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Faculty of Science  
Doctoral School of Earth Sciences

**The Characteristics of the Health Status and the Health Care System  
in Nógrád County**

Phd thesis

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Pécs, 2010

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## Introduction

Several factors justify the geographical analysis of health trends today, with special interest on declining of the overall health state of the Hungarian population, the crisis of the Hungarian health care system on its functional side and the regional differences in the system.

The declining rate of the national health state has been going on since the mid 60's which intensified as far as an epidemiology crisis by the beginning of the 90's. „*In Hungary an epidemiology crisis has been in progress; this crisis is qualified (not general), in term of not including the overall population, but mainly, not exclusively, the middle aged male population, especially the disadvantaged groups in society.*” (JÓZAN P. 2002. p. 419.)

The state of health is clearly represented by the average life expectancy at birth. Based on the international comparison data examining the trends of the anticipated lifespan, Éva Orosz concluded that in Hungary a different trend has been shaped comparing to the Western European process, which is accompanied with increasing social and regional inequality (OROSZ É. 1993).

In the European Union the men, born in 2007, can expect an average 75.6 years of age, while women of about 81.8. In Hungary this lifespan is shorter than in most of the European countries with some 6 years. And there are further significant regional disparities within the country. The lifespan of men, born in 2007 in the North Hungary region, is about 67.5 years, and for the women it is 76.4 years. In fact, the worst life chances for both sexes are found in North Hungary. Comparing to the average Hungarian men and women, the people of Nógrád County may count on less lifespan, with 0.2 year in case of women and 1.3 years in case of men.

Premature mortality is very high. Based on the international comparison data it is very excessive in Nógrád County where almost 30% of mortality hit the under-65-active population. The causes of death among the under-65-year-old population include all the avoidable diseases. Prevention has a significant role in decreasing early death. „*A new paradigm is needed in health care as well as policy in order to change the population's approach.*” (KISS I. – SÁNDOR J. – NAGYMAJTÉNYI L. – EMBER I. 2003. p.127.)

After Hungary's political transition into modern democracy several reforms and reform attempts have been introduced that affected all the levels of the health care system, aiming efficiency increasing and the modernisation of the country's health care system, however, failed to reach their original goals.

As a consequence, various fields of science started to pay attention on the painful spots, such as the decline of the health state of the population, the health-inequality of life expectancy and the access to health care system. Due to the interdisciplinary characteristics of health research different research trends have evolved in professional literature.

Following the medical sociology researches of the 60's, in the 70's statistical, demographic and epidemiological analyses were published. The health studies on the distribution of population were published in the framework of Geographical professional literature in a periodical called *Geographia Medica Hungarica*, which is supported by the Medical Geography Committee within the Hungarian Geographical Society. IT publishes articles of Hungarian writers in foreign languages. The periodical was published as the international magazine of medical geography under the name of *Geographia Medica* between 1969 and 1970. However, it ceased in 1994 because of financial problems and merged into the *Journal of Health and Place* (PÁL V. 1998).

The recent approach of health geography focused on unfair regional access of health care provision got more emphasis in the 70-80s. A prominent researcher of this field is Éva Orosz who has published several studies concerning the problems of regional differences of the health care system. (OROSZ É. 1984; 1988; 1989; 1993; 2001). The studies of József Tóth and Viktor Pál introduced the basic philosophy of science and conceptual issues of the national health geography science. (TÓTH J. 2002), (TÓTH J. – PÁL V. – ANTAL G. 2005), (PÁL V. 1997; 2002). Using their establishment the number of doctoral school students who deal with health geography science has been increasing. Besides the old themes some new issues have been introduced: The regional differences in health infrastructure (BODÁNE GÁLOSI M. 2001); The possibilities of enforcing patients' practical rights (ANTAL G. 2002; 2006); Analysing the circumstances of medical diagnostic laboratories (KALMÁR G. 2006); Introduction to major factors of the regional managed care system (KAJTOR E. 2006; 2008; KAJTOR E. – CSORDÁS P. 2007); The evidence of social conflicts using the findings of health geography as well as the social-spatial differences in health status (UZZOLI A. 2001; 2005). The interest of Social Geography researchers covered a complex inspection of health geography process in some certain regions: South Hungarian Plain: Dél-Alföld (PÁL V. 2004), 8th district Budapest (UZZOLI A. 2000), Nógrád county (KAJTOR E. 2007), Békés county (BEKE SZ. 2009).

During the preparation of my dissertation I used the professional publications focused on the concepts of health geography science as well as the approach of research, including the spatial differences in health status, the quality of life, health inequalities and the natural and social factors of Nógrád County. One of these publications is a niche complex of a study, which was initiated by the editors and authors of department of Medical Epidemiology Workgroup of MTA (Hungarian Academy of Sciences). It can be regarded as the analysis of public health in the new millennium. The authors characterized the national health status by the generally accepted demographic and mortality data, and analyzed the conditions of disease status and the dominant health behavioral factors as the most influential factors of the national health status.

In several chapters of the book the spatial differences in health status are detailed. (ÁDÁNY R. szerk. 2003).

## **Objectives**

*The objective of my dissertation is to comprehensively analyze the existing spatial inequality both in term of health status and health care system in order to create a complex picture of the situation in Nógrád County, and the opportunities of health inbedded the region's social circumstances.*

*My further objective is to emphasize the importance of prevention; health, as the greatest value; the need for justification and implementation of health maintaining- and promotion programmes.*

*During the investigation two main questions need to respond to:*

- 1) What factors affect the health of the population of Nógrád County?
- 2) What health geography processes have led to regional differences and to backwardness of Nógrád?

I also raised sub-questions to identify the co-factors:

- 1) How can health status been identified, and what methods and indicators can be used to determine them?
- 2) Considering the topic what kind conclusions can be drawn based on the research of health geography, demographics, epidemiology, health economics and sociology?
- 3) What are the economical and health-related parameters in the Northern Hungarian Region, primarily in Nógrád County?
- 4) What differences can be found in the territorial parameters comparing the regions and counties, and among the subregions within the county of Nógrád?
- 5) What spatial structure do the county's health services have?
- 6) What is the consistency of the hospital capacity and utilization of them?
- 7) What are the consequences of the health reform?

