



GIS analysis for structural changes in public health system



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Background

- ❑ two years ago - a new legislation in the Czech public health system
- ❑ separation of public health state administration and the expert services
- ❑ former system was a mixture of these activities

Objectives

- ❑ main goal - standardization of the state administration and the health state control according following criteria:
 - size of a region
 - number of population
 - number of employees with different hygienic specializations
 - new legislation requests
 - and other criteria.



Roots of Public Health in the Czech Republic



- ❑ the very beginning of public health services is dated to the year 1585
- ❑ four „especially gifted doctors“ appointed as physici regni
- ❑ the number of such health officers increased by 75 at the end of the 19th century



19th Century



- ❑ foundation of hygiene as a scientific discipline
 - reflection of health problems related to a rapid start of an industrial revolution in 19th century
- ❑ hygiene became an independent medical domain in the 2nd half of 19th century and started to be lectured at European universities as an independent discipline
- ❑ regional administrations – responsibility for activities of public health personnel, surveillance, vaccination and hygienic care

19th Century – cont.



- ❑ special health institutes in large, statutory towns
- ❑ new law on Public Health came into effect - Public Health Service (Health Police) was founded in 1870
- ❑ professional aspects managed by small institutes based at faculties.
- ❑ the first Hygiene Institute and General Institute for Food Sciences were founded

The Czech Republic – early 20th Century



- ❑ very bad state in epidemiology after World War I. 400 thousands people suffered from tuberculosis, pandemic of „Spanish“ influenza, high prevalence of Typhoid, Diphtheria and other infections).
- ❑ foundation of an independent Ministry of Public Health and department of the state health administration at the Ministry of Interior Affairs.
- ❑ foundation of the National Health Institute in 1925.
- ❑ establishment of branches in larger cities
- ❑ these branches became regional or district hygiene stations in the second half of the 20th century as facilities of hygiene and anti-epidemics care

The Czech Republic – years of 50th – 70th



- ❑ hygiene stations were established after a division of the State Health Institute, health institutes became a professional basis.
- ❑ the posts of the Chief Hygiene Officer, Regional Hygiene Officer and District Hygiene officer were established
- ❑ hygiene service focused on measures leading to a decrease of prevalence of infectious diseases, control of resources of drinking water, destruction of municipal wastes, healthy work conditions and ensuring healthy and safe food.

The Czech Republic – the years 80th and 90th



- ❑ new activities - focused on impact of environmental and occupational conditions to health state
- ❑ these tasks in Public Health began being carried out and/or solved out since the years of 80th and 90th

The Czech Republic 2000 -2003



- ❑ adoption of a new Law on Public Health – Law No. 258/2000 Coll. of Laws.
- ❑ implementation of the EU legislation in the field of Public Health.
- ❑ institutions of the Public Health are being divided into Regional Hygiene Stations as administrative institutions and Health Institutes as professional institutes which deal with health care in the field of Public Health.

