Саветовање
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Сесија: Пописни подаци у служби науке и најшире друштвене заједнице

Population dynamics and spatial processes

– examples of recent scientific researches and spatial planning practice -

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Content

- Statistical data about population dynamics
- Integration of spatial and statistical data
- Importance for scientific research and for spatial/urban planning
- Key studies and examples

Population dynamics

- Changes of structures of population (number, age, sex, education, income etc.), which can be followed by Census data, are of crucial importance for understanding of spatial processes.
- Based on work of many scholars from unique school of human/urban geographers of former Yugoslavia, continued later in Serbia, specific theoretical-methodological framework was developed.
- This framework was accepted and successfully implemented by spatial/urban planers in Serbia.
- Many of these studies, exploring spatial and functional relationships in settlement`s network were done as valuable contribution to spatial/urban planning practice.

Spatial aspects of population dynamics

- Within cooperation of researchers and scholars from the Institute of Architecture and Urban&Spatial planning of Serbia (IAUS), the Faculty of Geography, University of Belgrade, and later with Institute of Geodesy, Faculty of Civil Engineering new approaches to exploration of spatial aspects of population processes were developed, based on implementation of GIS tools, models and methods.
- Many studies has been conducted on exploring correlations and connections between spatial and population development.
- These researches led to introduction of dasymetric modelling of spatial distribution instead of choroplet mapping.

GIS modelling

- Census data about population were combined together with spatial data to model spatial distribution, and more important, to visualise spatial processes.
- Population change/change index, migration, daily commuting, structure of employees by economic sector etc. are commonly used data.
- This statistical data are combined with following spatial data – digital elevation model/surface, road network, hierarchy of urban centers, land use, build up areas etc.