## **The methods applied**

The need of complex analysis in the thesis required the use of the following methods:

The literature analysis is based on the national research of health geography, demographics, epidemiology, health economics and sociology. The international literature was a good aid to monitor the current trends and methods. In my dissertation I studied the Nógrád population's health geography characteristics with the major socio-economic factors and compared to the regional, national and international data. The spatial framework of my analysis is made up mainly for the county level, while the temporal framework includes the 2000-2007 period. While reviewing the trend of events in previous years, I also used a database.

The theoretical part of the thesis consists of the health-related concepts, the selected professional and scientific publications and the research results of health geography and epidemiology.

In the practical demonstration part I specify those regional characteristics that may affect the state of health in Nógrád.

In health care it has proved to be a good practice that before installing a new organizational form of health care system nationally the new procedure is modelled on an experimental basis in a narrower field. Nógrád County joined the health delivery system that started as a model experiment. In my thesis I present a case study of the model's successes and failures, as well as the most important outcome of it, the preventive activities. In my study I both apply the term of „model” and the term „system”, whereas the health delivery model has been operating as a system since 1st January 2006.

My analysis is fundamentally built on the national and provincial data sources from the databases and the annals. of Central Statistics Office. In addition, I applied for GYÓGYINFOK, OEP-FIFO, the MEDINFO the ESKI-IMEA, the National Household Health Survey (OLEF), the National Centre for Epidemiology and National Cancer Registry data. I studied the selection of literature on public health and the health care system, the Health National Programme of the Decade of Health the research reports of NKI, the annual reports of regional Chief Medical and the propositions and professional development concepts handed in to the County Administrative Board.

I used statistical methods for the temporal and spatial comparison regarding the health status and demographic situation of the population in Nógrád. In the analysis I applied different mathematical ratios and rates. To be able to measure population's health status I utilized the health statistics, demographic data, and morbidity and mortality indicators. The examination of mortality is completed with the structure of death causes with setting up the rates by gender and geographical distribution. Morbidity is an important indicator of the health status of the population, which reflects the rates of disease incidence. In my research topic the lifespan indicators associated with mortality have a significant role. In order to investigate the opinions about health care provision I developed a patient satisfaction questionnaire.

To make my thesis and process available information the means of informatics provided considerable assistance. To illustrate the findings and results I used map, graph and flowchart representations. For data processing and presentation I used MS Excel table manager. The thematic maps are regarded as the most important instruments for analysis which are made by Mapinfo 8.5 software.

The exploratory empirical research is particularly meant raising awareness of existing regional inequalities in the health system and the health options linked to the region.

## Results

The examination of the health geography phenomena can help to identify the factors – act not independently from each other - that determine the health status of the county's population. Answering the questions I formulated the following considerations:

*The external environment is an important determinant of the population's health status, and therefore the development of health-promoting environment. has a significant role.*

In Nógrád County due to the socio-economic trends over the last century the natural environment has been increasingly transformed. Considering health condition the most important environmental factors are air quality, water quality, noise pollution and waste treatment. Before changing the political system some of the industrial districts of the county belonged to the most air polluted regions. Thus, Nógrád air quality was worse than the national average, which was explained by the large number of industrial sites and inappropriate technologies. In the 90's, due to the decline in industrial production, and building a gas line in the areas of the county's air quality has improved. Although significant air polluting resources have not been set up recently, the highest proportion of deaths due to respiratory diseases occurred in Nógrád County (in 2007: 67.3 nationwide; Nógrád 119.1 out of one thousand inhabitants).

Today the major environmental harm is transport threatening the population of the settlements by air and noise pollution, especially along the main roads and major transport hubs of transit traffic. The county's outdated, old vehicle fleet enhances the pollutant sources.

It is especially important to protect the air quality in the county seat. as the specific valley-city location of Salgótarján makes the self-cleaning process decelerate. Protecting the environment of the county seat is even more important because of the extremely high mortality rate (21.3 per thousand people in 2007), which is more than twice as much as the city of Veszprém's mortality ratio (9.7). Nearly 20% of the county population lives in Salgótarján, and traditionally many people commute daily to the jobs and schools of the town from the surrounding settlements. Furthermore they do their weekly or monthly shopping here as well.

*The county's socio-economic conditions have contributed to a very serious demographic, morbidity and mortality situation.*

Northern Hungary used to be one of the most industrialized regions of the country until the 90's, the centre of coal mining, heavy industry and chemical industry Due to the decline of traditional industries and industrial production the county's economic situation has changed radically.

The unbalanced economy based on the mining and metallurgical companies turned onto a rapid degradation which led a long-delayed permanent crisis. The downgrade and closure of mines and industrial plants eliminated the workplaces and caused high level unemployment. Prior to all these trends the county dramatically fell behind and the migration of young people continued. The highly developed industrialized region has become a backward, depressed area. This condition is well illustrated by the ratio of psychiatric care turnover running over the national average rate (in 2007: nationwide 124.4 Nógrád 143.4 per one thousand people). The relatively lower socio-economic situation is not in itself, but primarily through a depressive syndrome causes higher morbidity rates (KOPP M. – SKRABSKI Á. 2007).

*A close correlation exists between the gross domestic product and the years of life expectancy at birth.*

Higher national income generally co-exists with higher life expectancy at birth. This finding is also valid within the country. The economy of a region or county determines the health of the population, and the emergence of regional differences. The country's economy-spatial structure highly influences the counties' positive and negative health status. Nógrád sustained the lowest per capita GDP (2006: 2363 thousand HUF per person; Nógrád 1 169 thousand HUF per person, the sentinel. 49.5% respectively).