GIS analysis preceded the structural changes



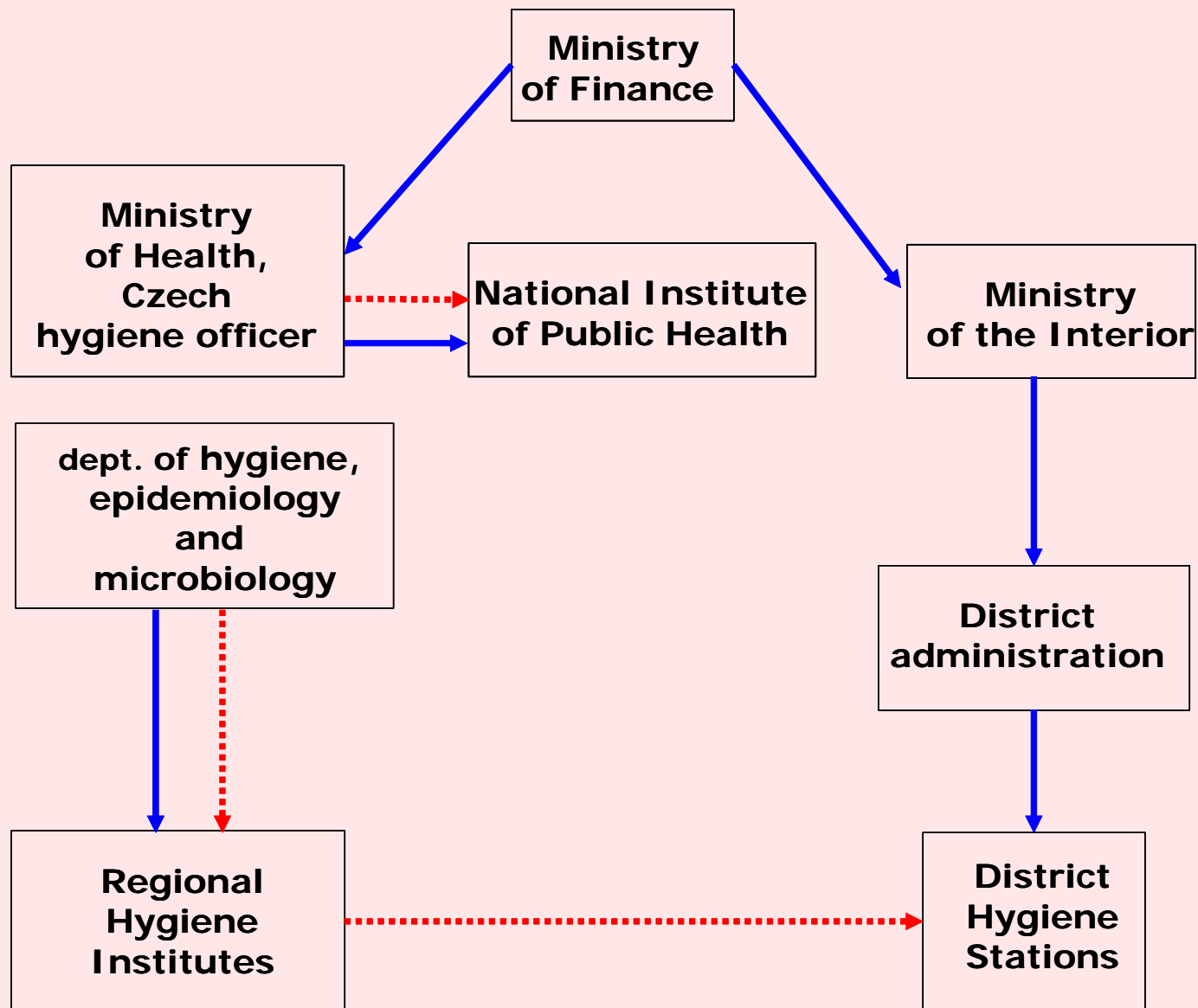
- ❑ the result of the GIS analysis provided a rough estimate of distribution of employees, expert services and hygienic branches needed
- ❑ consequently the analysis was based on reviews of budgets of all hygienic stations utilizing a lot of indicators
- ❑ the analysis was a consistent background for
 - allocation of employees in regions
 - balance of some hygienic specializations taking into account total number of population
 - effectiveness of state budget/per capita

Material and Methods




- ❑ the input data obtained from the routinely collected annual reports published by the Czech Ministry of Health from the year 2001 and the population data from the Census 2001.
- ❑ the GIS to be a proper tool for the analysis of hygiene service requirements in relationship with the geographical distribution.