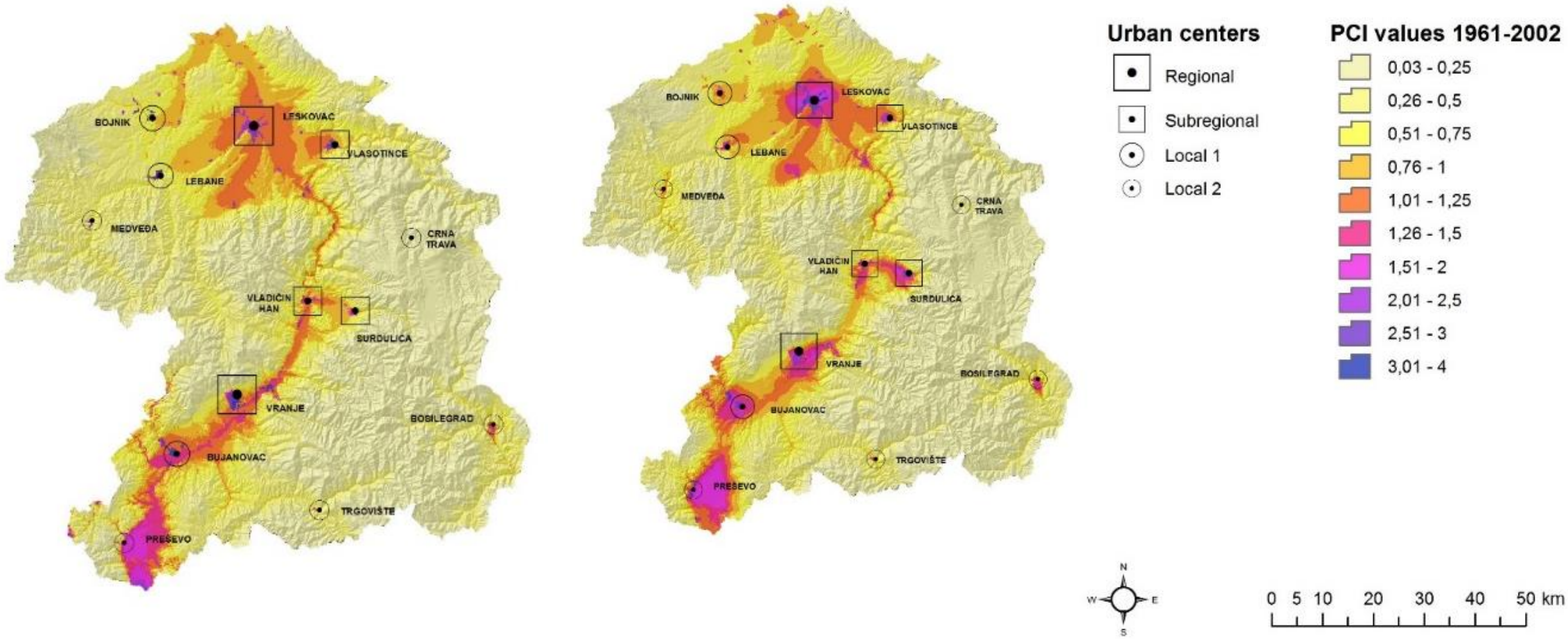
Key studies and research examples

- Researching spatial/functional structure of territories and dasymetric mapping produce new maps further used to become answers on following questions:
- How many people/consumer of space are on certain territories, and how many will be there in future?
- How population dynamics influence the spatial processes – where concentration/deconcentration zones are and where there will be in the future?
- How many people are/will be influenced by proposed spatial changes (environmental, hazardous, by planning regimes/constraints etc.)

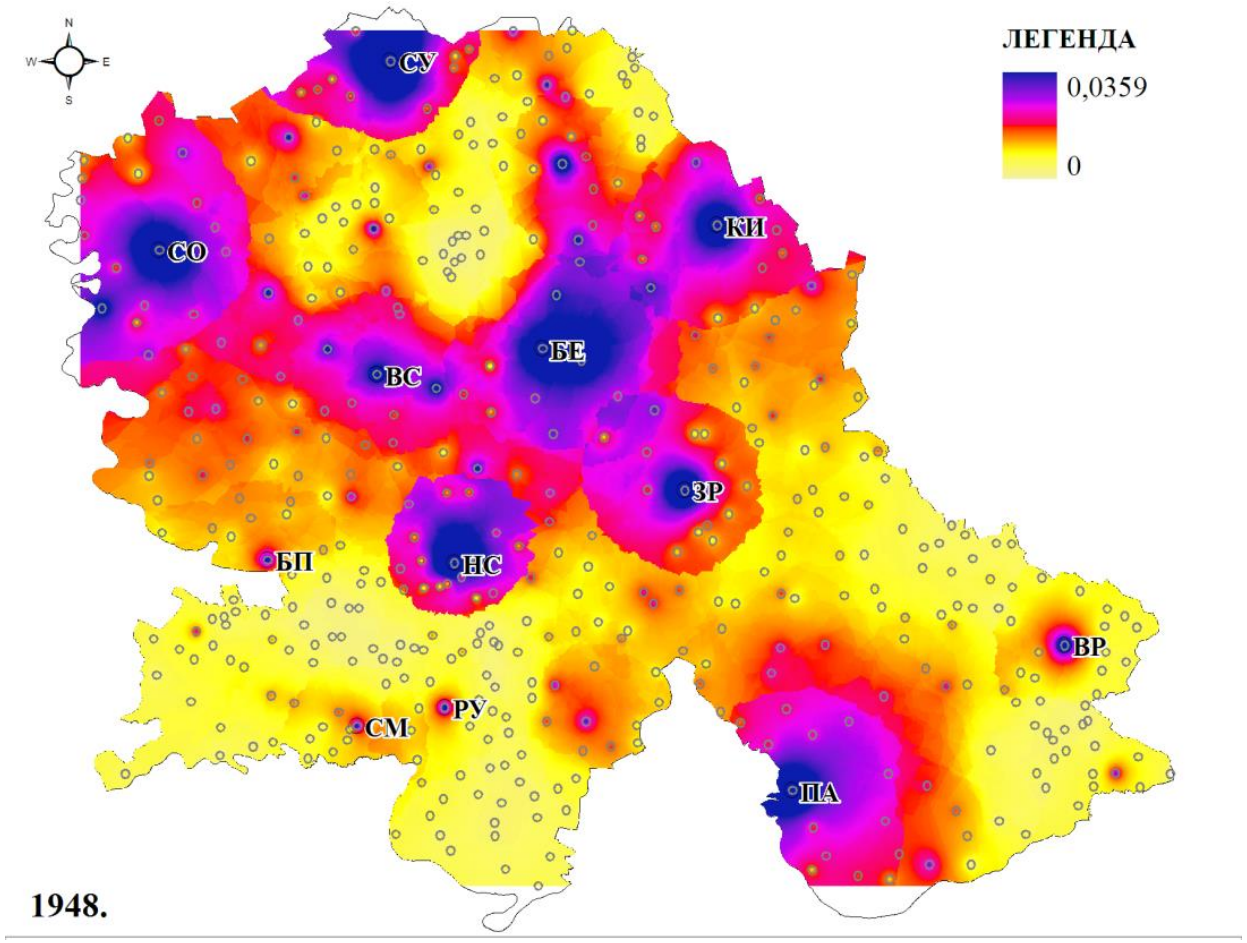
Mapping Population dynamics by geostatistical methods – spatial factors of population distribution