*Unemployment affects health outcomes in a complex and indirect way.*

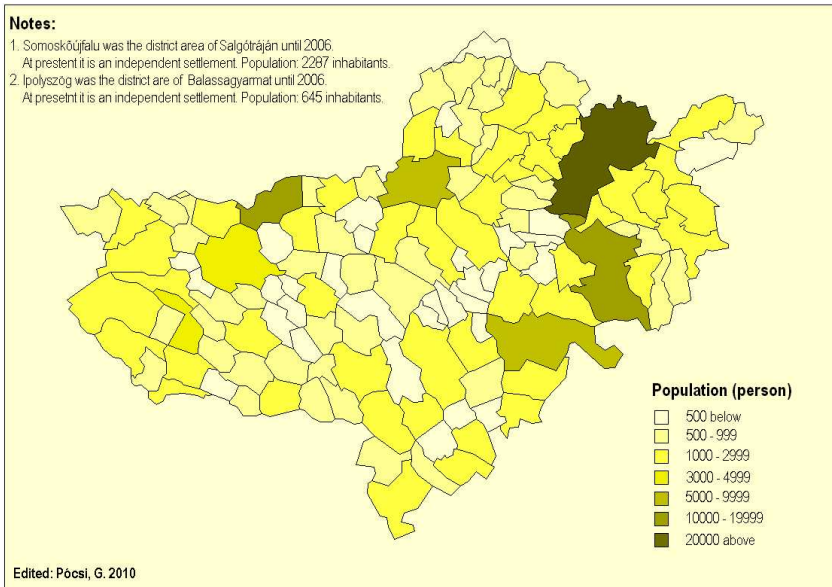
The results of the studies concerning this topic have not been justified the direct relation of unemployment and health status, but proved correlation of unemployment and worsening health. The unemployed lose their income, and thus sink into poverty; this has an impact on living conditions and nutrition. The Health Panel Hungary study 2006 follow-up study found, that in case of men the lack of job security is the most significant risk factor for premature death.

The rate of unemployment in Northern Hungary dramatically increased in 1990-1996 – from 3.2% to 18.2 % - which fell lower by the 2005 micro census (as low as 16.4%). Following the least favourable situation of Borsod-Abaúj-Zemplén County Nógrád came to the second place permanently.

*The size of the settlement, implied in the science literature, is significant: healthy life expectancy is growing parallel with the size of the settlement.*

The bigger the settlement is the longer life expectancy, and shorter illness period, thus longer healthy life expectancy will be predicted. In Nógrád the small-village-settlement-network is the dominant character (*Fig. 1*).





**1st Fig. The settlements of Nógrád County categorized according to the size of the population at the end of the year 2007**

Source: Nógrád County Statistical Yearbook, CSO, 2007 (terv. KAJTOR E)

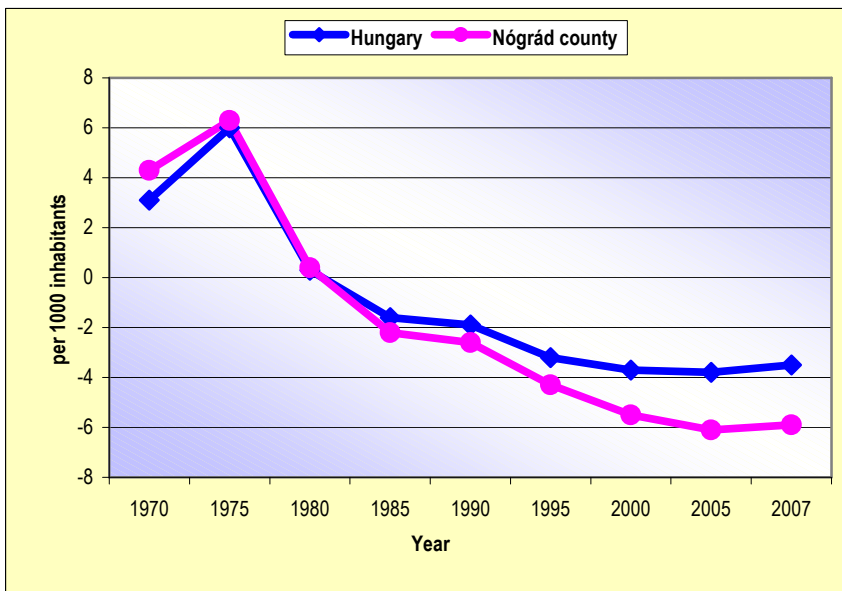
The small-village-settlement-network is indicated by the fact that the average population in the villages is less than a thousand people (979 people), while the national average is 1,136 people (86%). Out of the county's 125 villages 32 have less than 500 inhabitants, and further 45 have between 500-999 people.

The proportion of towns and villages in the county deviates significantly from the national ratio. Per capita town and villages (20.8) is more than double the national average (9.6). Consequently, it is obvious that the urban population ratio is very low (41.8%) in the county. Nationally, this ratio is 67.7%. A very significant part of the population is at a disadvantage concerning the daily medical care accessibility. In 66 of 125 village and further 12 attached villages the general practitioner is available only once or twice a week.

The other days of the week, the doctor can be found in the seat-village or other settlements several kilometers away from the patient's home.

*Among the demographic characteristics, the most influencing factors determining the health status are the age composition of the population, educational attainment, marital status and the proportion of the ethnic groups.*

The most significant demographic trend in the region of Nógrád is the permanent and continuous decline of the population. One of the reasons of the decline is the negative development of the natural migration processes (*Fig. 2*), and the migration data also consistently show a negative balance. As a consequence the population of Nógrád county consumed by more than 5% in the seven years over the millennium, on 1 January 2008. it was 210.2 thousand people; while nationally only 1.5% decline was observed.



**2nd Fig. The rate of increase and decrease of natural reproduction in Nógrád county and in Hungary, 1970-2007**

Source: *Statistical Yearbook of Nógrád County, 1970-2007, Demographic Yearbook, CSO, 2007 (ed. E. KAJTOR)*

The growing population-decline may lead to weaken the county's capacities, as decreasing mainly comes from the migration of the young population. This is also proved by the proportion of marriages. Willingness to have children is continuously falling which will result in further deterioration of the evolution of age structure. In Nógrád County the birth-rate of the Roma population shows a lesser decline than the one of non-Roma families. As a result more non-beneficial changes are expected in the composition of the population, and even worse processes will be induced reflecting health.

