

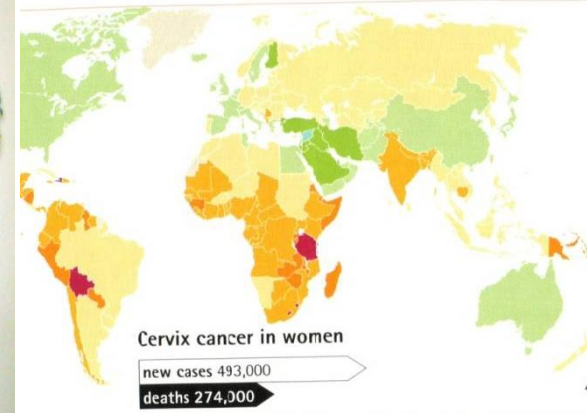
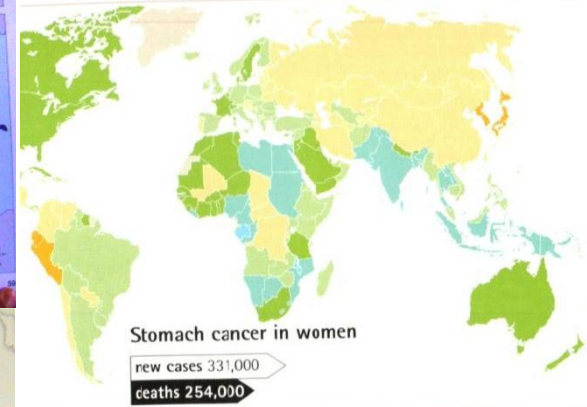
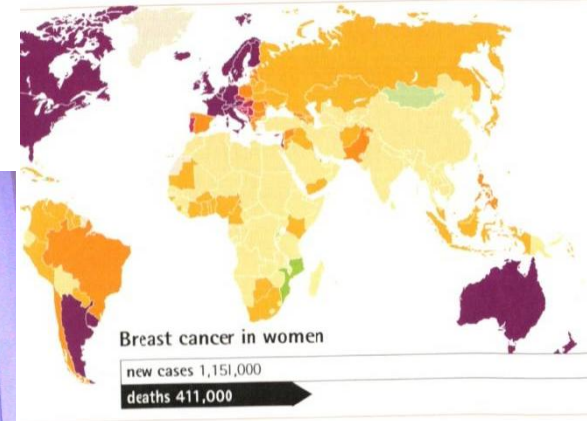
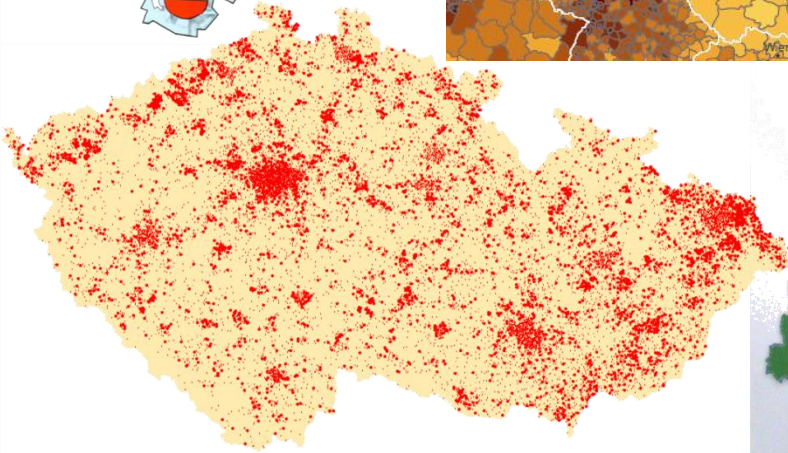
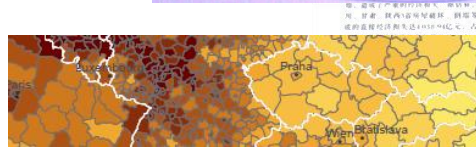
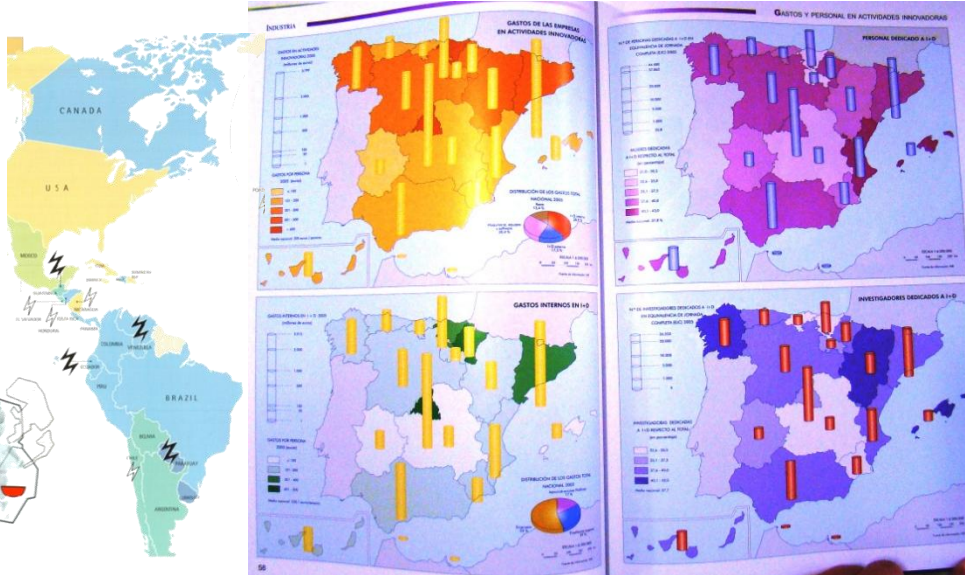
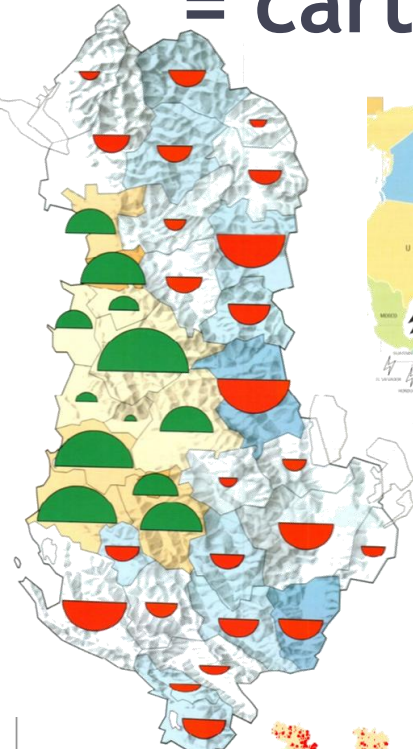
Geovisualisation of Statistical Data within Spatial Data Infrastructure

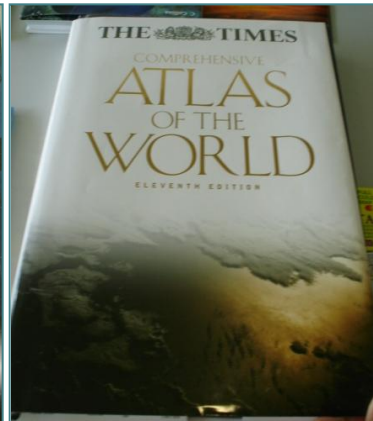
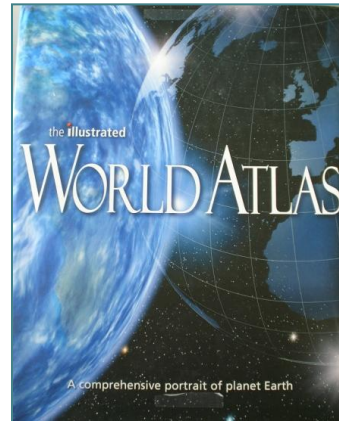
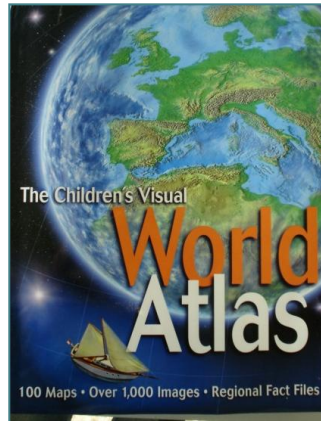
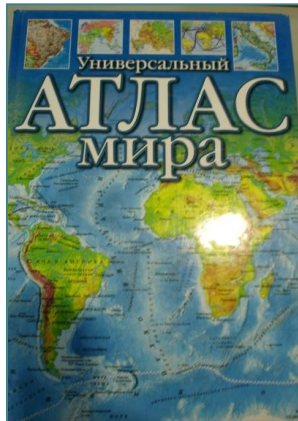
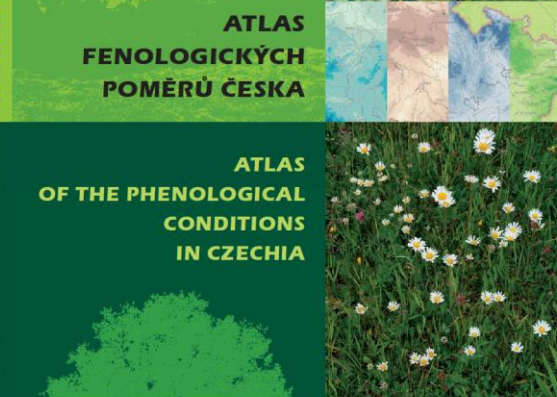
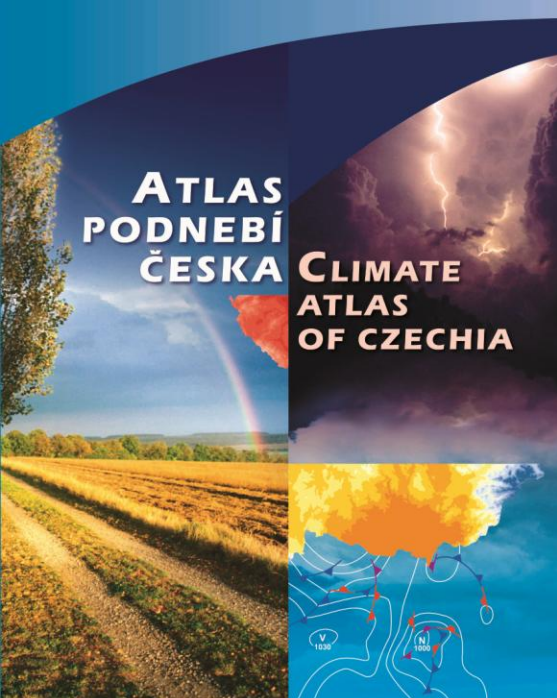
Vít Voženílek

Palacky University, Olomouc, Czech Republic

EGFS
Prague
25 Oct 2012

Geovisualisation = cartographic visualisation





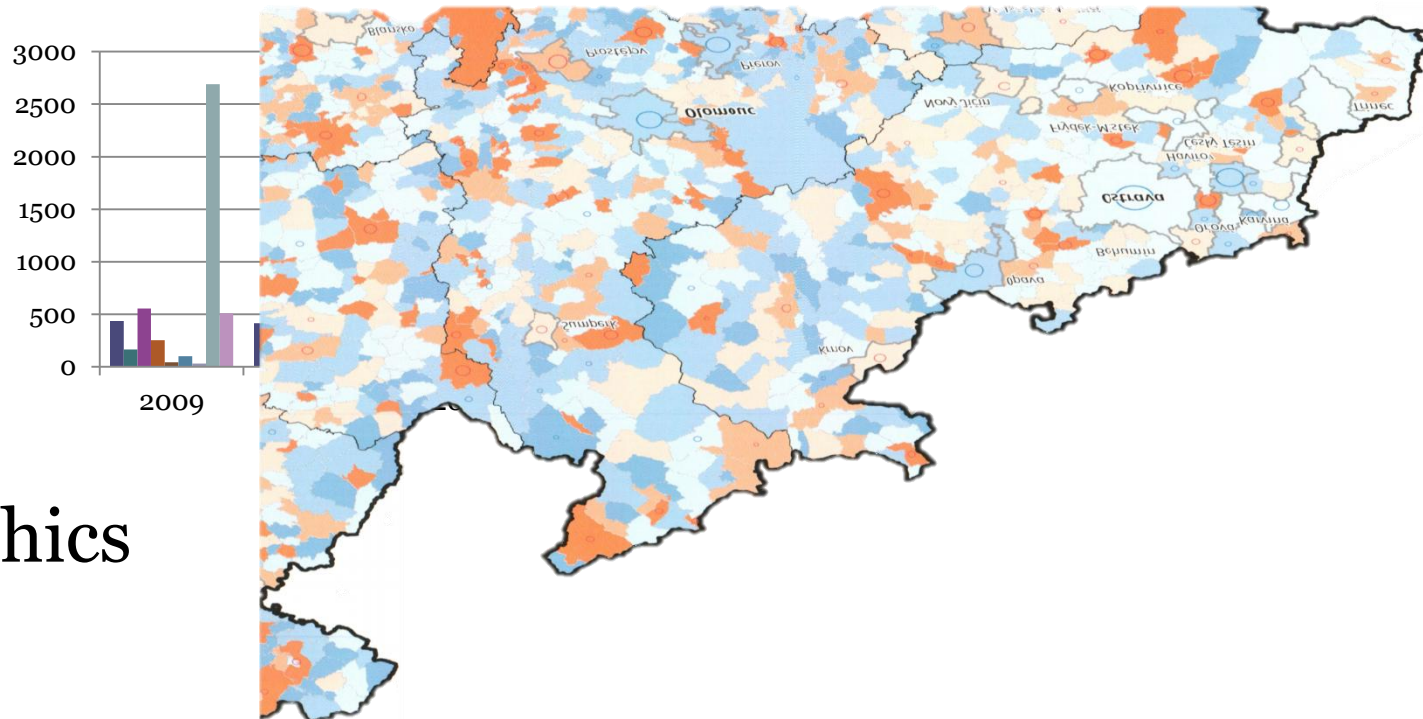
Ways for expression of statistical data

- Text *...the highest number of universities is in Germany, while the lowest number is in Portugal ...*
... after 2010 the concentration of gipsy families moves towards north-east of Europe ...

