

## **Introduction**

The population health represents a priority part in life quality, being the synthetic expression of inter-relationships between human population (with its genetic, demographic and cultural features) and the components of the natural and social environment.

The study approaches the population health condition with the help of the socio-demographic indexes, introduced from a spatial and temporal perspective, high lightening the inequalities existing at the level of a territorial-administrative unit and also emphasizing the trends generated by those indices in order to become aware of the reality; this demarche can be considered as a starting point for the sizing of the public health politics at the local level.

Another important aim of this research represents the high lightning of the relationship between the health condition of the population and the socio-economic context, and also the assessment of the intensity of this connection. To sustain this scientific research, there have been imagined a number of indicators which underline in a synthetic way quantitative and qualitative aspects, trends, territorial inequalities, with the purpose to capture the particularities of the reality in Neamț County.

During this research we intended a unitary, general analyze of the health population in Neamț between 200-2009, from the perspective of the geographic and socio-economic inequalities with the focus on their space and temporal dimension.

The interdisciplinary character of the present theme has conditioned the use of some varied methods, from those strictly geographic to those sociologic and statistic, in order to obtain one analyze of the investigated processes and phenomena as correct, integrative and also as documented as possible.

The study on the health population in Neamț County is the result of a serious specialised bibliographic documentation, of a intense, personal research, which consisted in obtaining and processing the data got from the authorized institutions and putting into practice of the knowledge acquired during the doctoral training session. The work is structured into five chapters, each trying to answer the intended aims.

**Chapter I - *Geographic aspects in the study of health population*** - is dedicated to defining the concept of Medical Geography in the study of health condition, emphasizing the approach of inequalities in health and also their analyze from a special and temporal perspective.

One of the sub-domains with the fastest development in geography is represented by medical geography or by the study and the appliance of the geographic and techniques in

assessing and understanding the problems connected to health condition (Barrett, F. A., 2000).

Medical geography perfectly exemplifies the nowadays tendencies in the scientific research, being a domain of inter- and transdisciplinarity. Due to obvious connections with the topics of interest for the public health, epidemiology or sociology, the terminology used for them is varied, in the specialized literature being suggested terms like Health Geography, Ecological Medical Geography, or Geography of Health Services.

Being a relatively new study object, without a well structured methodological basis, not only in our country, but also at the international level, there has been insisted upon the quantitative and also upon the qualitative dimensions of health population in Neamt County, highlighting their analyzing and assessment modalities through statistic and field investigations.

The general context of analysis and evaluation of inequalities cannot be conceived without taking into consideration the statistic modelling, without choosing their best way of representation with the help of maps and Dorling cartograms.

Decrypting the inequalities from a spatial and temporal perspective is not possible without the appliance of the statistic methods. During the entire work, correlation and regression were the procedures used in order to underline the connection and the conditioning between the socio-economic factors and the general health of the population.

The multilevel analysis which supposes the simultaneous analysis of variations recorded in the health condition by integrating a larger number of geographical levels and zones, allowing this way a hierarchy of information, has got a large enough space in this chapter.

Not lastly, it is underlined the importance of maps, they becoming essential tools for investigating and communicating the inequalities in the health condition of a population, but also for the innovative cartographic representation, the Dorling cartograms.

**Chapter Two, *Indicators utilised for assessing the health condition of a population***, is dedicated to analysing the indicators used in the health evaluation.

The health condition is a very generous concept which refers not only to the presence or absence of a disease, but it also includes the measure of life quality. Health condition represents a way of measuring and describing the health of an individual, of a group among a population, or of a whole population, taking into consideration accepted standards, this being most frequently realised with health indicators; the description of health condition is being realised in quantitative terms measurable through indicators and in qualitative terms.