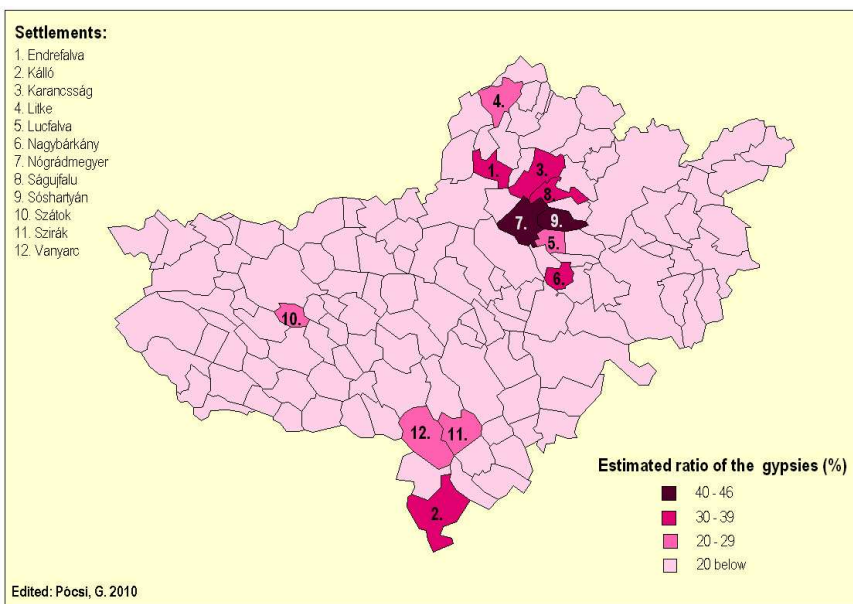
Predictions considering Roma population say that within 30 years after 1990, the proportion of Roma people will almost double, enhancing further significant regional differences (HABLICSEK L. 2007).

The *increase in the number of elderly people* implies frequency rising of non-infectious chronic, degenerative diseases and the increase in the number of deaths and health costs. Nógrád County's population aging has been proceeding, in the new millennium, overtaking the average national degree which is indicated by the aging index. In 2000 the difference between the provincial and national aging index was more than 6.4 percentages. In 2007 the difference increased by 1% (7.4%).

According to the bi-annual report of the general practitioners (OSAP) - in 2005 - three major diagnoses needed medical attention in the county. High blood pressure has an outstanding ratio among adults, which exceeds the national average and is more common in women. Ischemic heart disease and diabetes is also significant in doctor-patient encounters. The higher rate experienced among women is likely to be because of their health-conscious attitude.

A strong correlation is observed *between the educational level of the population* and the mortality. This correlation is counter-growing to the level of education. The lower education is obtained, the shorter life expectancy and longer time spent in ailing health is foreseen. Higher education helps individuals to solve problems, and have more conscious, healthier lifestyle. In Nógrád County the educational attainment of the population is significantly below both the regional and the national average. Considering foreign languages Nógrád is one of the „poor-of-foreign language-speaking” counties. The county's share of the R & D capacity is minimal. The continuous migration of young graduates, as well as the increasing proportion of the under-educated people undermines the county's innovative ability, which is low by its own nature.

The *Roma minorities* contribute to the high proportion of the territorial differences in mortality trends. Prior to their welfare conditions and all of the key features of their social and economic situation Roma people is the county's most disadvantaged group. Following the collapse of the heavy industry the position of the Roma significantly worsened, and the enequality compensation programmes did not have sufficient resources and attention. Their social inequalities, cultural disadvantages are most pronounced in their non- equal opportunities to health. Their pathetic employment situation – indirectly – is a health risk factor. Their high disease ratio is directly related to poverty, and their life expectancy rates expected at birth are very shame, 9-10 years less than the national average. In Nógrád the estimated number of Roma people is the highest in the urban areas: in Salgótarján 3982 people; in Bátorfőszék 1,919 people, 909 people in Balassagyarmat; in Pásztó 416 people, 205 people in Rétság; in Szécsény 248 people. In the small villages their proportion is from ten to twenty percent, but their number is increasing towards the North, and in some places close to fifty percent (*Figure 3*).



**3rd Figure Village-regions in Nógrád County, where the estimated rates of Roma population is exceeding 20% (estimate of the year of 1992)**

Source: *The Roma population in Hungary*, Kertes G. - Kézdi G 1998, (terv. KAJTOR E)

In the poorest small villages the population of Roma is under a very serious situation, since they both suffer from poverty as well as frequent diseases, in addition they hardly have a direct access to immediate medical care.

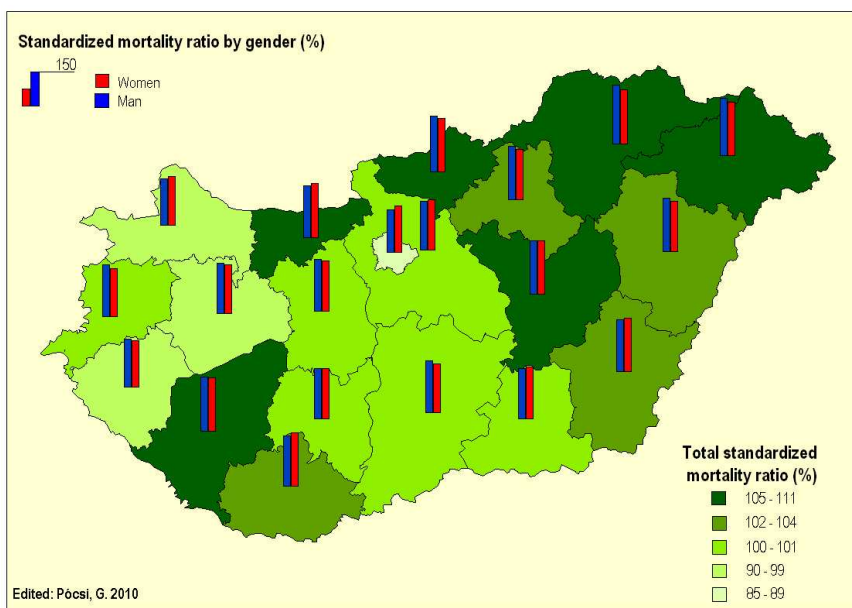
*The infrastructure of the settlement defines the inhabitants' equal opportunity, quality of life and state of health.*