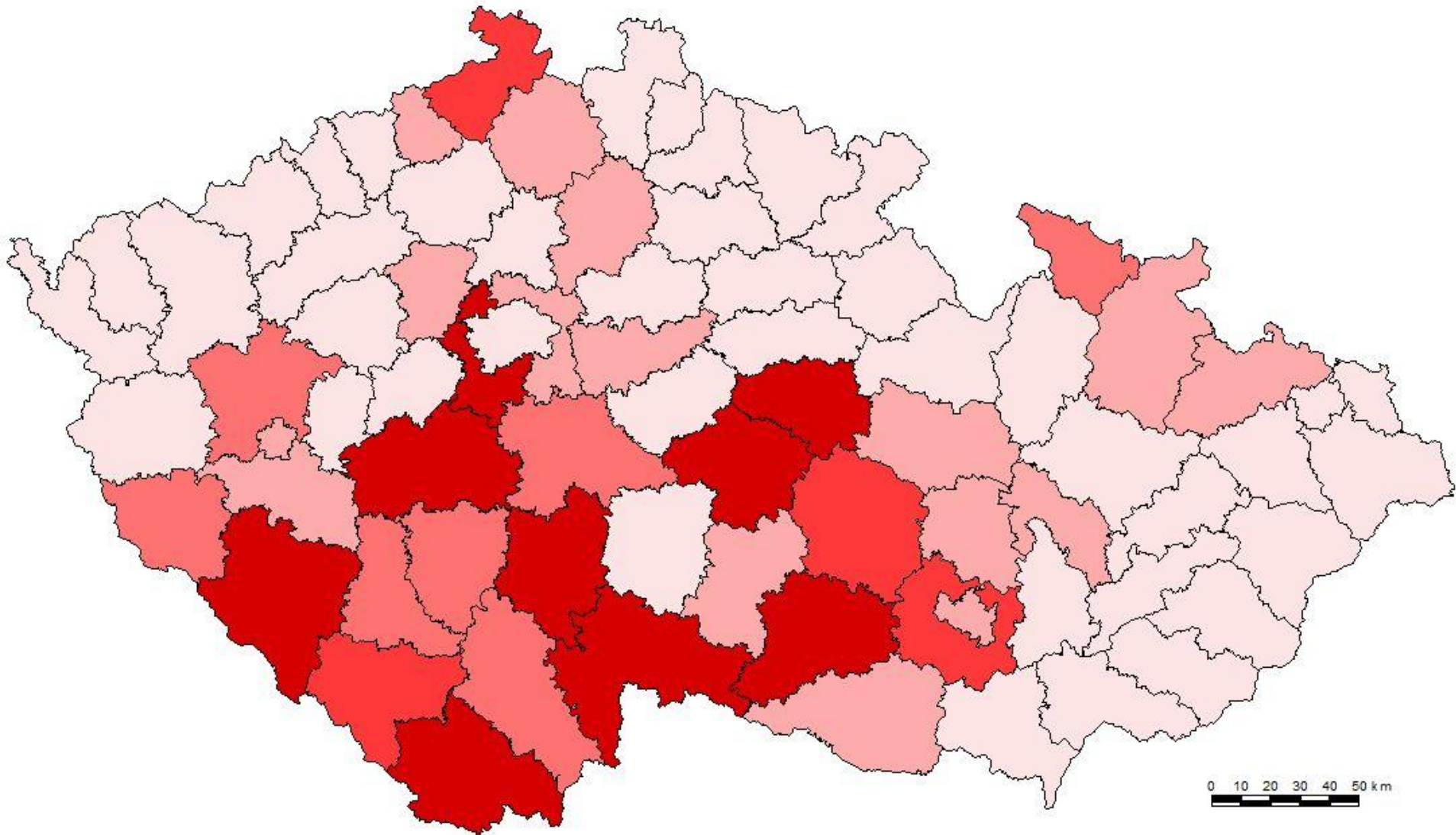
- Table

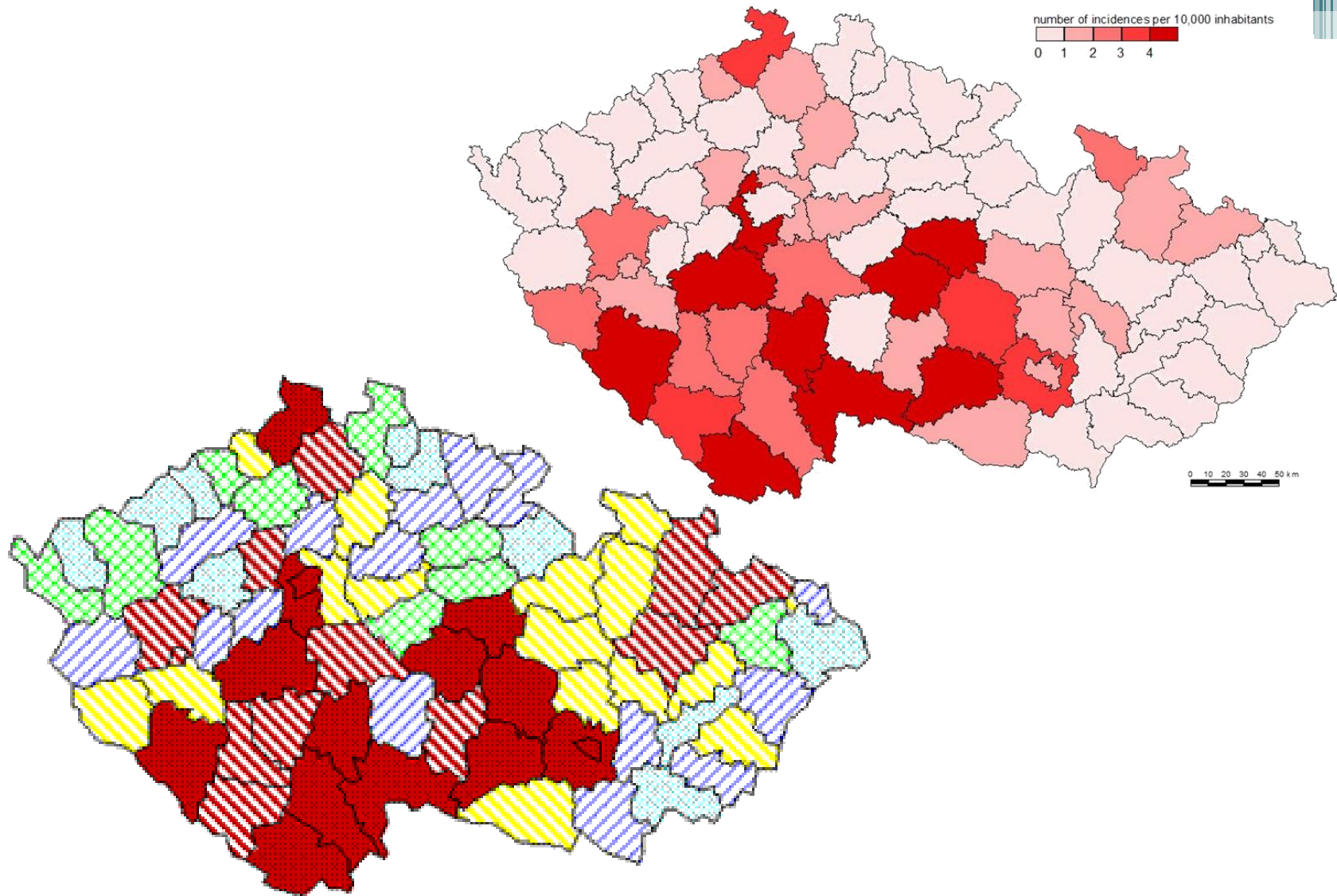
	GER	POL	HUN	UK	POR	EST	FIN	RUS	LAT
2009	435	165	554	254	43	102	32	2689	510
2010	415	184	573	208	44	159	33	2664	515
2011	404	177	498	171	40	297	105	2737	579
2012	371	158	465	160	41	466	283	2812	663

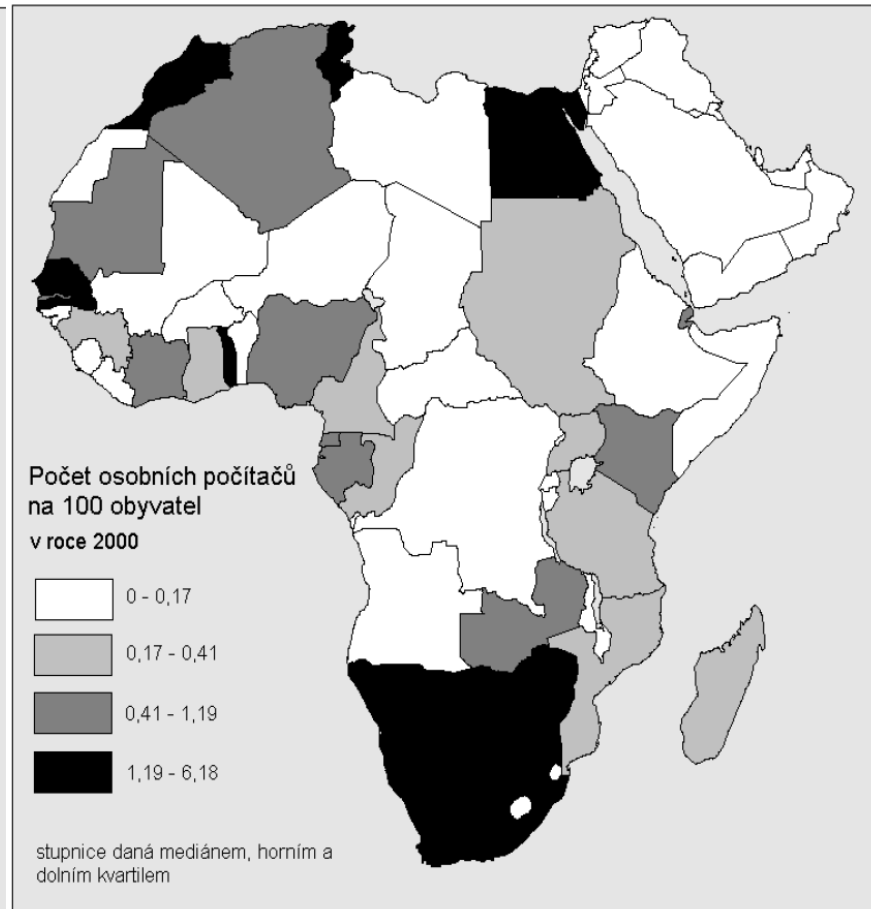
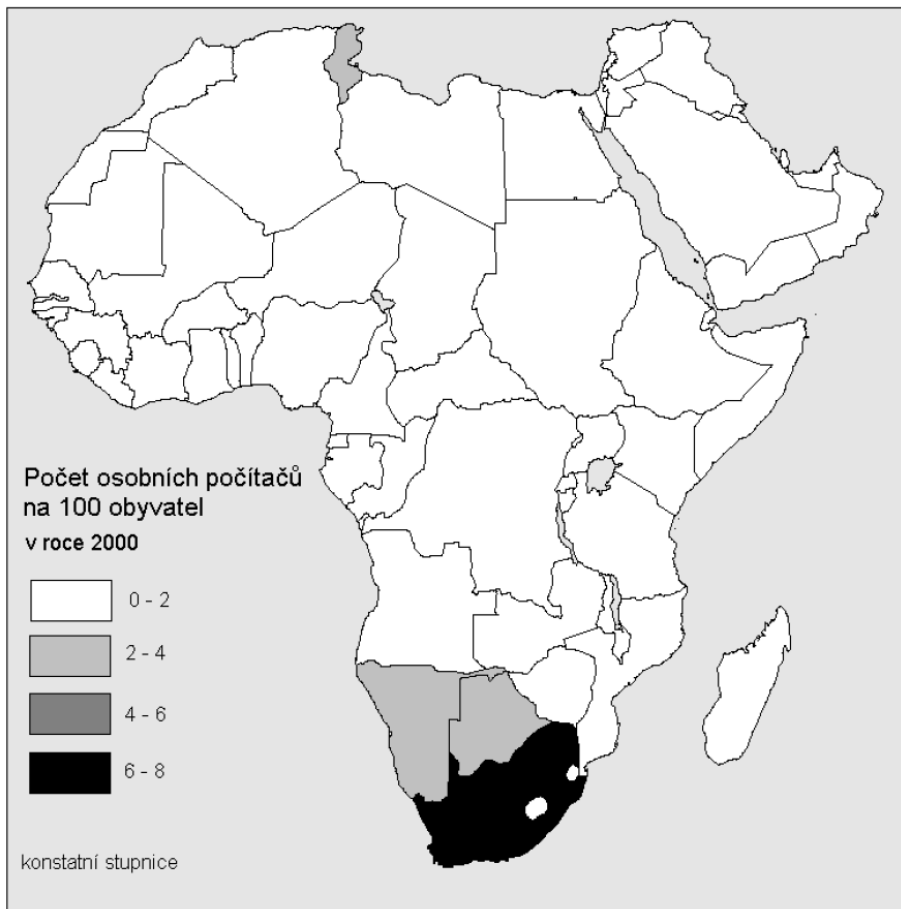
- Graphics