Former Structure of Hygiene Service



budgeting 

methodical guidance 

Disadvantages of the Former Structure



Inconsistency of the state health supervision was caused:

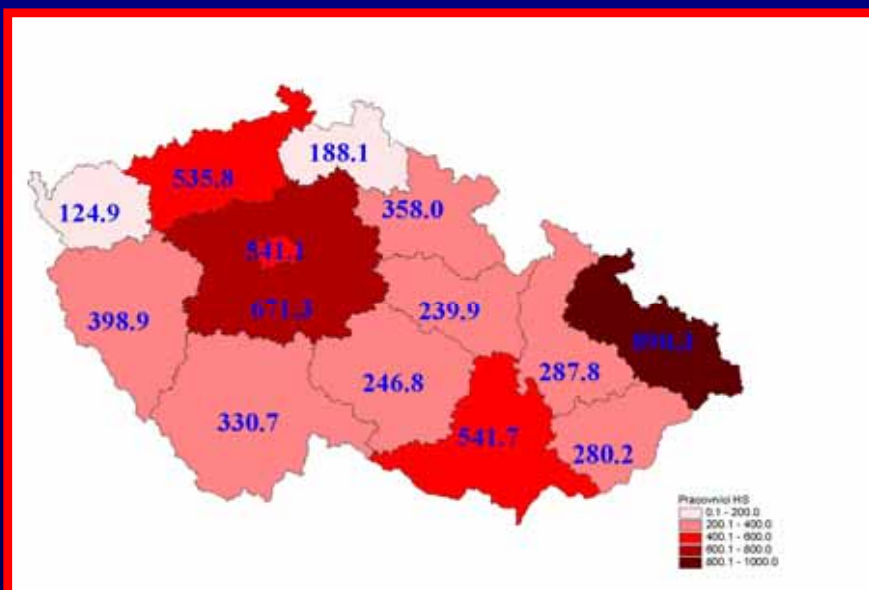
- ❑ by two autonomous directive and executive branches:
Ministry of Health - Regional Hygiene Institutes,
i.e. vertical management;
District administration - District Hygiene Stations,
i.e. horizontal management
- ❑ different level of staff and equipment quality among the institutes and stations in regions (personal, instrumental, spatial) caused by different financial sources and by local impacts (industrial/agricultural/urban/recreational area)
- ❑ missing set of common criteria and indicators



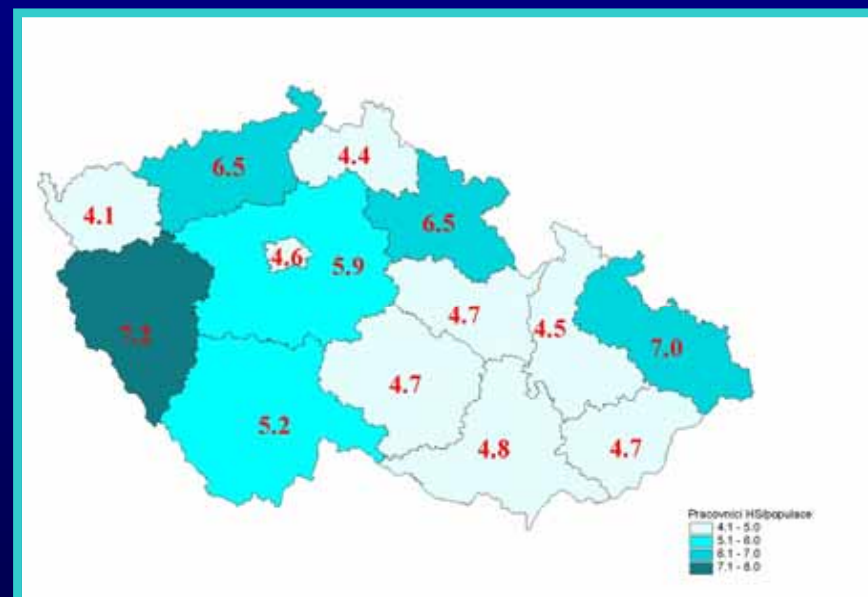
GIS analysis results



The Total Number of Employees in Hygiene Service



The Relative Number of Employees in Hygiene Service by 10,000 Inhabitants of the Region