In general the county's development of infrastructure is weak, most of the index-factors fall behind the national and the rural average. Nógrád County belongs to one of the most disadvantaged regions of Hungary. In order to reduce lagging behind and facilitate convergency, after the millennium, considerable substantial funds arrived in the county. Its positive impact is seen especially in the road network modernization, water, sewer, gas pipeline construction and hospital reconstructions. The public utility development programs resulted in major infrastructure projects in recent years (in 2007, proportion of homes connected to the water network: national 94.7%, 89.1% in Nógrád, proportion of homes connected to the sewerage network: national 69.8%, 62.5 % in Nógrád, piped gas consumers in households with housing % of GDP: 76.3 nationwide; Nógrád 59.8).

All of these investments will have their impact on health later on. However, a major change in the economy, or progress in the number of workplaces have not been observed.

*Over the past three decades a significant rearrangement is experienced of spatial proportion of mortality in Hungary.*

The '70s favorable mortality rates of Nógrád County turned to the negative direction in the second half of the '80s. This phenomenon can be explained, among other things, that Nógrád mortality ratio had been better than the national index, but by 1985 this rate far exceeded the national average. In the 90's the share of deaths in the population presented one of the worst value. By the millennium this unfavorable trend in mortality, made Nógrád have the worst mortality rates (Fig. 4).



**4th Fig. SMR standardized mortality ratio (%) according to area and gender, 2007**

Source: ESKI-IMEA, 2007 (edit. KAJTOR E)

Deaths caused by diseases of the circulatory system are responsible for more than half of all deceases, and it is a trend in all regions of the country. In Nógrád, the frequency is significantly higher than the national average for men and women alike (2007: 683.5 national; Nógrád 843.1/ thousand inhabitants).

Respiratory disease mortality in the county, however, shows a higher frequency and differs from the nationwide index. Presumably, environmental pollution and the previous unfavourable occupational structure play the major role here. The micro-regional analysis of mortality conditions are confirmed the correlation of the deaths and the settlements' state of development. In 2000-2007 the worst rough mortality rates were found in the Szécsény and Bátortereny region, while the best in the Rétság region.

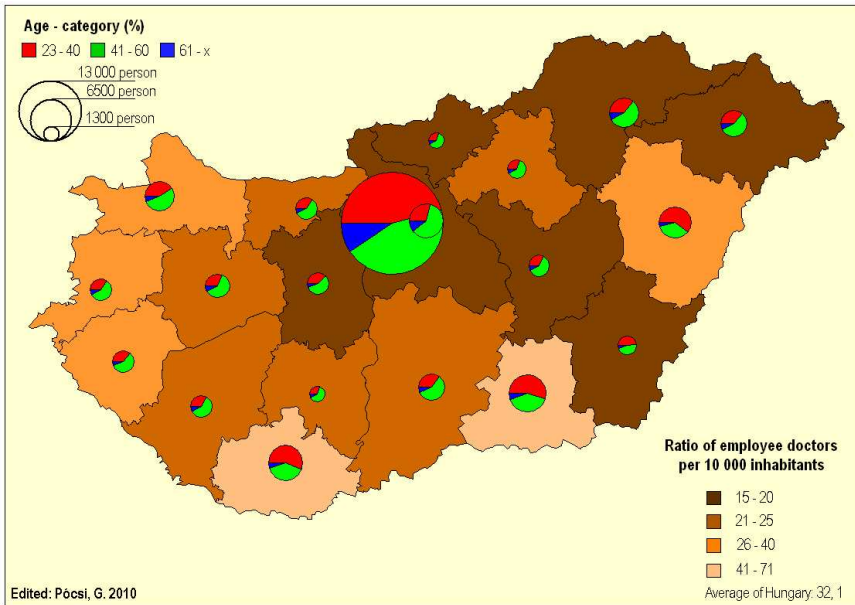
*Health care is not predominantly responsible for the state of health of the population, as it is only one element of the factors affecting health. The regional health system's shortcomings, however, may enhance the – already existing – regional differences.*

In the period of this study the general practitioner provision in the county is getting worse from year to year. The GP staff cuts exceeded the 11%. The number of inhabitants per a GP or paediatrician is the highest in Nógrád after the counties of Pest and Szabolcs-Szatmár-Bereg. In national comparison, however, a family doctor per capita the cases of home visit is the lowest in Nógrád because of the permanent provision. The number of the inhabitants to be cared of as well as the number of doctor-patient encounters show considerable differences region by region. The busiest GPs are the ones in the Szécsény and Pásztó regions.

In Nógrád County three hospitals provide the tasks of medical care. Previously, there used to be a hundred-bed pulmonary hospital, but the General Assembly of the Municipality of Nógrád County closed the pulmonary sanatorium in Nógrádgárdony on 1st November. The tasks of the terminated pulmonary sanatorium were passed to the St. Lazar County Hospital and to the Dr. Albert Kenessey Hospital and Clinic. Recently, all the three hospitals of the county have been under reconstruction works. The hospitals are up-to-date both in terms of aesthetics and their facilities, and serve the county's population. These institutions are owned by the local government, but the economic pressure forced the governments to operate some of the units in a longer term rental contract (radiology, pharmacy, food, laundry service, security service). In the row of the counties – after Pest – Nógrád sustained the lowest hours of specialist medical supply. The narrow capacity of outpatient health care provision forced a significant part of the population to pay for private practice, or wait for the reservation date.