- Cartographics

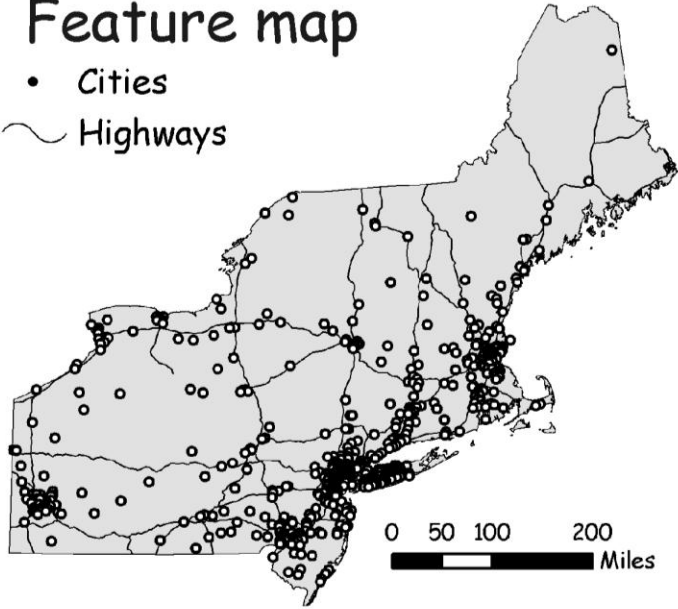






Feature map

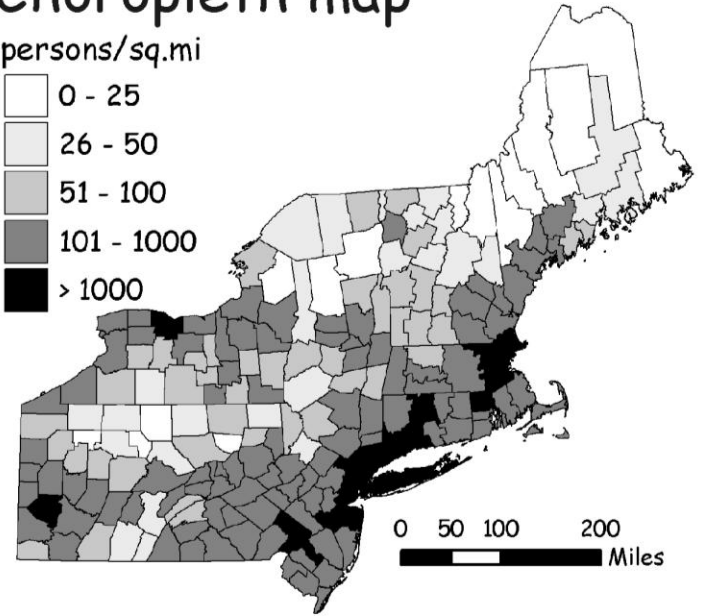
- Cities
- ~ Highways



Choropleth map

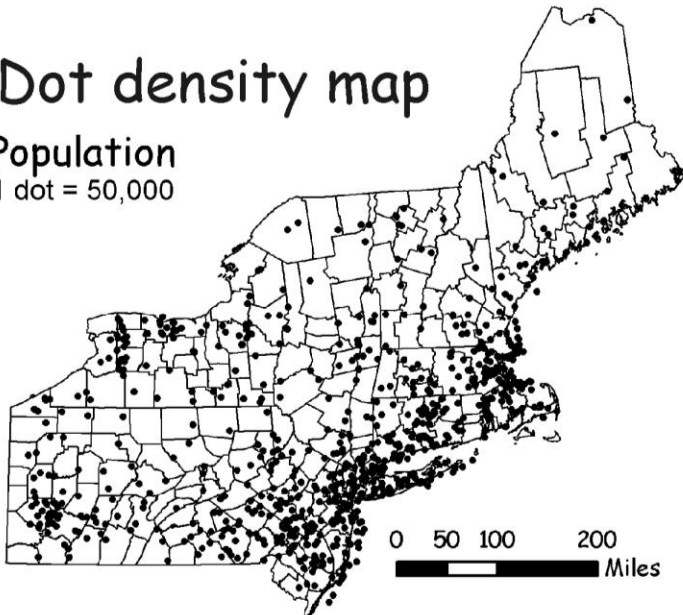
persons/sq.mi

- 0 - 25
- 26 - 50
- 51 - 100
- 101 - 1000
- > 1000



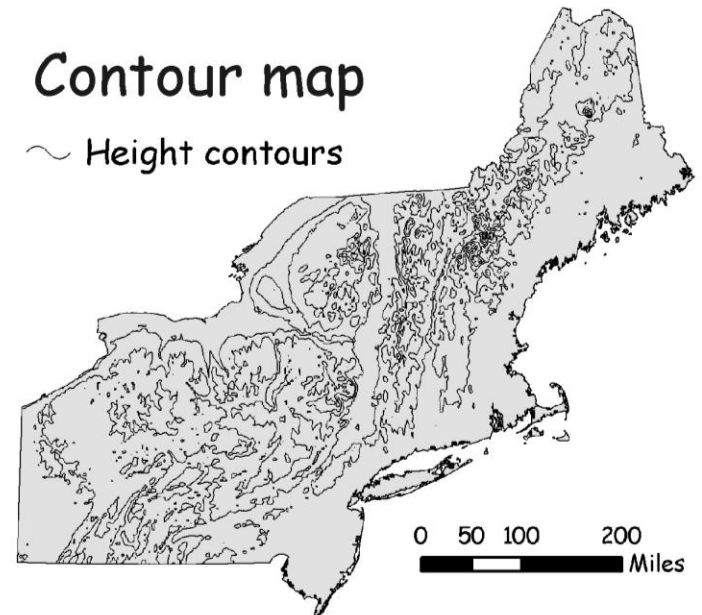
Dot density map

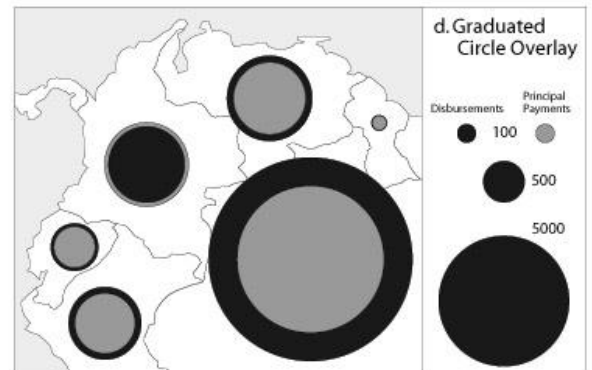
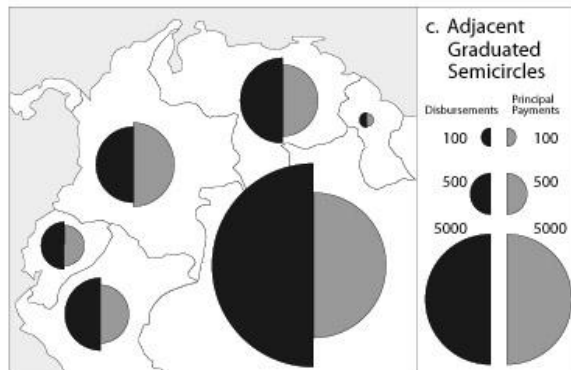
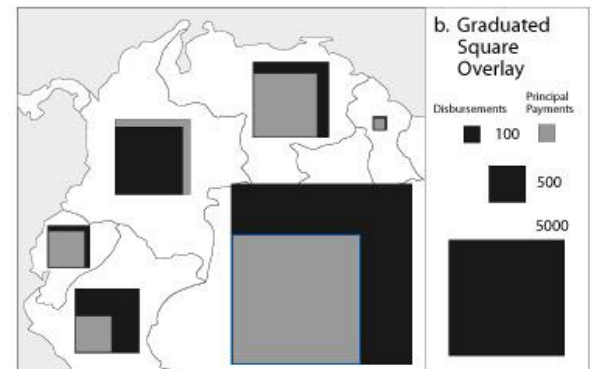
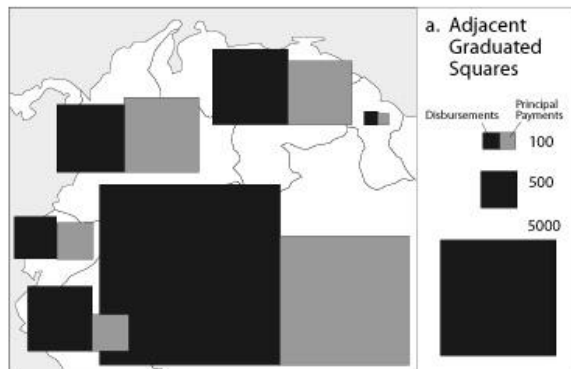
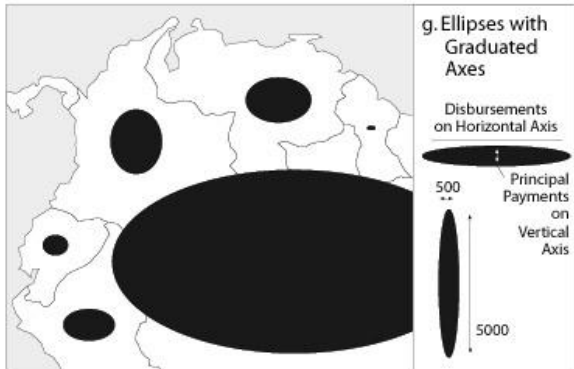
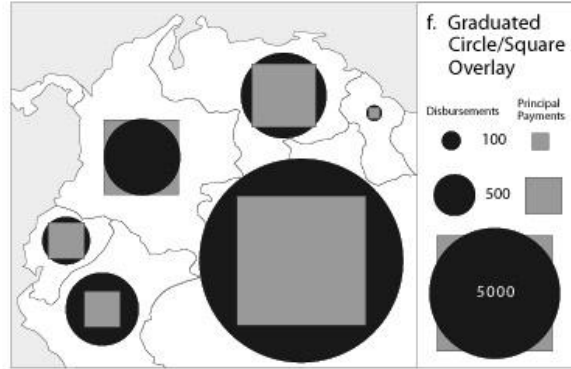
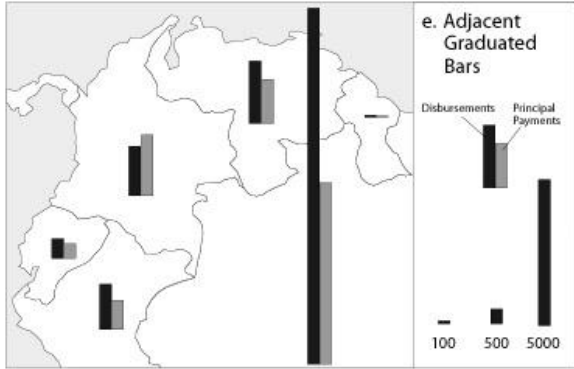
Population
1 dot = 50,000