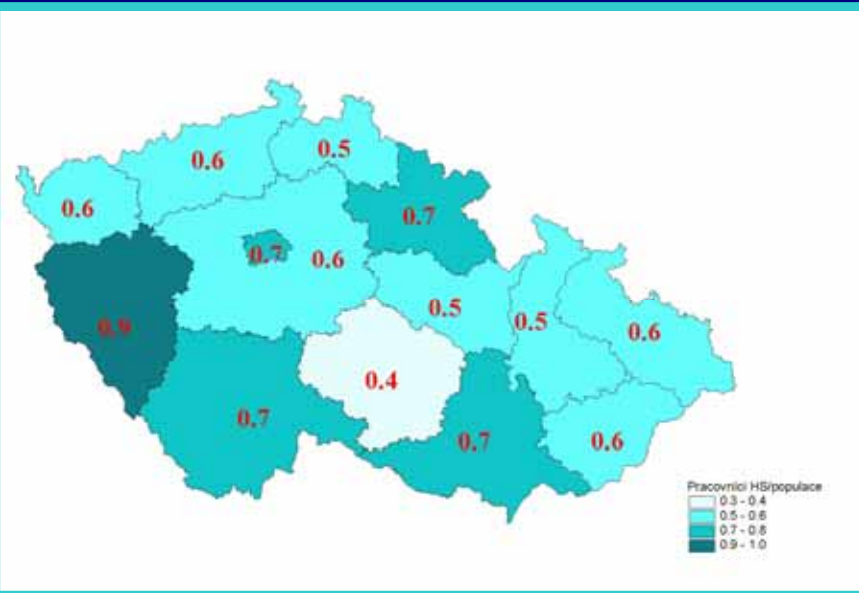




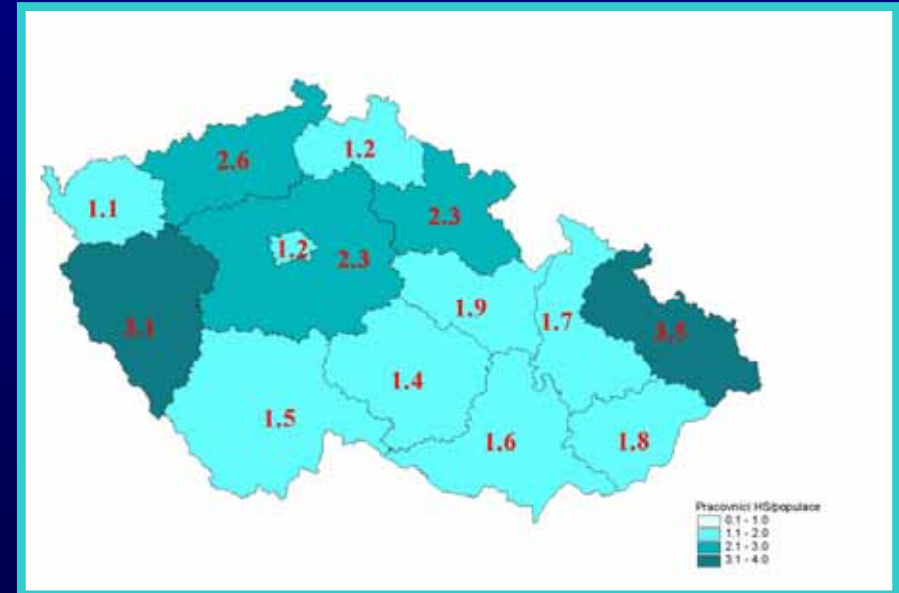
GIS analysis results – cont.



The Relative Number of Employees in Hygiene Service in the Branch of Infection Epidemiology by 10,000 Inhabitants of the Region