*The county does not attract professionals and does not have the power to keep them.*

The negative assessment of Nógrád County, unfortunately, is felt in particular in the health system. There are few doctors, dentists, a pharmacists, psychologists, health visitors, psychotherapists and speech therapists. Medical professional supply is unfavourable at all levels of the progressivity in the county (*Fig. 5*).



**5th Fig. Medical professional supply by area and by age, 2007**  
 Source: Health Statistical Yearbook, CSO, 2007 (edit. KAJTOR E)

The age structure of the county's doctors' is older than the national average. The increasing numbers of vacant specialist posts may jeopardize the continuity of patient care. Besides the quantitative parameters, another unfortunate fact is that only insignificant minority of the doctors have scientific degrees. It needs a very great effort to be able to obtain scientific degrees from the hospitals of Nógrád. The negative medical professional supply of Nógrád is also related to the lack of a medical university. In these disadvantaged areas, the extent of gratitude money is low and occasional.

*Health conditions affecting the social environment include health care access, quality and quantity.*

The proportion of those patients who use hospital care outside of the county is very high (28.6%). In contrast, Nógrád County has almost no patients from external circulation (only 2.1%). In 2007, the net loss from the patient circulation into and out of the county is a significant 26.5% reduction. After Pest, Nógrád is the second county where the highest number of the patients looks for hospital treatment in other regions. Budapest has a strong attraction on the county's

settlements in the south-west as some of them only 30 km away from the capital, in addition the settlements on the west have a traditional binding to Vác.

This binding is even confirmed by the traffic conditions, time and cost factors. The micro-regions of Balassagyarmat and Rétság requested the National Public Health Service to change the zone of obligatory medical supply, and initiated assignment to Ódön Javorsky Hospital in Vác. The initiative process was not concluded; therefore, the consequences are not yet predicted.

*The inadequacy of health care organization and slow decision making process have also increased unfair access and low efficiency in health care provision, early detection of illnesses, rapid diagnosis setting and effective cure at up-to-date, appropriate level are challenges of our time.*

In Nógrád, CT, isotope diagnostics and mammography became available the latest time among the counties, while MRI as well as radiodiagnostics are still not ensured. Hospital reconstructions and tenders temporary levelled the instrumentation. In Nógrád County selected residential mammography began only in April 2003, still struggling with technical problems. Its earlier introduction could have moderated the increase of cancer deaths.

For many years the Nógrádian population suffered from the lack of proper availability of primary health care on-call system, since neither dental nor paediatrics night-duty did not operate. Even today, their availability is only partial. Communication and collaboration is not convenient between the county hospitals, as the interests of the maintainers and the hospitals are different. The organization of patient delivery is also not optimal. Patient delivery is proportioned to the number of inhabitants, but the territorial division is disproportioned. The negotiations have partly worked the problems out. It would be appropriate to provide Western Nógrád some new capacity of ambulances. Failing that, the spatial distribution is necessary to review again.

*In the trend of the population's health status there is no significant change in Nógrád County in the recent years.*

Despite the fact that the county's public health-epidemiological situation is stable, and State Public Health Office with alliance of civil organizations try to make accept healthy lifestyle, in the state of health of the population is not seen substantive improvements. The mortality rate turned in the negative direction in 1987 and has further deteriorated after changing of the political system as well as in the period of this present investigation. In Nógrád County the psychological and economic background of changing the political system has a delayed impact. The statistical analysis shows the regional disparities in development, and the fact that the population of the county's health status is worse than the national average.



Nógrád people are not only poorer but also sicker. The neglected chronic diseases are typical.

This is mainly due to the living conditions, the culture of health, the greater proportion of people over the age of 60, the failure of structural reorganization, unemployment, low living standards and the weaknesses in the health care system. The solution to this could be in employment, improving income conditions, if prevention, organization of health care delivery system, care and follow-up care would work.

It is undeniable, however, that there are signs of improvement of life expectancy expected at birth in Nógrád County, too. People born in 1980 compared to the ones in 2007 life expectancy rates increased by 4.4 years for women and by 2.4 for men. The situation is especially encouraging for women. The expected increase in the number average years of women is almost twice as many as of men. Reducing the regional differences, in which Nógrád drops behind, needs further facilitation and interventions.

## **The conclusions and suggestions drawn from the findings of the research**

1st *The quantitative and qualitative parameters of health care human resources should be improved.* In order to that the empty posts ought to be filled as soon as possible by more effective human resource management activities. Efforts are to be made in hospitals to have more doctors with high academic degrees. The conditions for successful applications firstly demand sufficient level of housing provision which should be created by the municipalities. Secondly, marketable salaries are needed because the civil servant salary scale in Nógrád is not attractive for any doctors or other healthcare professionals in shortage. Local authorities should use the tools of the scholarship broadcast.

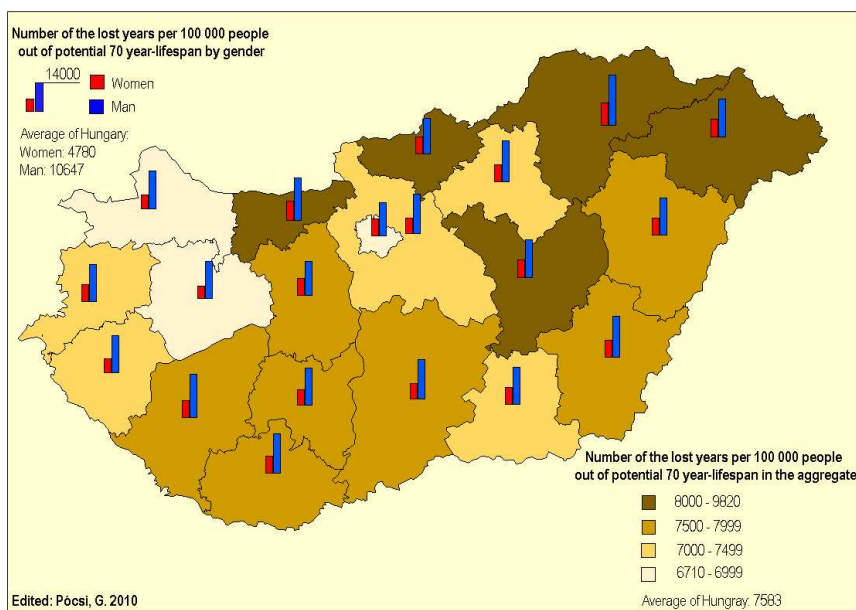
The situation of human resource could be improved by setting the competency levels, so the graduated, skilled nurses would carry out tasks which are currently performed only by doctors. The European Union member states have already introduced similar provisions to restrain the lack of doctors (in the English NHS<sup>1</sup> nurses have the right to prescribe medicine).