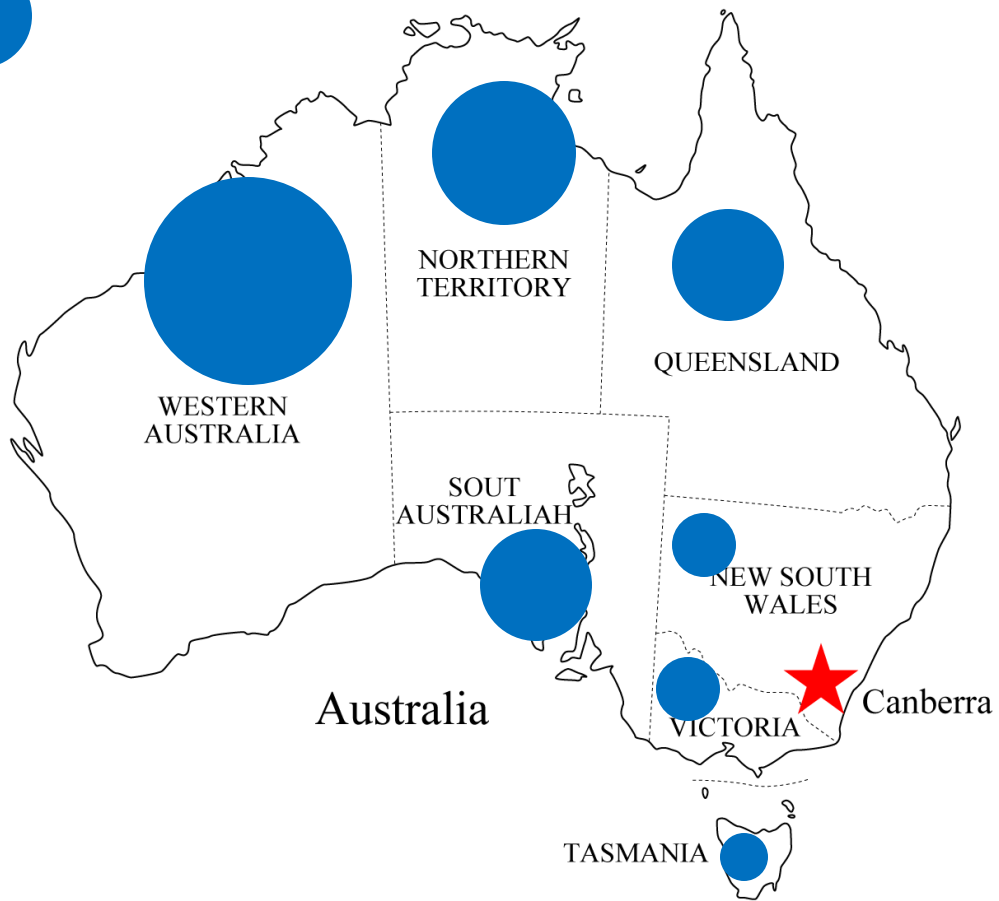
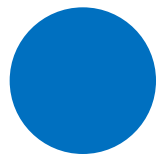
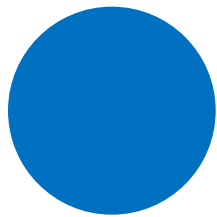


Contour map

~ Height contours

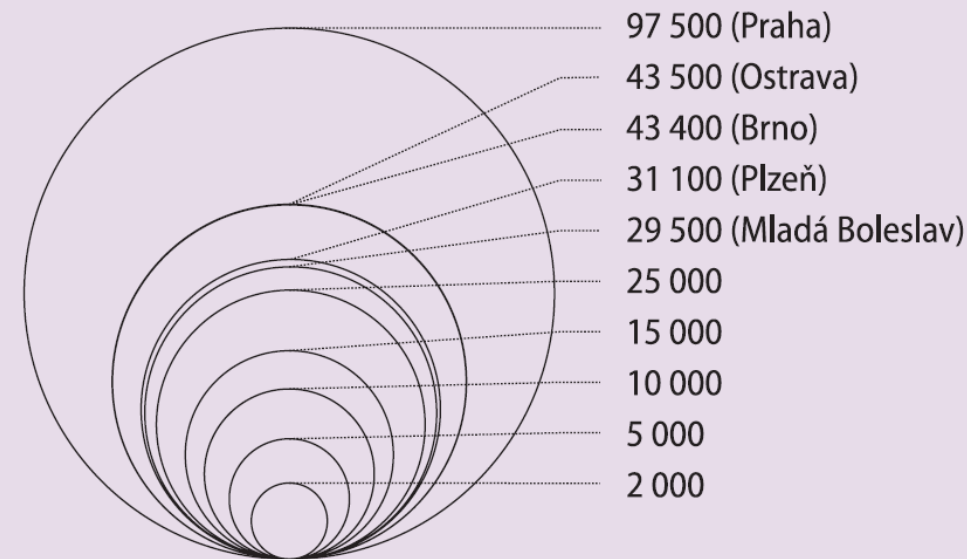






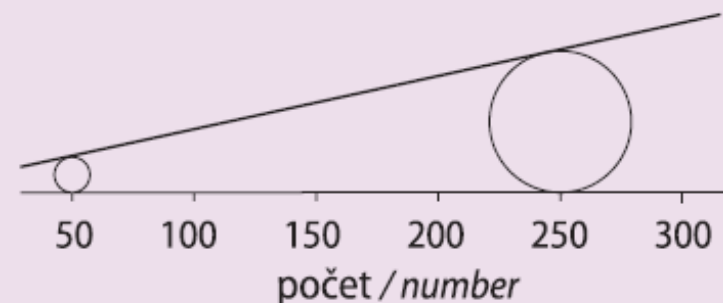
Počet pracovníků ve zpracovatelském průmyslu v obcích s rozšířenou působností (2004)

Number of employees in manufacturing industries in municipalities with extended competences (2004)



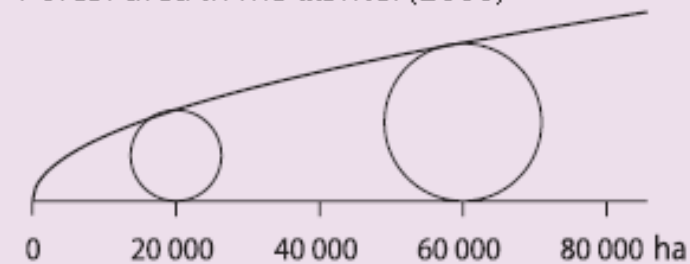
Velké dobytčí jednotky v okrese

Big cattle units in district



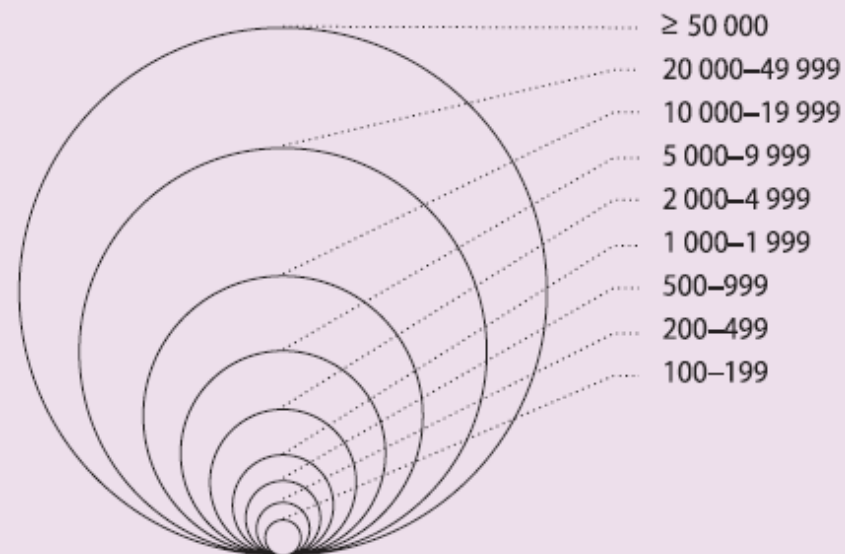
Výměra lesních ploch v okrese (2005)

Forest area in the district (2005)



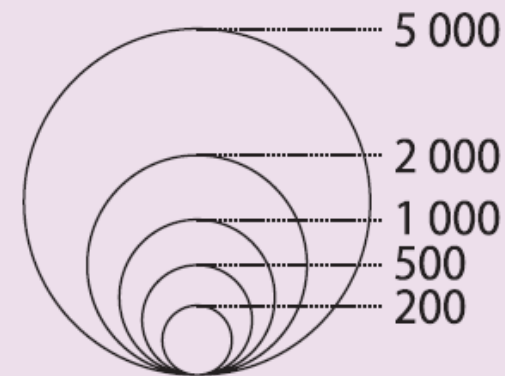
Počet pracovníků ve zpracovatelském průmyslu