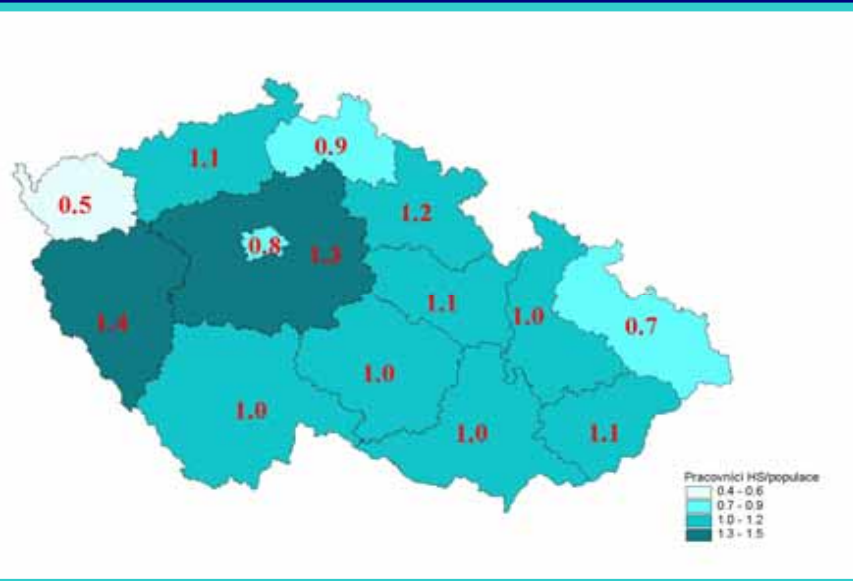
The Relative Number of Employees in Hygiene Service in the Branch of (paid) Expert Services by 10,000 Inhabitants of the Region



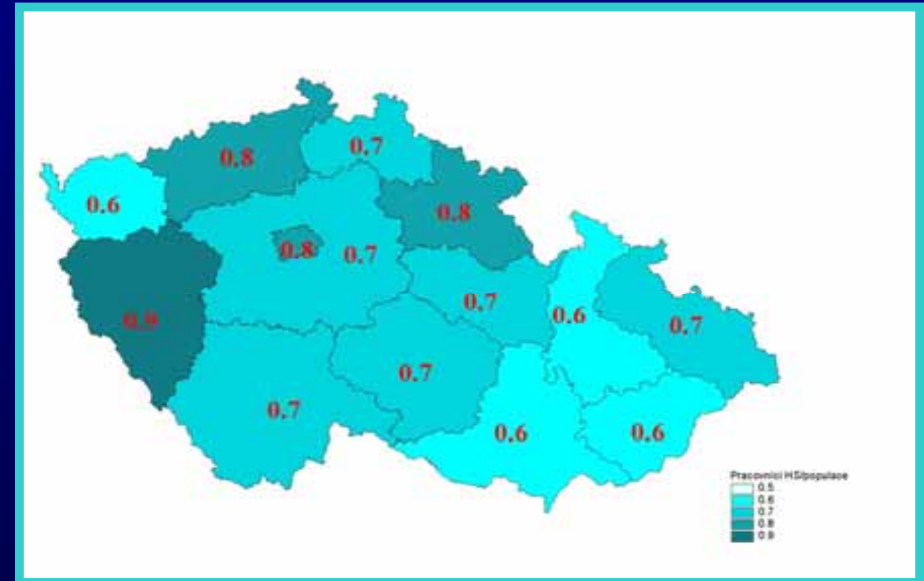
GIS analysis results – cont.



The Relative Nr. of Employees in Hygiene Service – in the Branch of Hygiene of Children and Adolescents by 10,000 Inhabitants of the Region in the age group 0-14



The Relative Number of Employees in Hygiene Service - in the Branch of Occupational Hygiene by 10,000 Inhabitants of the Region in Productive Age