2nd *Strengthening the preventive approach, elaborating primary and secondary prevention and health promotion programs and delivering them to the participants.* By emphasizing and improving primary and secondary prevention diseases could be largely preventable, and the number of deaths may be reduced. The importance of prevention is confirmed by the high-level of deaths among the under- 65 population, which is typical of our country as well as Nógrád.

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<sup>1</sup> In the UK National Health Service, NHS has a central role in management and coordination of the health services, established in 1948 (National Health Service, NHS).

A widely used summary indicator of early death is the index of the lost years per one hundred thousand people. Significant regional differences are found in early mortality both by total and by sex (*Fig. 6*).



**6th Fig. Number of the lost years per one hundred thousand people out of potential 70 year-lifespan, by area and gender, 2007 (standardized)**

Source: Stadt-boards, CSO (terv. KAJTOR E)

More than 50% of the county's population die of smoking-related diseases (the lip-mouth-pharynx, larynx, esophagus, trachea, bronchial and lung cancer, ischemic heart disease, cerebral disease and chronic obstructive pulmonary diseases). Nearly 13% of the mortality (trachea, bronchial and lung cancer, malignant melanoma of the skin, ischemic heart disease, chronic liver disease and cirrhosis, traffic accidents) might be greatly reduced by primary prevention. 29% of the cancer mortality consists of deaths that can be screened.<sup>2</sup>

*3rd Priority should be given to disadvantaged micro-regions, settlements and social groups (especially the Roma population). Their convergence ought to meet the EU standards desperately. The high diseases ratio strongly justifies the need of intensive screening that can be financed by tenders and projects.*

<sup>2</sup> The data are from the annual information of 2008th of National Public Health Office (ANTSZ)

Since 2007, the internationally supported "Equal chance against Cancer" program combined with a screening event has been held in Nógrád County on Health Days. It should be continued. The central part of the program is addressed to the socially disadvantaged population and includes mammography screening and preventive health education programs.

The importance of the program is even more emphasized by the fact that among the disadvantaged, especially the Roma population the cancer rate is three-four times higher than the national and county averages.<sup>3</sup>

*4th The role of civil organisations in preserving health is one of the challenges of the future, because individual health awareness is highly influenced by other means than the direct effect of the health care system.* The dissemination of healthy lifestyle and making it a social norm by encouraging health-aware behavior patterns, besides other factors, would allow to reduce deaths and critical illnesses mainly caused by cardiovascular disease and cancer, or shift their appearance later in life, and thus significantly increase the number of healthy years of life. In Nógrád chest, cervical, breast and other manifestations of organized screening must be increased as high as 70% of the rate. However, another priority is to promote mental health and reduce harmful habits. A highly important task is to improve the situation of disadvantaged groups and to develop their health-aware behavior. The period of establishing health-aware behavior is optimal in the early age of life, because it does not require any special attention then and it becomes generic. In order to improve the population's health status, it would be advisable to create a Health Coalition. The Northern Hungarian Regional National Public Health Service Office (ÁNTSZ) could co-ordinate the various civil and social organizations, institutions, and promote the partnership, exploring and using the resources of the community.

*5th More attention should be paid to care activities including primary as well as professional care.* It would be important to improve quantity and quality of care parameters for patients suffering from cardiovascular illnesses, cancer and diabetes. The unfavorable ratio of home visits per family doctor – because of continuous care – serves as the critic of GP's work, because it indicates not proper maintenance of care activity in the region. This phenomenon is even unacceptable if GPs are more loaded here than the national average. In order to change this process professional and financial resources are needed. The methods can be adopted from the managed patient care system.

*6th The development of outpatient capacity is highly welcome, particularly in the highest morbidity and mortality sectors.* These are internal medicine, cardiology, endocrinology and rheumatology. Currently the above listed specialist fields are operating in extremely low professional hours. Nógrád is the most disadvantaged county in the professional hours of medical supply.

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<sup>3</sup> The research was initiated by the Borsod-Abaúj-Zemplén County Regional Council the in the catching-up program of the preparatory project of county's Roma population in spring 2002. The research was carried out in Delphi Consulting, led by Ferenc Babusik, BABUSIK F – PAPP, G. 2002.

Attention should be paid to the capacity distribution with special interest in the aging population and the characteristics of early deaths in men, as well as equal opportunity of availability in the micro-regions of the county (e.g. by building or expanding outpatient polyclinics in the regions of Bánytereny, Rétság and Szécsény).

*7th Cross-border cooperation is a future option to reduce the disadvantages of the bordering regions and improving the living conditions of the population.* Nógrád County borders with the Slovak Republic for more than a hundred kilometers, so it would be advantageous to harmonize health care in the bordering areas. Being the members of the European Union a new way is opening to reduce the disadvantages in health care for the sake of both populations, overcoming the marginalized situation after the Treaty of Trianon.

The county two major hospitals are available in the immediate vicinity of the border: the Salgótarján St. Lazar County Hospital and the Balassagyarmat Dr. Kenessey Albert Hospital and Clinic. Both hospitals' building reconstruction with modernization and comfort rise have been completed recently. Utilization of these two hospitals would be worthwhile from the other side of the border as well, because the nearest medical supply centres – either Fil'akovo or Ipolyság polyclinics, or the clinic and hospital of Lučenec – are further away from several highland villages than the above mentioned Nógrádian institutions.