Number of employees in manufacturing industry

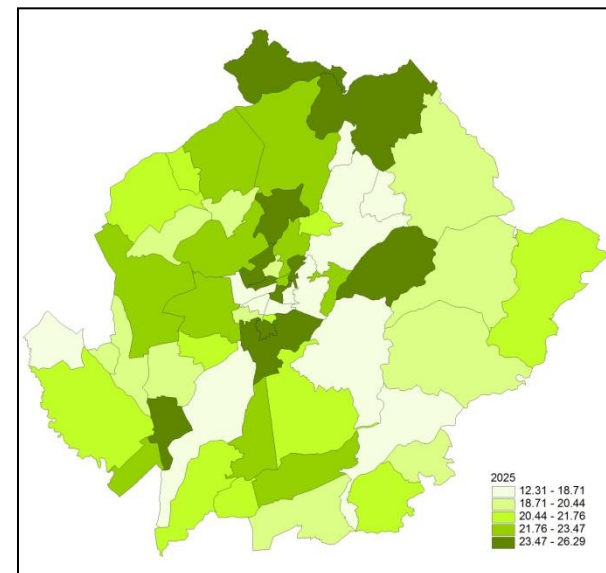
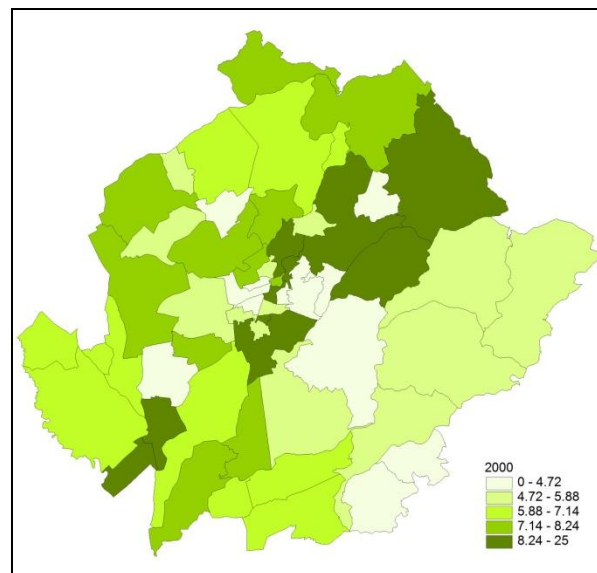
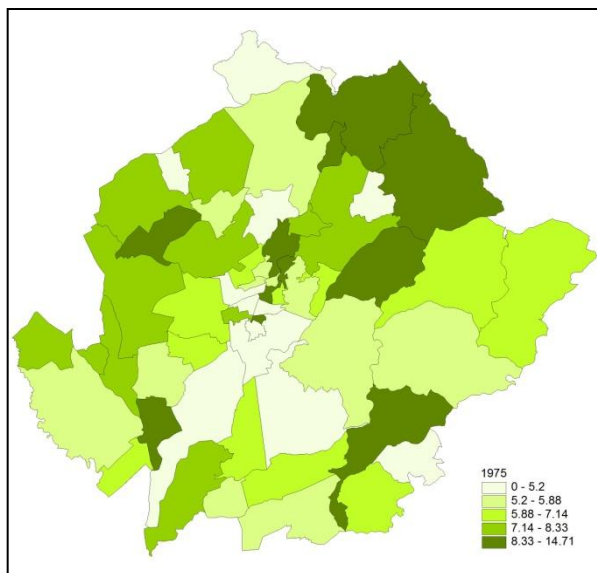
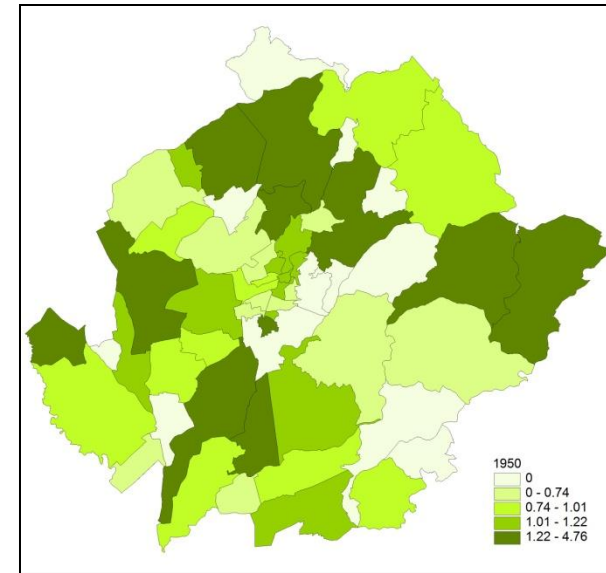
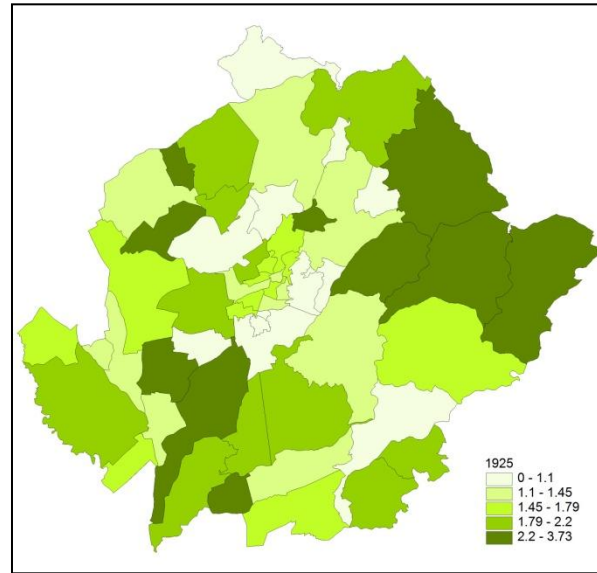
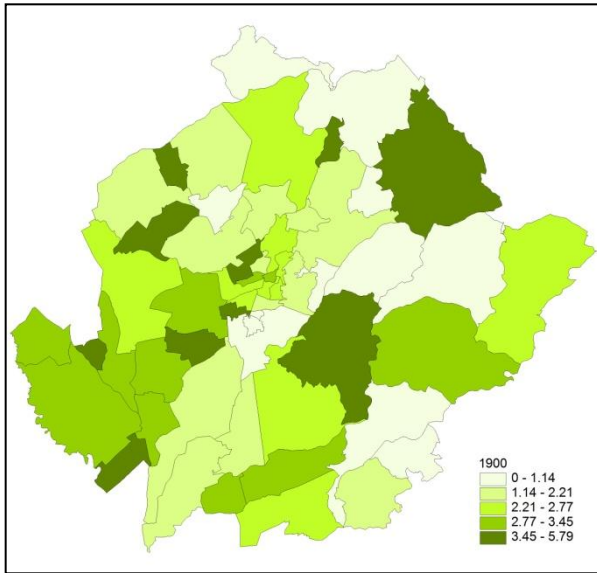


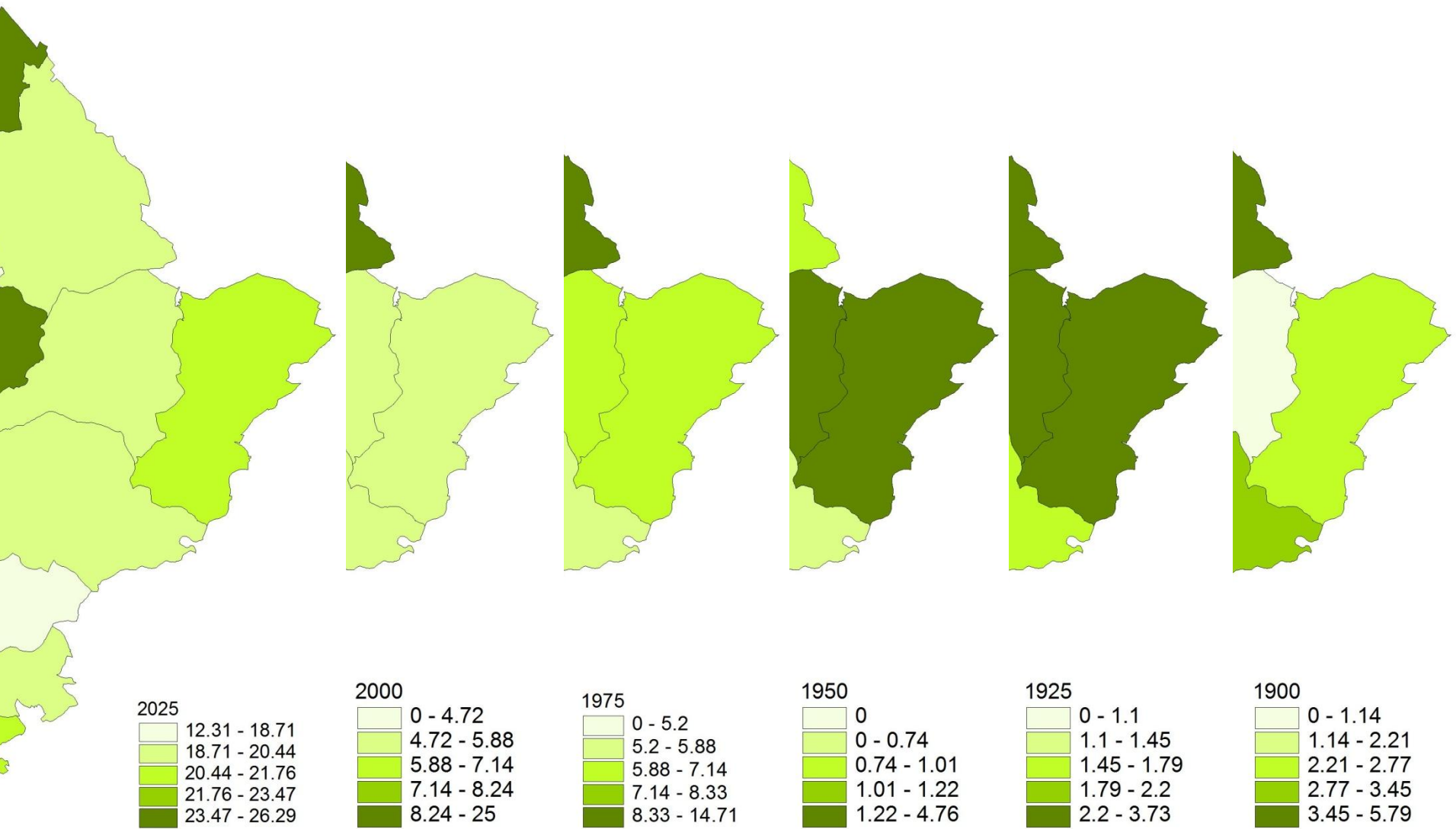
Počet pracovníků

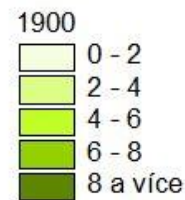
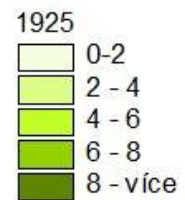
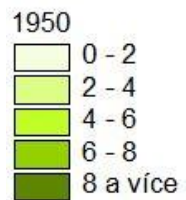
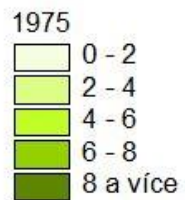
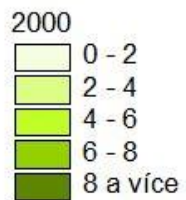
Number of employees

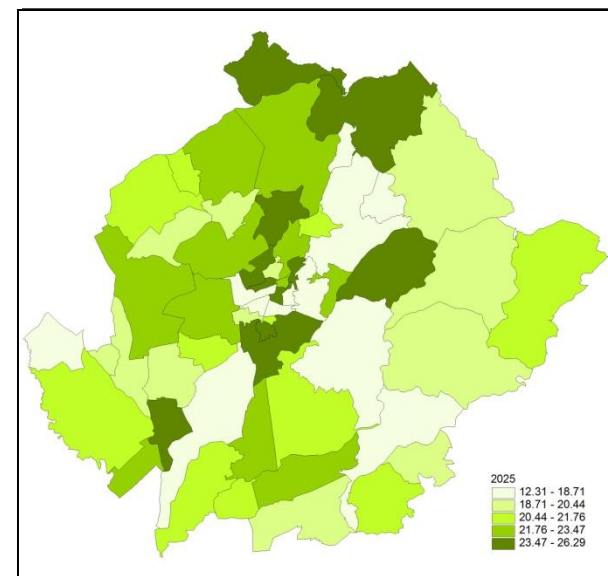
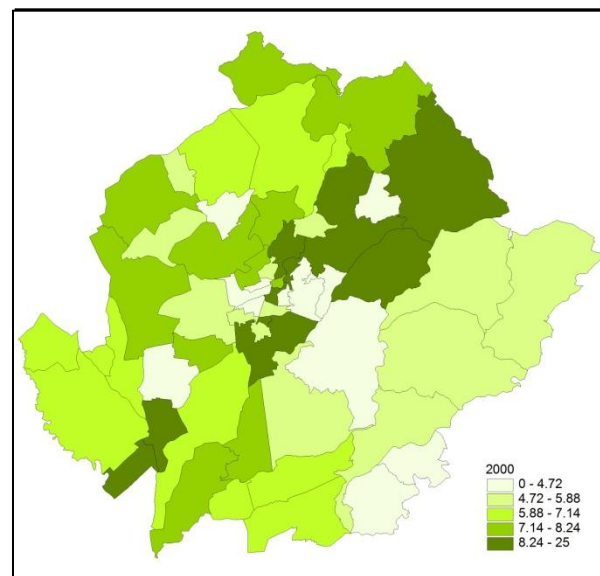
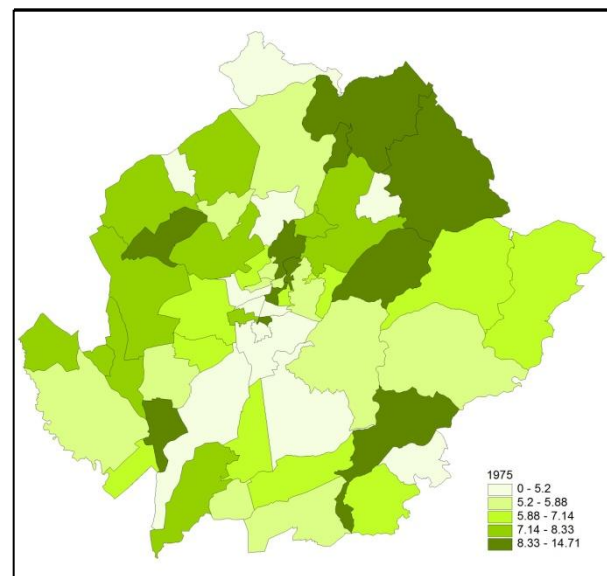
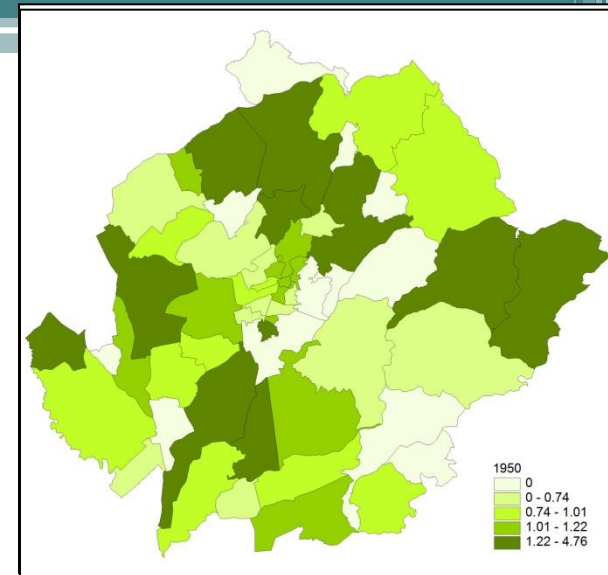
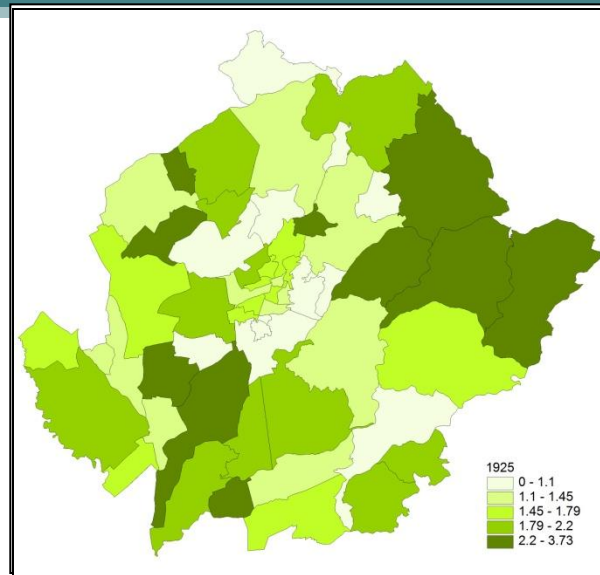
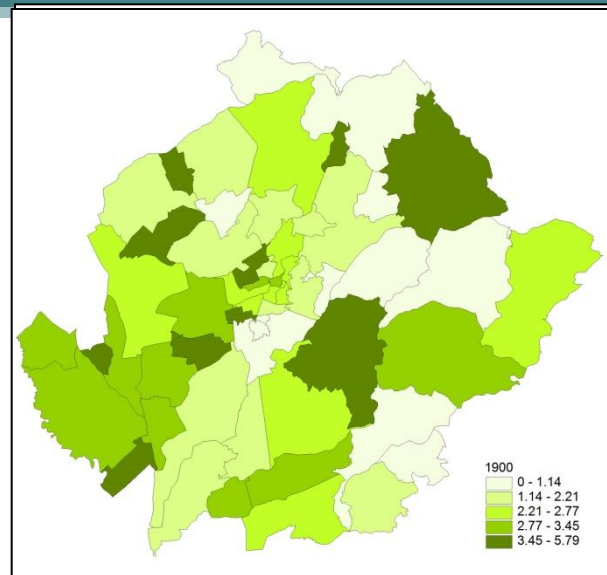