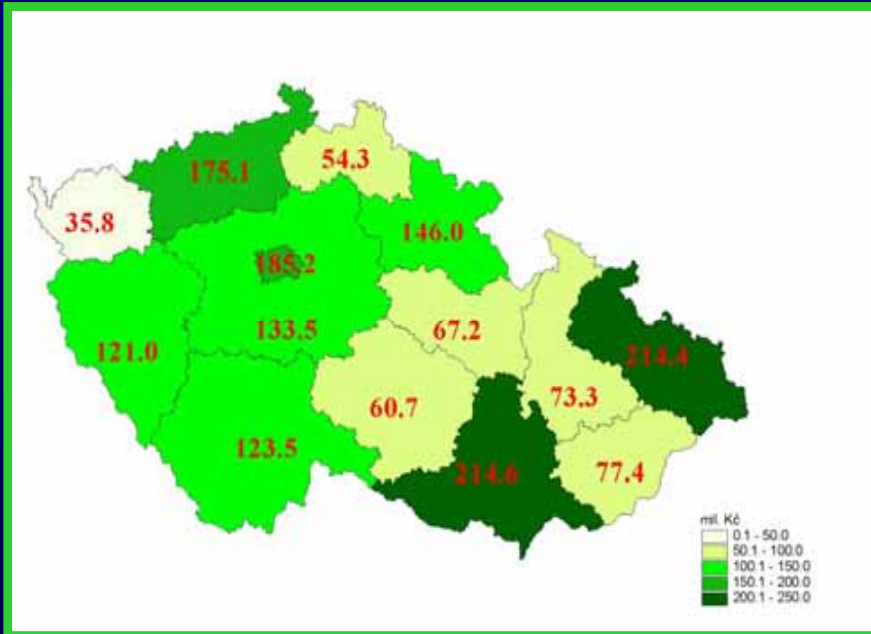




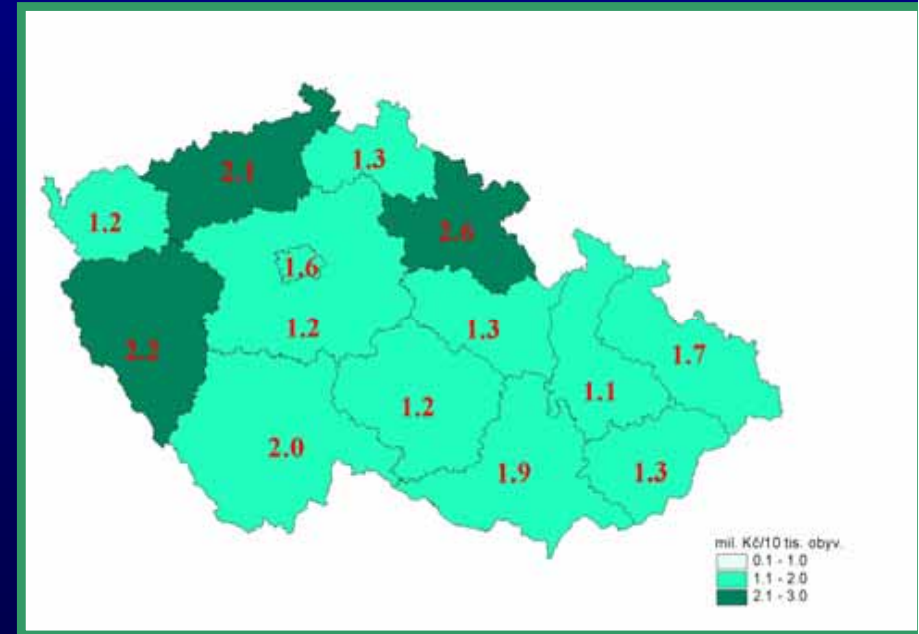
GIS analysis results – cont.