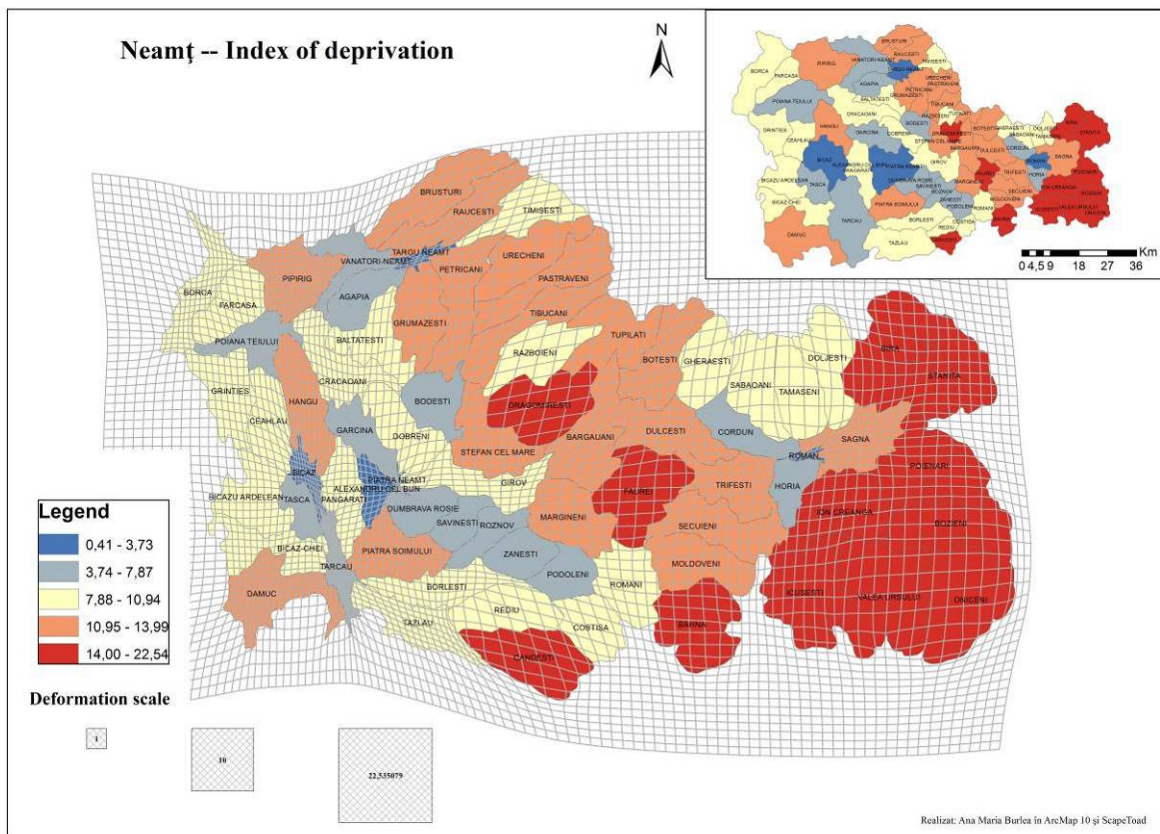
In this chapter, after describing the analysis and after underlining the importance of interpreting the trends in monitoring the health condition of a population, the indicators which are most often called for characterising the health condition are presented: life expectancy at birth, birth rate, fertility rate, the general mortality rate, mortality rate specific to categories of disease and infant mortality rate. At the same time, for realising a fully picture of the reality in Neamţ County, there have been analysed the particularities of morbidity, the evolution of the general and specific incidence by groups of diseases, but also the causes of morbidity for the main age groups. The overall picture of health condition is not complete without describing the prevalence of illness of the population in Neamţ County, and also the description of the structure of the hospitalized morbidity.

In **Chapter Three, *Health condition-level of development relationship. Composite indicators: index of deprivation and index of health***, as it can be anticipated from the title, the analysis of the complex connection which establishes in health and also the level of socio-economic development are followed.

For determining the relation between health condition and socio-economic deprivation, this scientific approach assumed the building of two indicators: the indicator of economic deprivation and the one of general health, with the help of which their space distribution using maps has been followed.