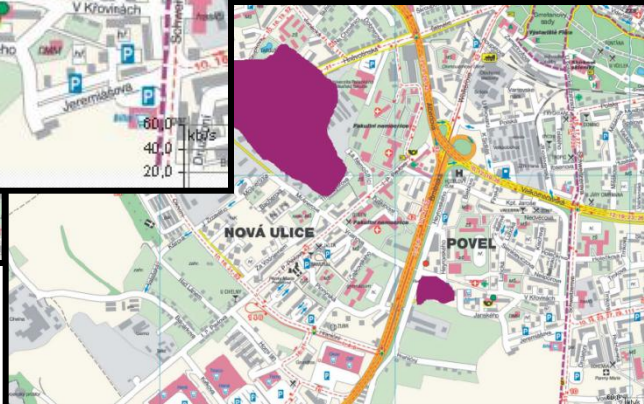
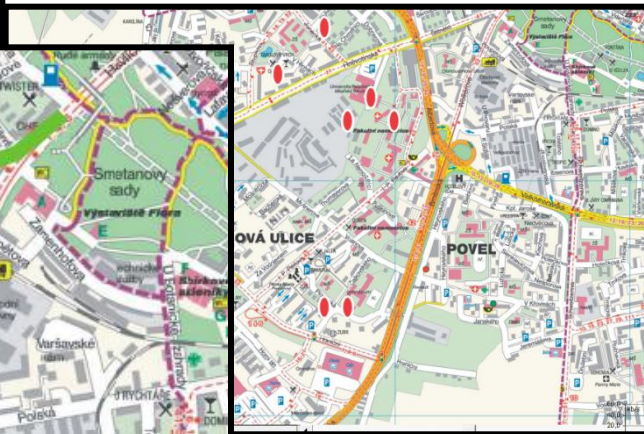
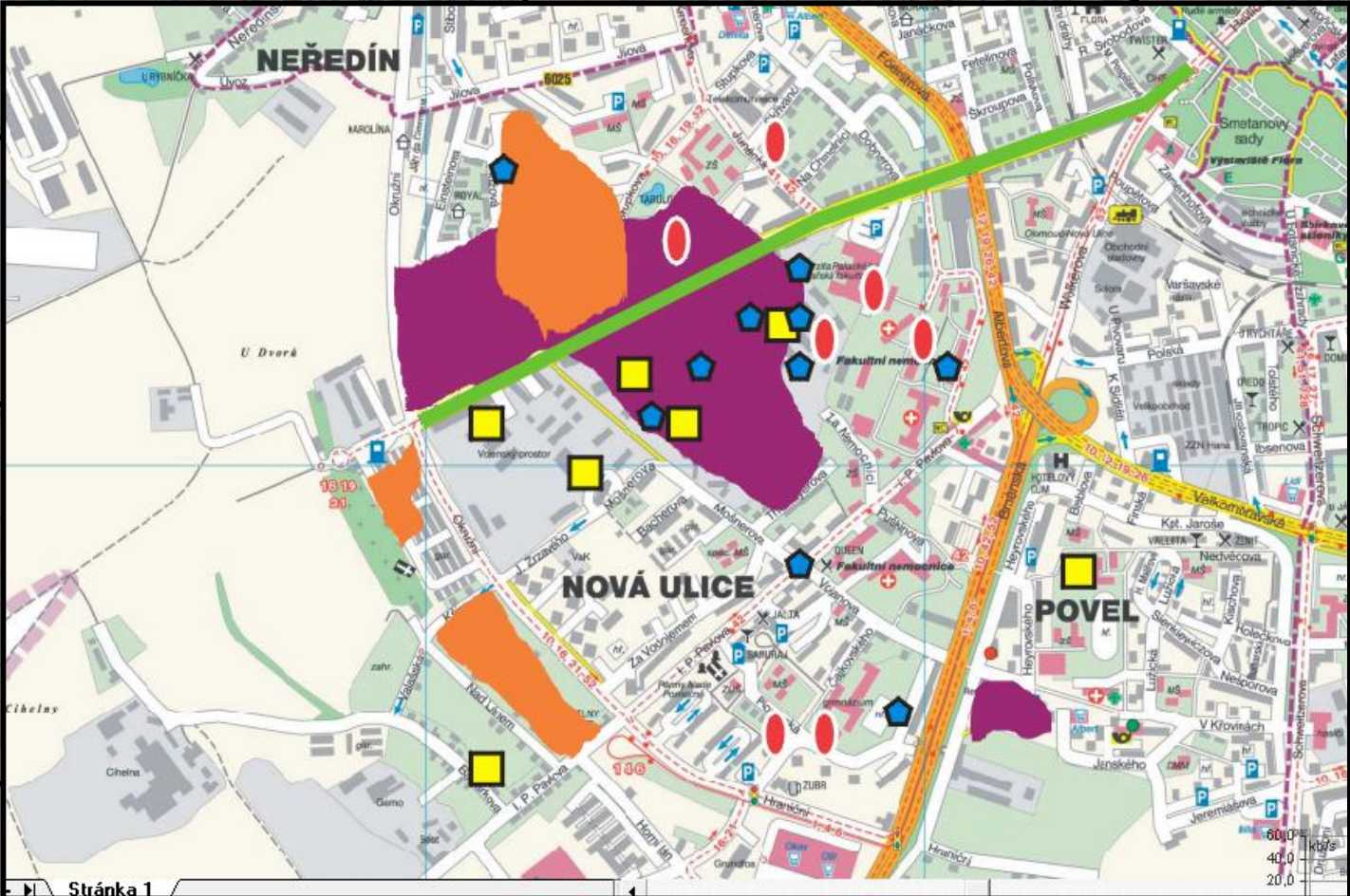
1 map, 2 maps, 3 maps, ... ATLAS!

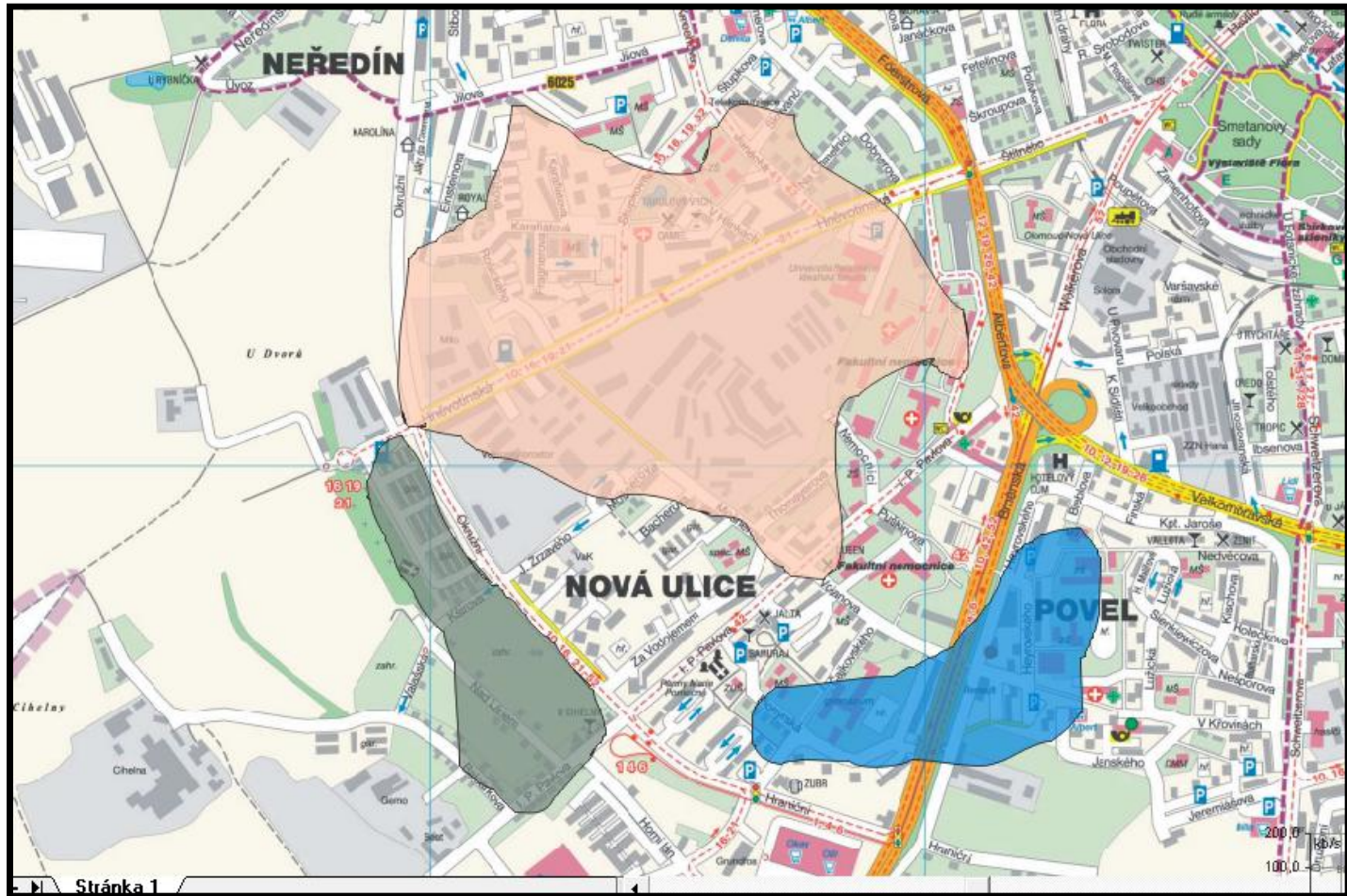












REALITY



MAPPING



SUMMARY OF PHENOMENA

Czech SDI

Coordination roles

- ministries: Min. of Environment, Min. of Interior
- scientific societies: CAGI and Nemoforum

Data providers

- The Czech Office for Surveying, Mapping and Cadastre
- Czech Statistical Office
- The Ministry of Agriculture
- Transport Research Centre
- River Basin Administrations etc.