In the second half of the '90s a fruitful cooperation seemed to develop between the Salgótarján and Lučenec hospitals. It had successful moments, such as scientific conferences, hospital introductions, and discussions of the opportunities, experiences and difficulties. At the turn of the century, however, this connection was interrupted. Several meetings have been arranged between the owners of the institutions and health insurance companies by primarily Hungarian initiative. The negotiations are interrupted from time to time, but they should be re-opened again and again.

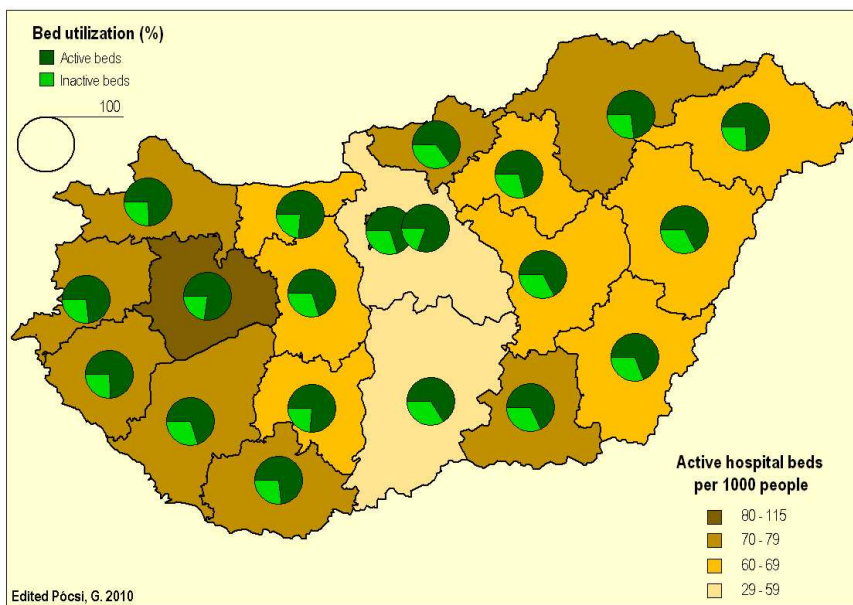
*8th The managed patient care system has proved to be a possible solution, when different processes, less known to the general medical practice, built upon each other such as communication, professional protocols, prevention, education, training and information technology.* The MPCs Nógrádian operation suggests that the initial model experiment activity has opened new dimension in health care, particularly in further development of primary care. The system's mission and motivation of the funding was to establish the "gatekeeper" role for the GPs. Deliberate communication started and operated between the progressive care levels. The advantage of patient-quota based financing system was that the payment adjusted not to the capacity, but to the needs and had a positive impact on efficiency. Its indisputable merit is establishing preventive approach and planned preventive activities, which will hopefully have an impact later.

I believe that the results of care organization have its place in the future health care system, and losing these experiences would be regrettable.

## The further possible directions of research, the potential utilization of the results

1st The leading deaths due to respiratory diseases in Nógrád county should be studied carefully in a complex, health geography, ecological and epidemiological investigation, together with micro-regional observations. The mortality due to respiratory disorders is high among men, significantly above the country-wide rate. This rate is less among women, but still high and almost every year, surpasses the national degree. This negative, permanent regional phenomenon confirms further purposeful research.

2nd Harmonization of the hospital capacity and utilization in the county hospitals demands further study considering the professional activity, the hospital department structure and the hospital bed capacity. Following the hospital reform, and after the reduction of active hospital beds – higher than the national average – utilization of hospital beds is the lowest in Nógrád (Fig.7).



7th Fig. Active hospital beds per thousand people, with hospital bed utilization, by location, 2007

Source: CSO Regional Statistical Yearbook, 2007 (terv. KAJTOR)

In case of Salgótarján and Balassagyarmat hospitals the conditions of the matrix department structure should be supervised.

The Pásztó hospital's infrastructure standard as well as its rich natural environment is capable of making the hospital to be involved in high-quality health tourism. Complementing the activities of the health tourism business-based health services can be related.

An important part of a further research should be to identify the causal factors of patients' departing from the county to have medical treatment in other counties.

*3rd Neither the patients' pathways nor the introduction of appointment lists have turned to be problem-free, so further study on their operation level is highly recommended.* As part of the health care reform the hospitals are supposed to run appointment lists. The other key element of the reform is the transformation of patients' pathways. In my thesis I have not examined these factors in detail, because of the short time has elapsed since the introduction, but for the sake of early cure of diseases observation and investigation of these factors are essential.

*4th The modernisation and experimentation of the Hungarian health care delivery system have been under way since the time of political changing but besides managed health care provision no other solutions have occurred to increase satisfaction, sustainability, or at least would slightly improve regional inequality.* It seems evident that the experiences, the benefits and shortcomings of the system, which actually have served a significant proportion of the population for nearly a decade, should be studied by the health policy makers and by correcting errors, continue its development.

The latest research found that the regional distribution of funding is not determined by the needs of the population. The disproportionate access is not only detrimental in terms of efficiency, but also affects social justice. The researchers consider appropriate methods to analyze the needs and based on its findings would identify the most expensive treatments, the capacity available the geographical distribution and the opportunity of access.<sup>4</sup>

The enhancement of the managed patient care system have proved to be suitable for it.

**The utilizable areas of the research:** health policy, regional development, health promotion, health care management, the North-Hungarian Regional Health Council, the county's health services, the local governments, projects, health plans, Slovak-Hungarian border cooperation, roma adjustment programs, civil organizations.

The results of research would primarily serve the interests of the population of Nógrád County.

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<sup>4</sup> Needs-adjusted health care disparities in Hungary. Research Report, Nonprofit Public Benefit HealthMonitor Research and Consulting Ltd. Budapest, September, (VITRAI J. et al. 2009).

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