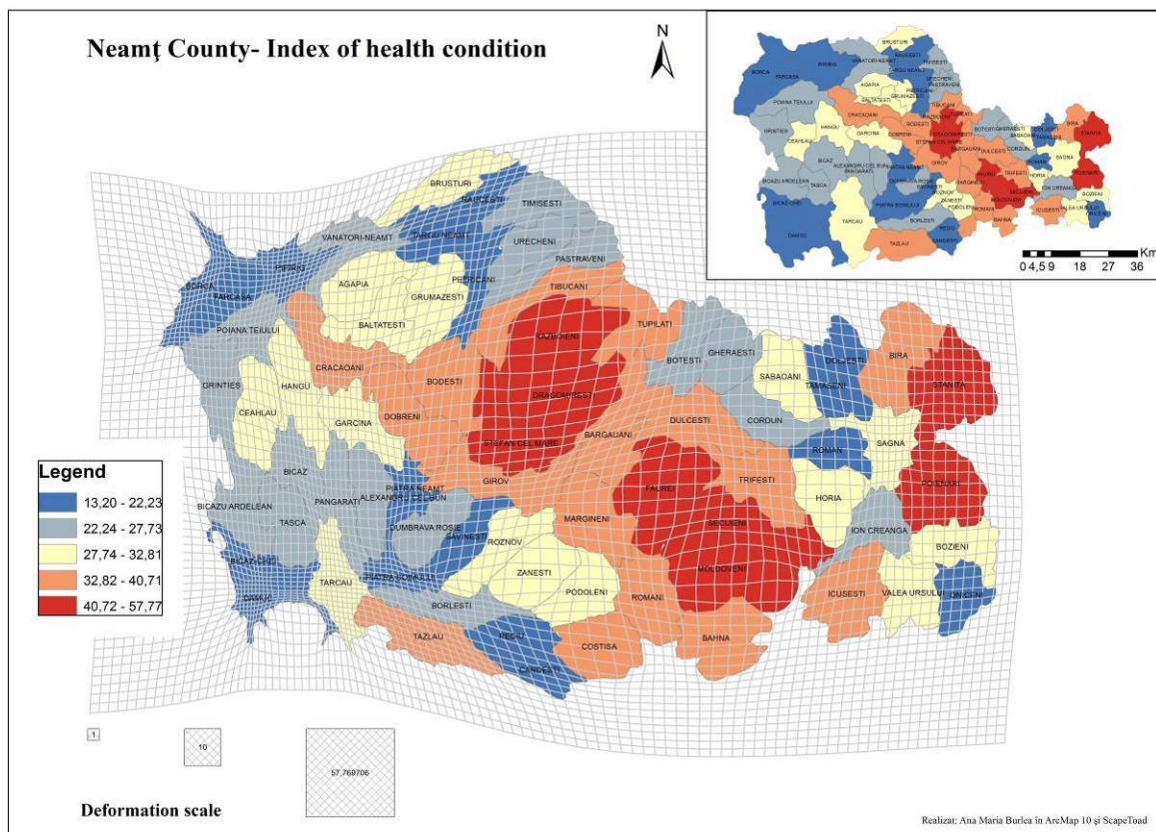
The aggregation method chosen for realising the composite indicators relevant for the study was the one of real ranks, through which the higher proportions are assigned to indices with a richer level of information. Thus, in what concerns the deprivation index, the partial indicators used were: the unemployment level, the level of education, the percentage of buildings connected to potable water, the percentage of houses connected to electricity, and the percentage of population occupied in the primary sector.

In order to create a stronger visual effect, this index has been shown also through the Dorling method of representation, in which the areas with problems are over-dimensioned, allowing a faster identification and the zones with favourable values are under-dimensioned, almost disappearing from the map.



**Fig. 1 Index of deprivation - the Dorling method of representation**

Similarly, an index of health condition has been calculated, cartographic transposed through the Dorling method. The elements which represented the basis of creating this index were: the general mortality, infant mortality, the index of aging of the population, the rate of demographic dependence of old population and the report between the level of general mortality and the percentage of population over 65 years old-as a method of evaluating of life expectancy at birth.



**Fig. 2. Index of health condition - the Dorling method of representation**

For establishing if there is a statistic connection between the two indicators, I have appealed to regression. In our study, the coefficient of correlation was 0.65, indicating thus a positive relation between them- the higher index of deprivation, the more precarious is the health condition. The used model explained 42 % of the variation of dependence. With other words, 42% of the variation of the index of general health is due to the level of socio-economic deprivation.