Main users

- State and regional administration – for overall assessment and decision making process
- Universities and schools – for education and research
- Research institutes – for research
- Private sector – for their enterprise
- Citizens and NGOs – for the control of state and regional administration and free time activities

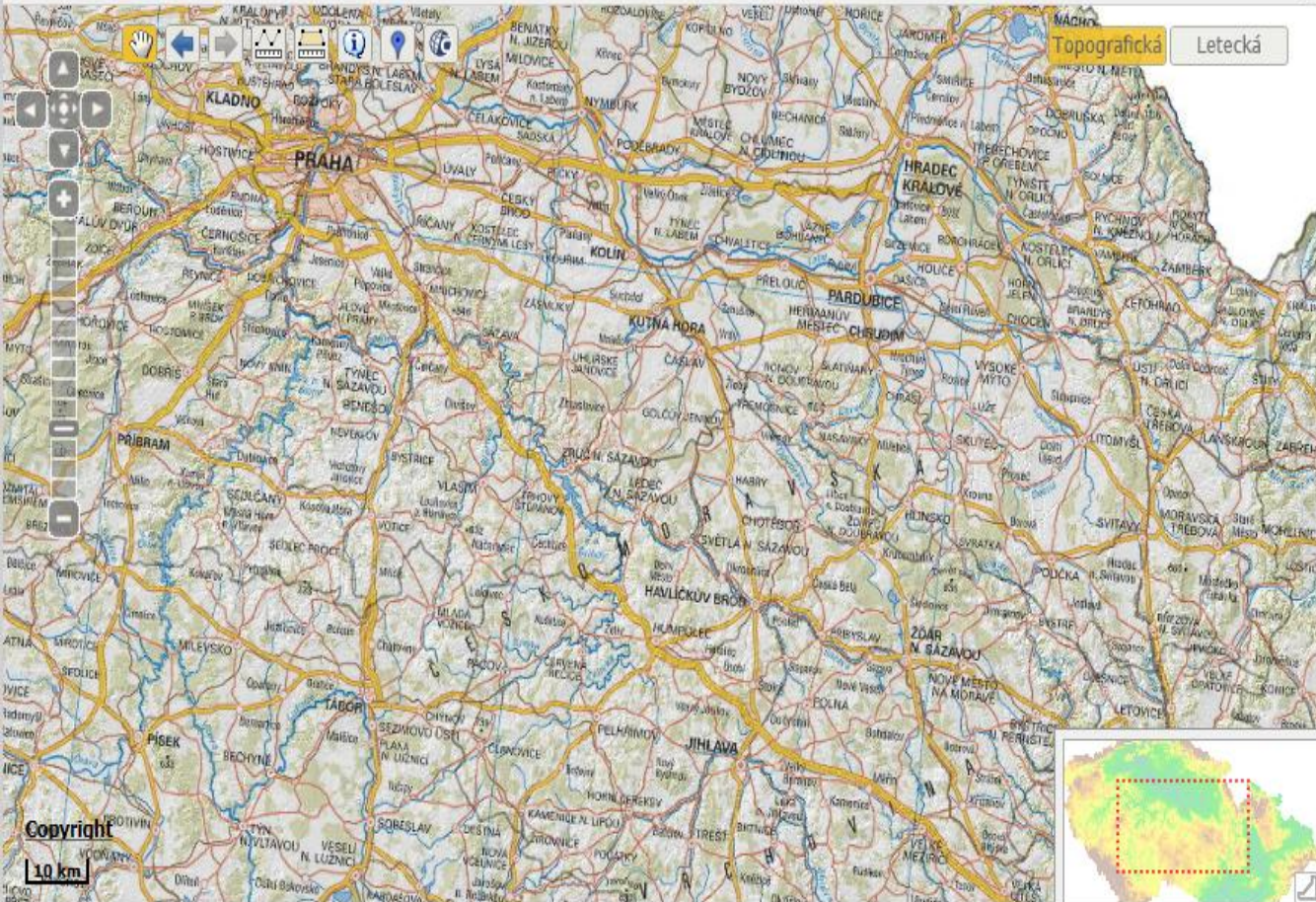


Adresy Metadata Dokumenty
Zadejte část adresy, název lokality Hledat

Email: _____ Heslo: _____ Přihlásit

Registrace | Zapomenuté heslo

Mapové kompozice: x = -578451, y = -1041910



Layers panel: Vrstvy, Info, Mapové kompozice, Veřejné

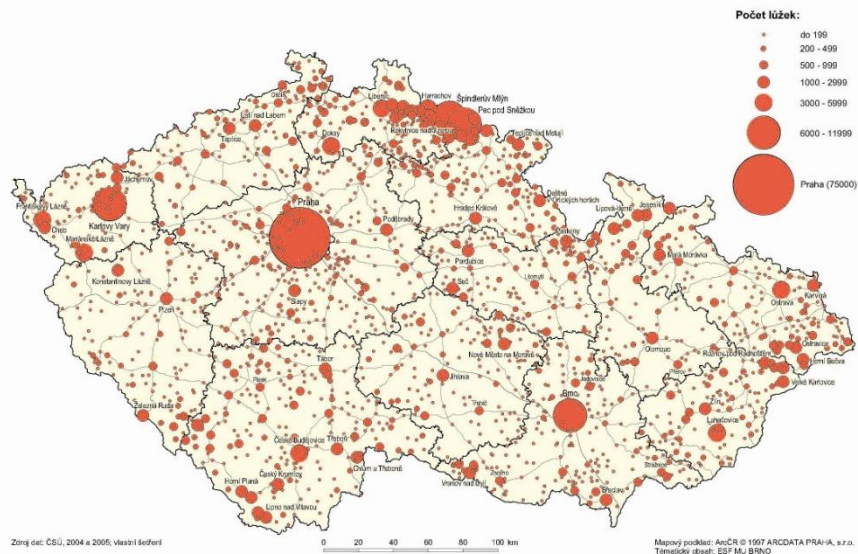
Tyto mapy byly vytvořeny ověřenými poskytovateli dat a správcem geoportálu.

Map style selection: Základní, INSPIRE

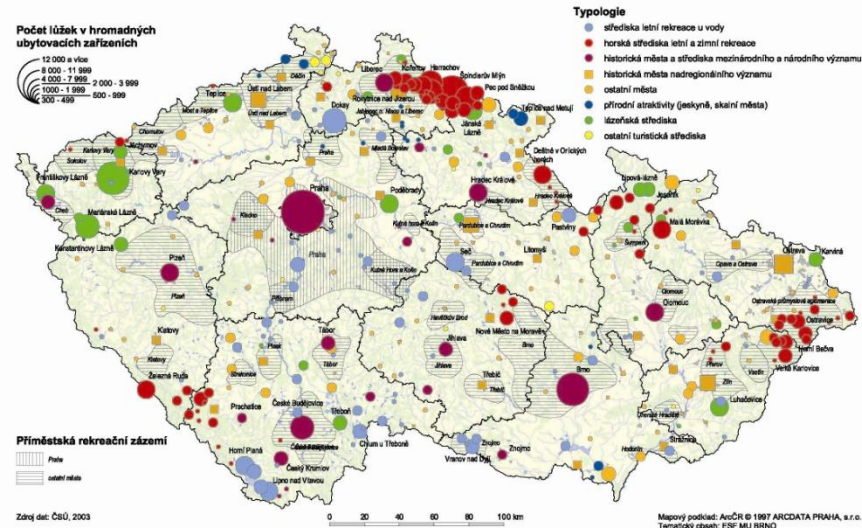
- Coordinate reference systems
Geographic coordinate systems
Geographic names
Administrative units
Addresses
Cadastral parcels
Transport network
Hydrography
Protected areas
Elevation above sea level
Land cover
Aerial photographs
Geology
Statistical units
Buildings

Připojit službu

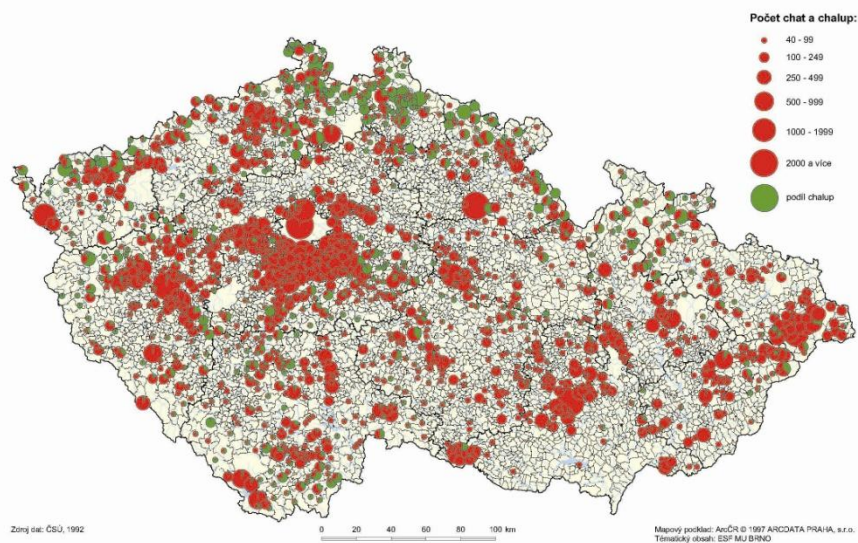
HROMADNÁ UBYTOVACÍ ZAŘÍZENÍ



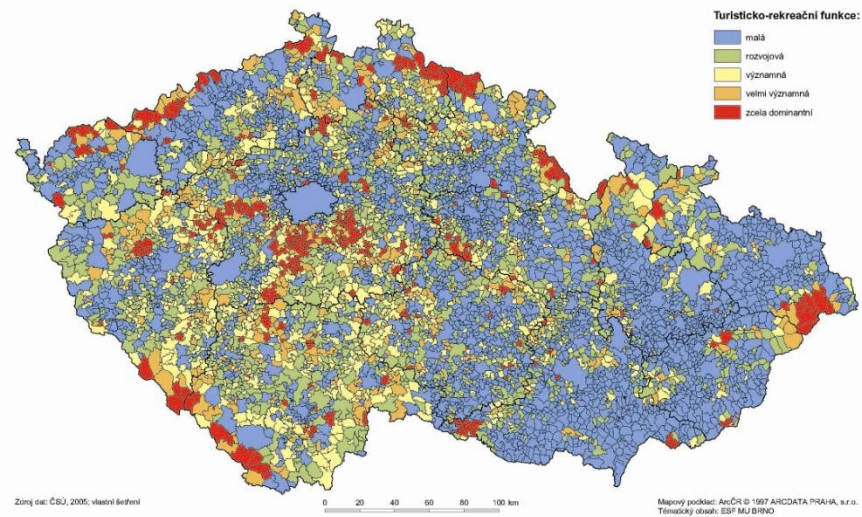
HLAVNÍ OBLASTI A CENTRA VÍKENDOVÉ A POBYTOVÉ REKREACE A CESTOVNÍHO RUCHU



DRUHÉ BYDLENÍ (CHATAŘENÍ A CHALUPAŘENÍ)