Budget of the Hygiene Institutes and Stations from the Estimates



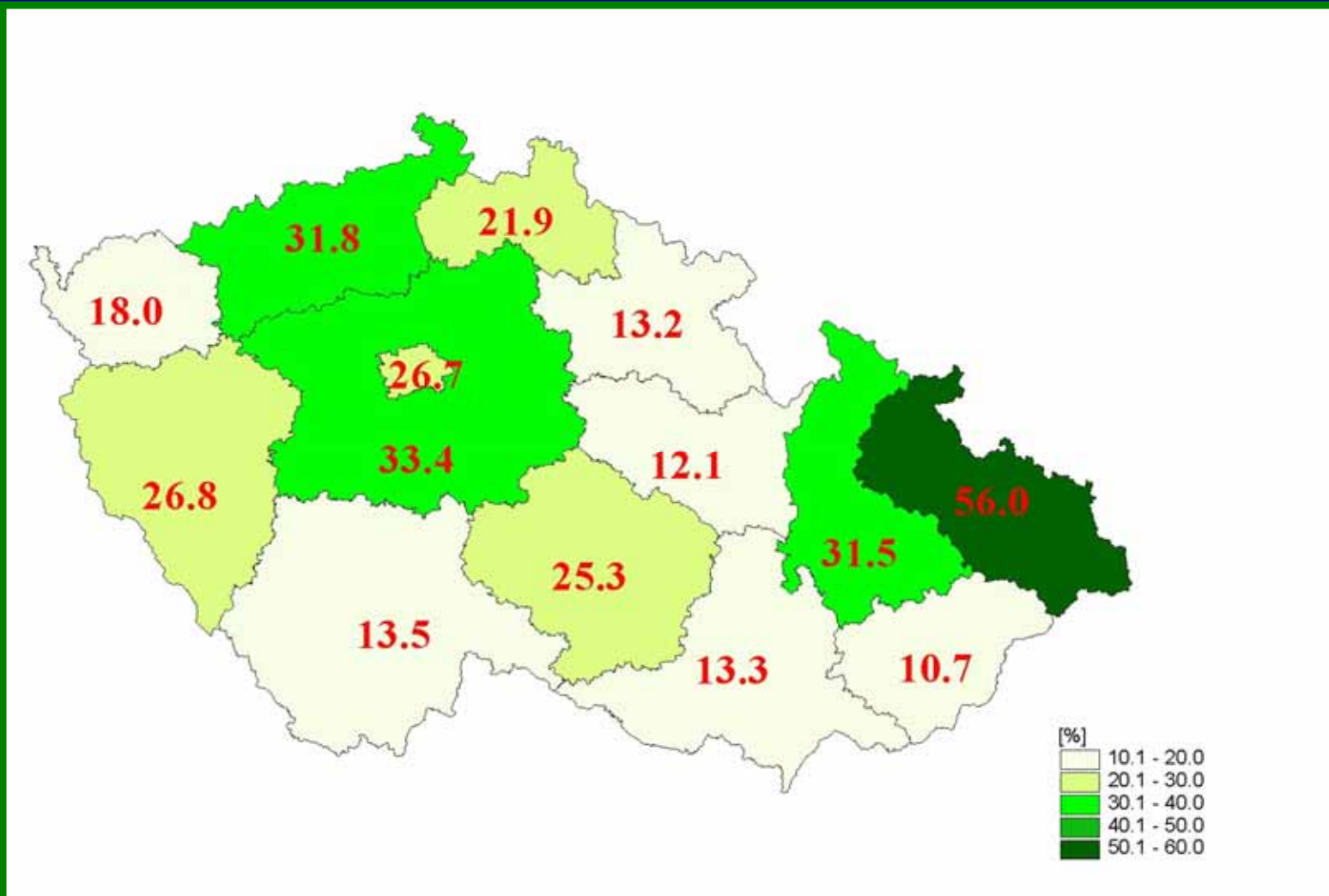
Relative Budget of the Hygiene Institutes and Stations from the Estimates by 10,000 Inhabitants of the Region