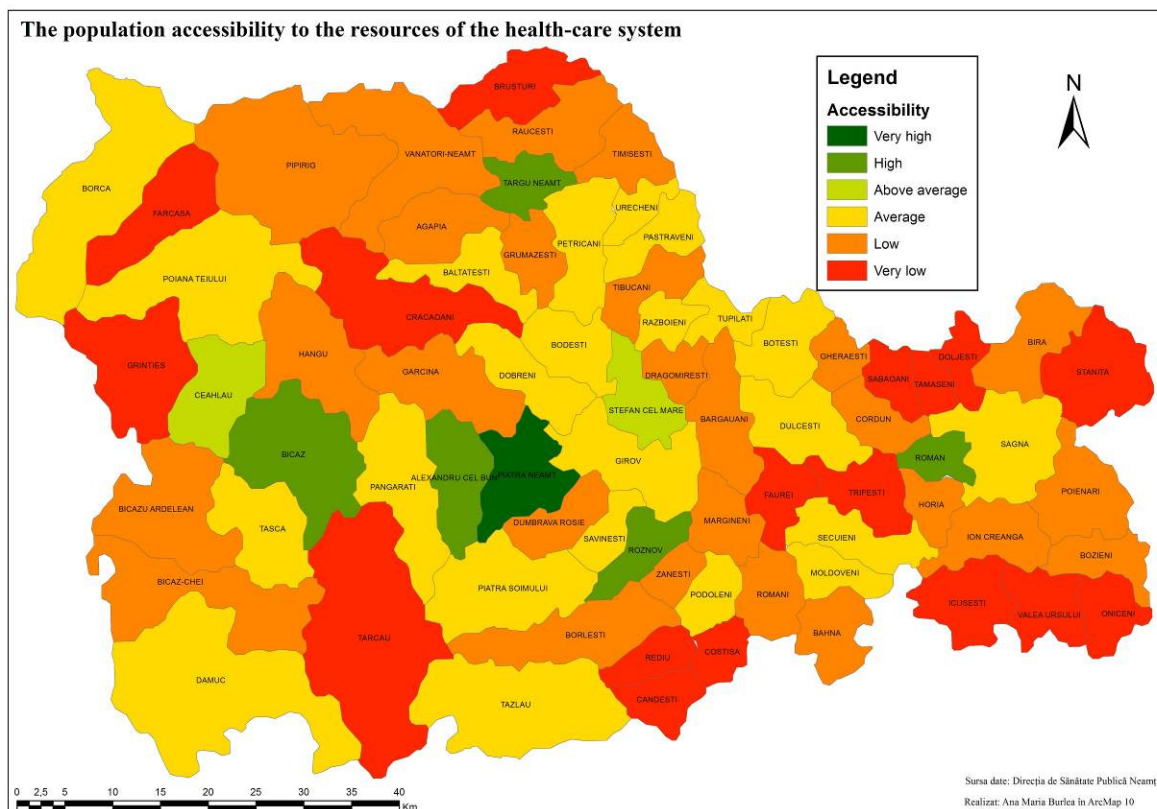
In Chapter Four, *Assessing methods of the intensity of the relation between the health condition of population and the socio-economic status*, are enumerated and introduced some of the methods used applied to surprise the strength of the connection between health population and the socio-economic status, identifying the amplitude of inequalities.

Also, a distinction among simple methods of evaluating the intensity of inequalities, with examples for this specific case: the difference of rates (absolute and negative rates), the index of dissimilarity-the absolute version, and complex methods: the relative index of inequality, the slope of the inequality, the curve of concentration, the index of concentration.

These indexes were adapted to the specific of the study and applied for the two analysis scales.

Any study which has as main objective the analysis of the health condition of the population is not entirely complete without taking into consideration the resources of the medical system, of the quality of the medical services, of its availability and accessibility. In **Chapter Five, *The health-care system in Neamț County- accessibility, characteristics, dynamic***, the resources of the health-care system are identified and characterized, following their spatial and temporal evolution, the graphics designed allowing facile visualisation of trends.

Also, there have been designed an index of accessibility, starting from the provider report –population, the report between the human resources and the population corresponding to all the communes respectively, transposed later in a map of accessibilities of the population to the resources of the health-care system of the county.



**Fig. 3 The population accessibility to the resources of the health-care system**



## Conclusions

For conceiving and implementing some coherent public health-care politics, we must understand the factors which promotes the appearance of diseases and the way in which the risks determined by the genetic heritage, the life style, and also those that arise from the environment and the occupational one interact with the social, natural and anthropogenic background.

The vicious circle *precarious health -socio-economic deprivation –deficient access to medical services* represents the reality of the communes in the county which cannot be neglected and which needs all the attention of the local authorities. Overcoming the barriers imposed by accessibility and availability of health-care system resources is an essential element when the improving of the population health condition is desired.

Decoding the socio-economic inequalities in population health imposes a complex approach. Their identification and recognition is not enough, they must be joined by methods of quantifying the level of differences, and also to offer clues on some mechanisms through which the level of development of a community can highly influence the health condition of its members.

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