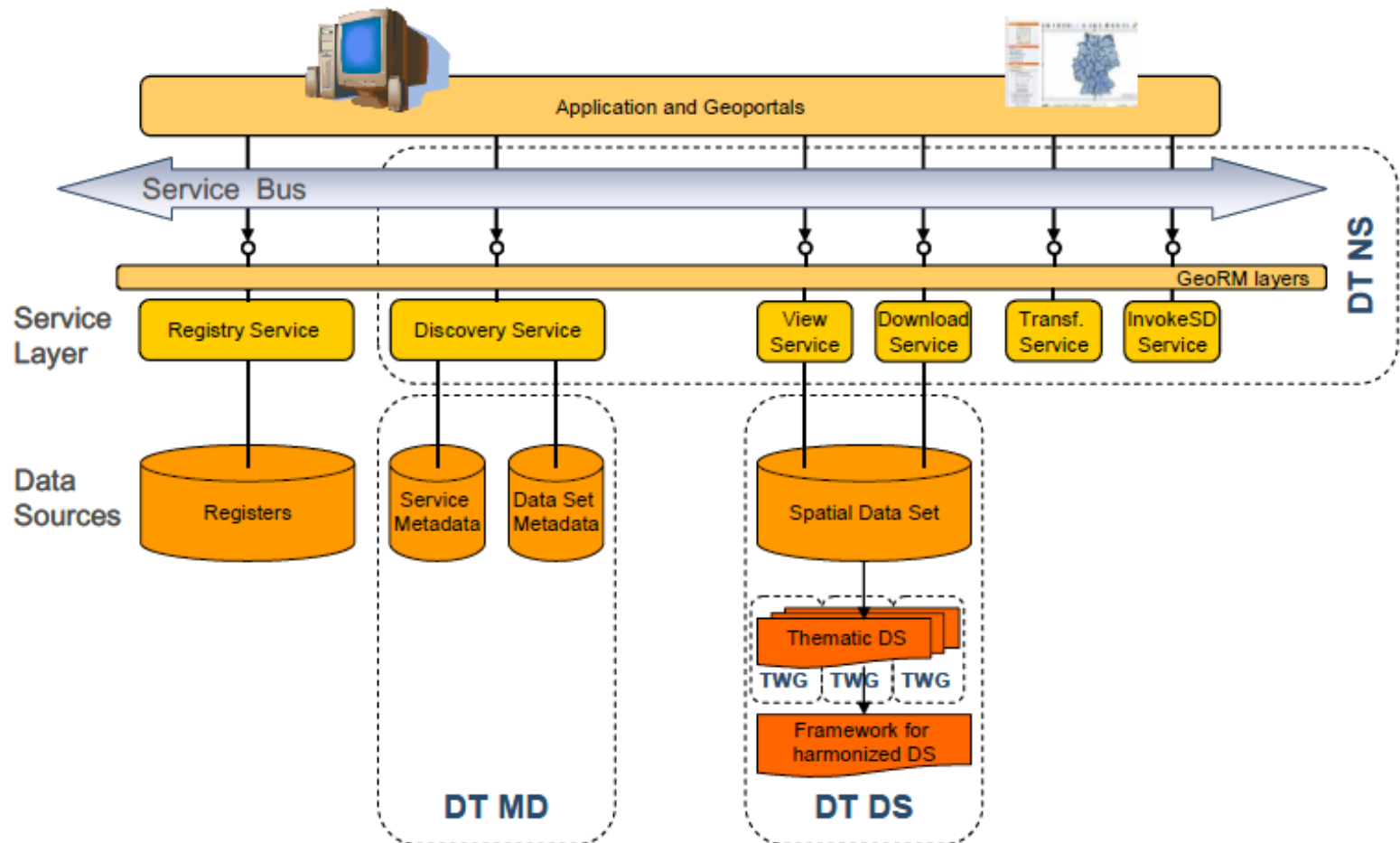
TURISTICKO-REKREAČNÍ FUNKCE OBCÍ



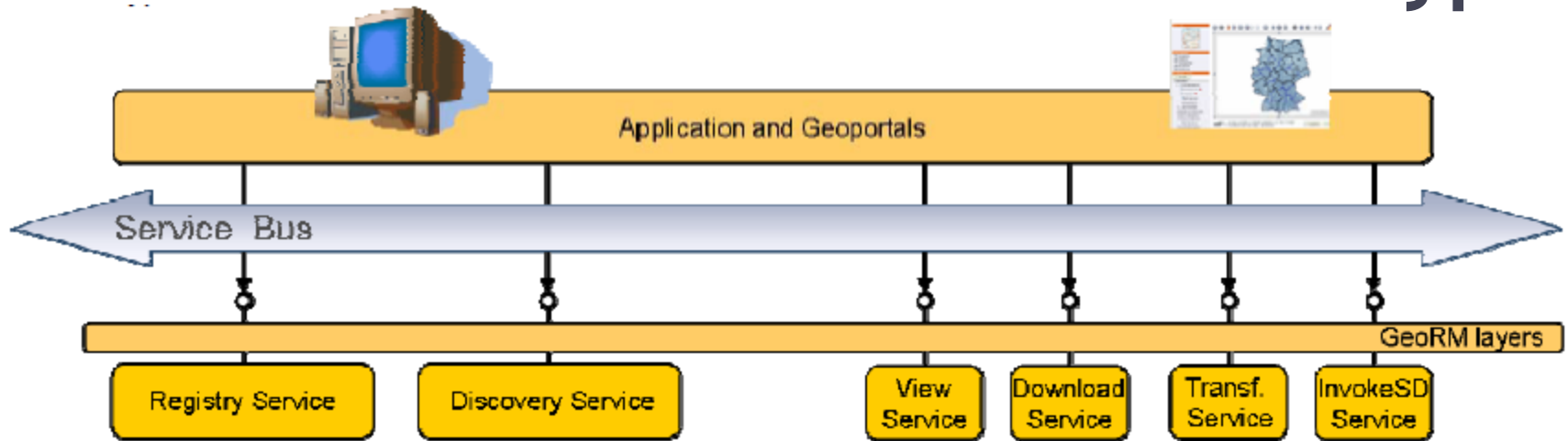
SDI as a principal platform for geovisualisation

- final SDI provides complex and well-organized source of information for geovisualisation
- to design and compile maps and atlases from SDI can be easy and very efficient
- technological issues of SDI-based geovisualisation can gain the latest development of web technologies
- mutual improvement of SDI and geovisualisation supports developments of both fields
- vast data sources of spatial and attribute data being managed by SDI – geovisualisation is the best way of expressing information for various purposes

INSPIRE technical architecture overview



INSPIRE service types



Register services - provides access to resources

Discovery services - to search for spatial data and services on the basis of the content of the corresponding metadata and to display the content of metadata

View services - to display, navigate, zoom in and out, pan, overlay viewable spatial data sets and to display legend information and any relevant content of metadata

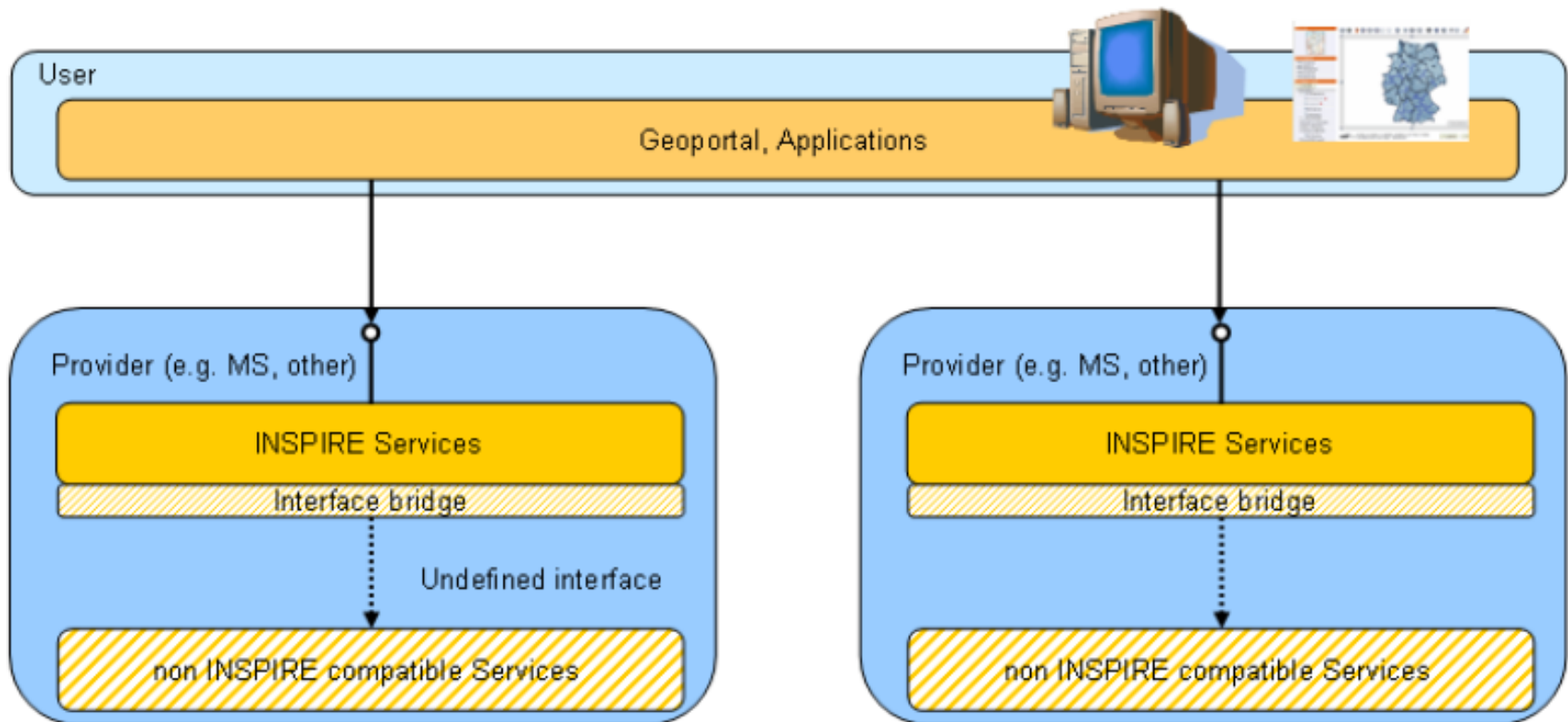
Download services - download, copy, provide access, gazetteering

Transformation services - enabling spatial data sets to be transformed with a view to achieving interoperability

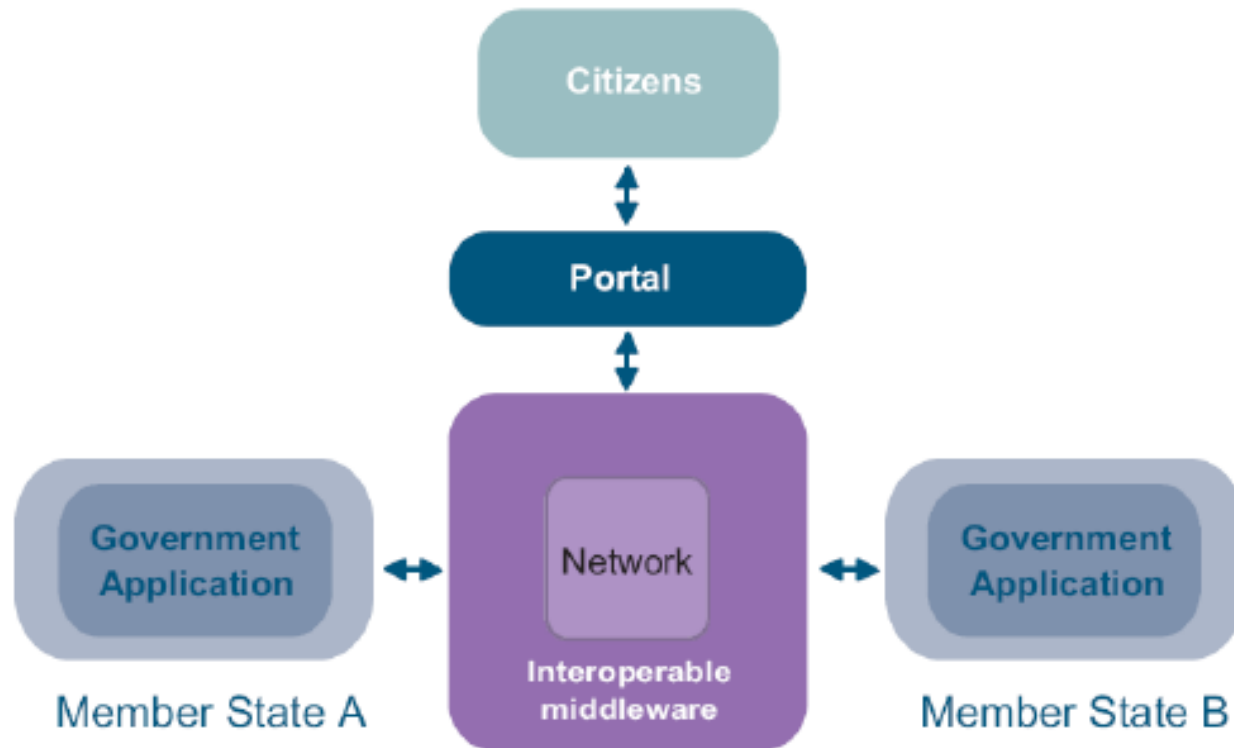
Invoke spatial data services - allows defining both data input and data outputs expected by the spatial service and define a workflow or service chain combining multiple services; allows defining the external web service interface of the workflow or service chain

Network Service Definition

as a mediator between member states INSPIRE and non INSPIRE services and EU level users



Interaction through the portal



Conclusions

- almost all statistical data are located to some specific territory
- cartography has long tradition, however conveying statistical data is dominantly by tables and graphs
- geovisualisation of statistical data has to be designed and compiled by two professional groups – thematic and cartographic
- well-structured and operated SDI may play role as ambiguous geovisualisation

Thank you for attention.

prof. dr. Vít Voženílek

Palacky University, Olomouc, Czech Republic

vit.vozenilek@upol.cz