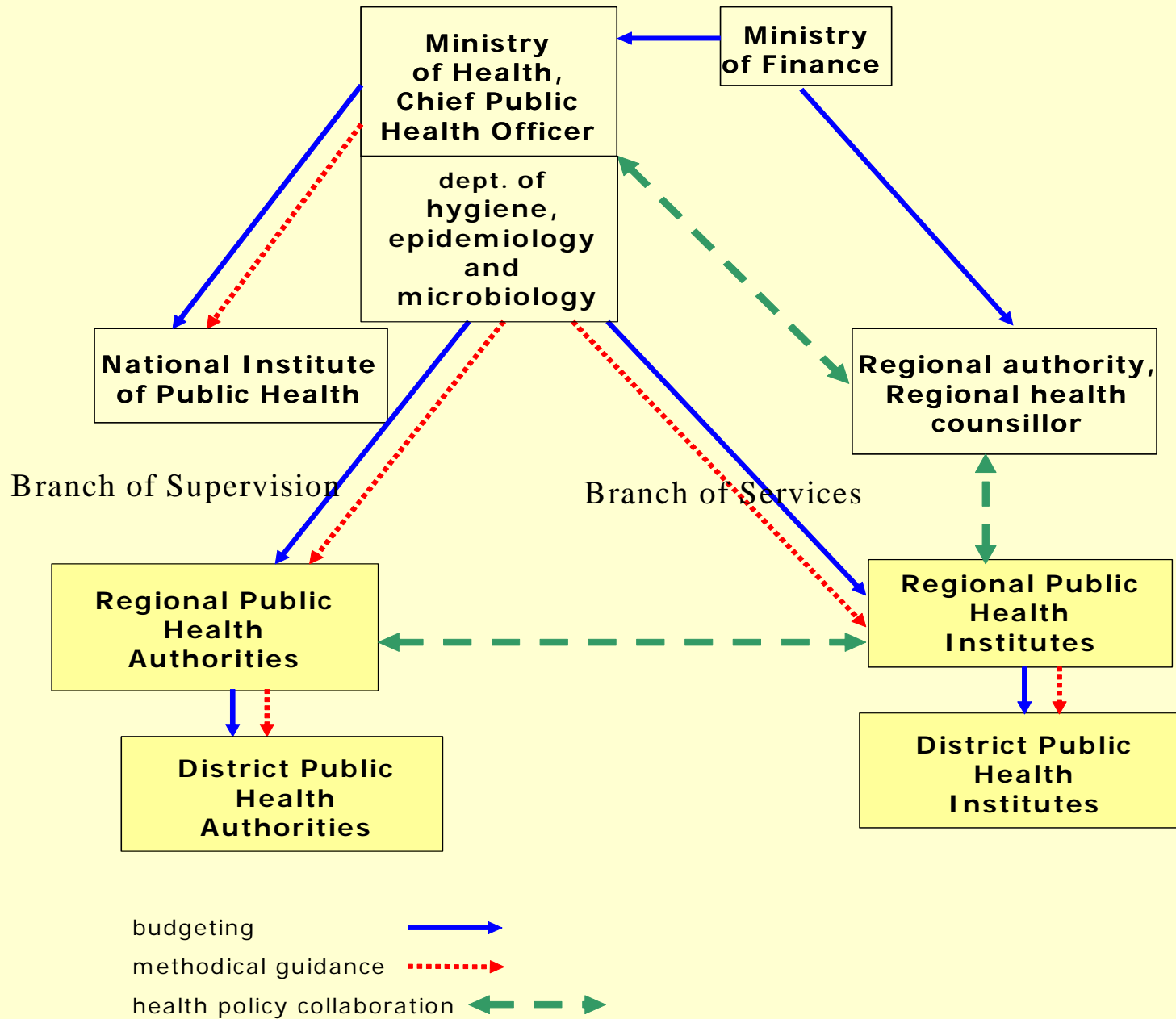


GIS analysis results – cont.

Cost-benefit analysis - Benefits of Institutes and Stations from the Expert Services in Total Costs



The New Structure of Hygiene Service





Advantages of the New Structure



I. Regional Hygiene Stations (state administration):

- Uniform methodical guidance
- Standard activities of state health administration
- Separation of state health administration from municipality
- Planned activity of state health administration
- Quality reinforcement of state health administration on the basic level
- Strict financing from the state budget
- Unified system of education/capacity building

Advantages of the New Structure – cont.



II. Health Institutes (expert services):

- ❑ the Health Institute is defined in Act on health care - it is a health institution dealing with environmental health, occupational medicine and laboratory activities
- ❑ delivery of public services in health protection and health promotion based on commercial basis in the whole country
- ❑ standardized delivery of public services

Conclusions



- the only use of GIS analysis enabled a comprehensible and visual presentation of the results for decision makers
- the results were successfully used as a support for negotiations during the legislation process in both Chambers of the Czech Parliament
- the new legal Act had been approved by the Parliament and the restructuring of hygiene service was realized in the beginning of 2003

Thank you for your attention.....



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