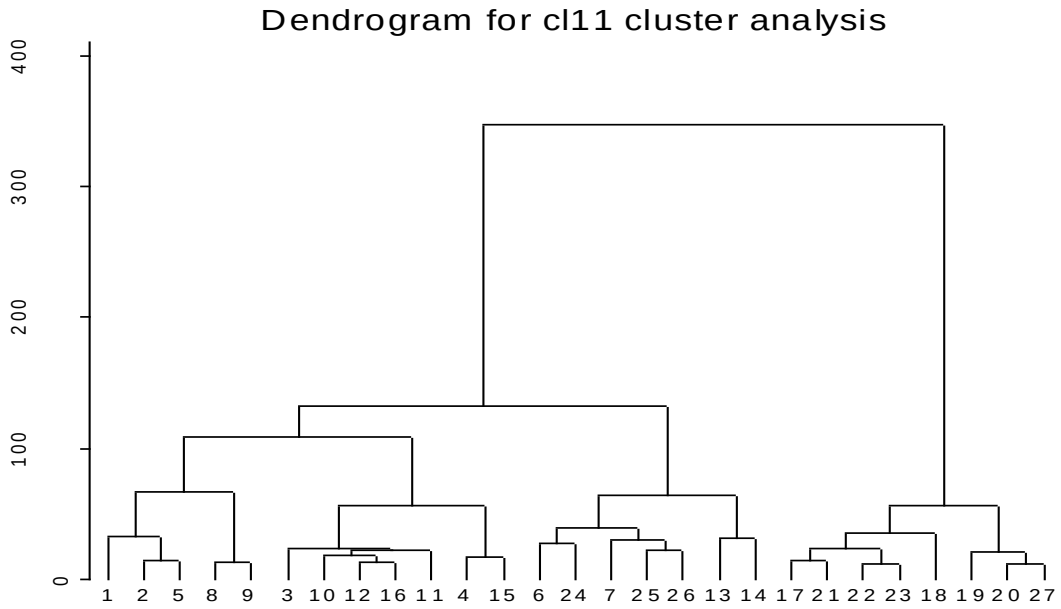

Source: research result.

The first group is formed by eight states, which are part of the regions Southeast and South of the country plus the Federal District. This result was already expected by the research, since the Human Development Index (HDI) in these regions is the highest in the country, and the Federal District has the highest HDI in Brazil, according to the data from IPEA - DATA. The HDI is also a measure for quality of life, a patterned way to evaluate in measure the well-being of a population, which incorporates wealth, literacy, life hope, birth rate and other facts for several countries in the world.

The second group was formed by 19 states, which in their composition, are located in the North, Northeast and Central-west regions, which on the other hand present smaller quality of life than the first group, exposing then the necessity for more intensive public politics, with the intention of promoting the development of the states as well as quality of life.

These regions also represent smaller HDI, which confirms the result reached by the research, reinforcing the necessity of qualitative intervention public politics compromised by the growth and income levels, as well as health, education and other factors associated directly and indirectly with the improvement of the quality of life of the Brazilian states.

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Conclusion

The usage of quantitative approach, especially of the factorial analysis and cluster were important to understand the measurable aspects of the different levels of quality of life in the Brazilian states, highlighting their dissimilarities. The factorial analysis enabled the reduction of the extensive number of variables in two factors, infra-structure and resource availability, considered determinant to obtain a good quality of life. This way, the present research has contributed to sketch the direction of the necessary interventions, which can orient public as well as private politics that have as their focus the improvement of the quality of life, taking as references objective and measurable factors, subjected to actions through the public power or private initiative.

Due to the definition of the factors, it was possible to make a sketch of the enormous asymmetry observed in the Brazilian state, due to the existence of two quite different groups. The first composed by the states of the South, Southeast and the Federal District, which presented superior levels in the index of quality of life. The second, formed by the other states - in an alert situation, due to the depressing levels of quality of life that were observed. In this direction, the study confirms the strong regional differences that were observed in the literatures and expose, empirically, the variables to be improved, aiming at greater national well being.

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ATTACHMENT

	Brazilian states	Regions
1	Rondônia	North
2	Acre	
3	Amazonas	
4	Roraima	

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5	Pará	
6	Amapá	
7	Tocantins	
8	Maranhão	Northeast
9	Piauí	
10	Ceará	
11	Rio Grande do Norte	
12	Paraíba	
13	Pernambuco	
14	Alagoas	
15	Sergipe	
16	Bahia	
17	Minas Gerais	Southeast
18	Espírito Santo	
19	Rio de Janeiro	
20	São Paulo	
21	Paraná	South
22	Santa Catarina	
23	Rio Grande do Sul	
24	Mato Grosso do Sul	Center-West
25	Mato Grosso	
26	Goiás	
27	Distrito Federal	