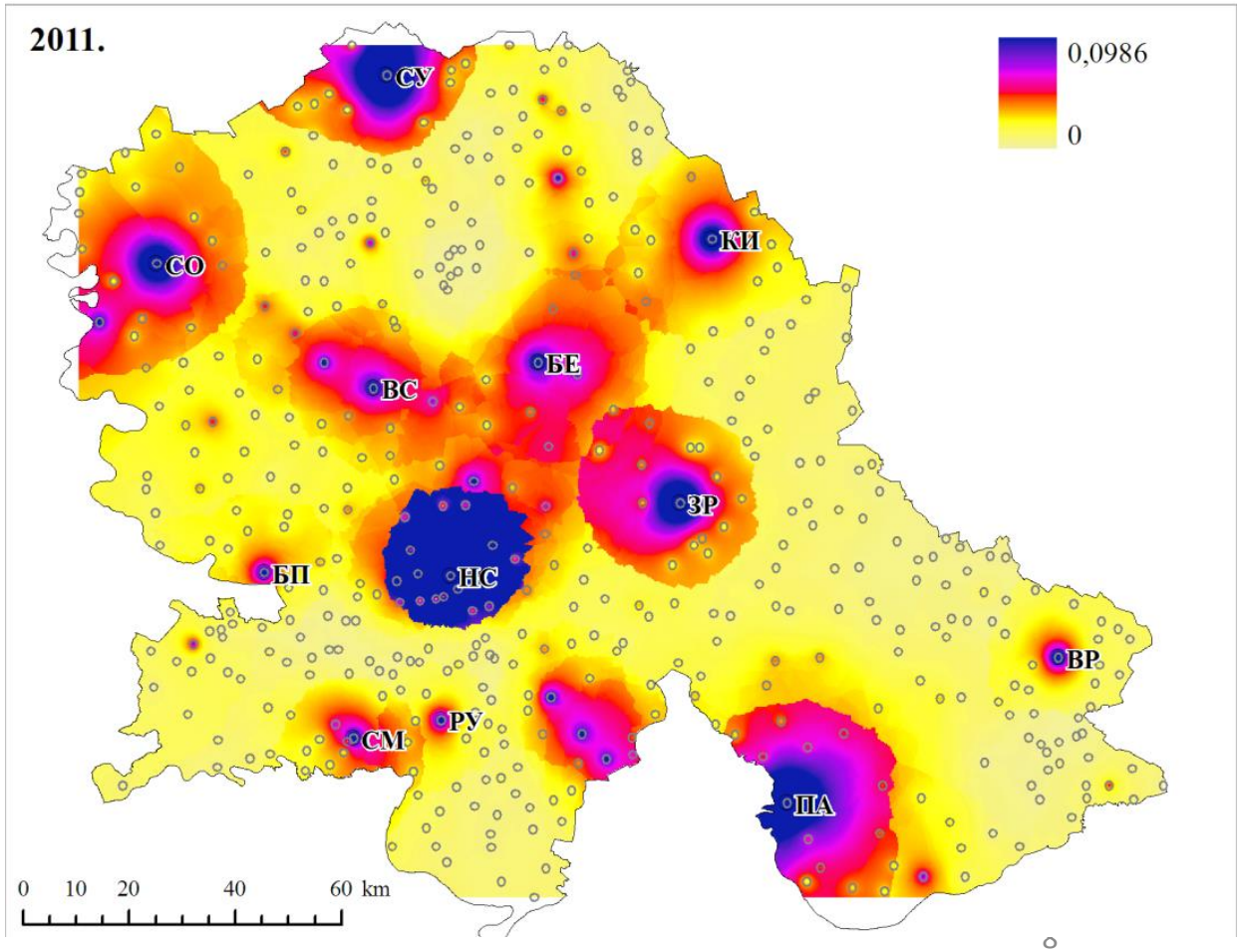
GEOGRAPHICALLY WEIGHTED REGRESSION

REGRESSION KRIGING

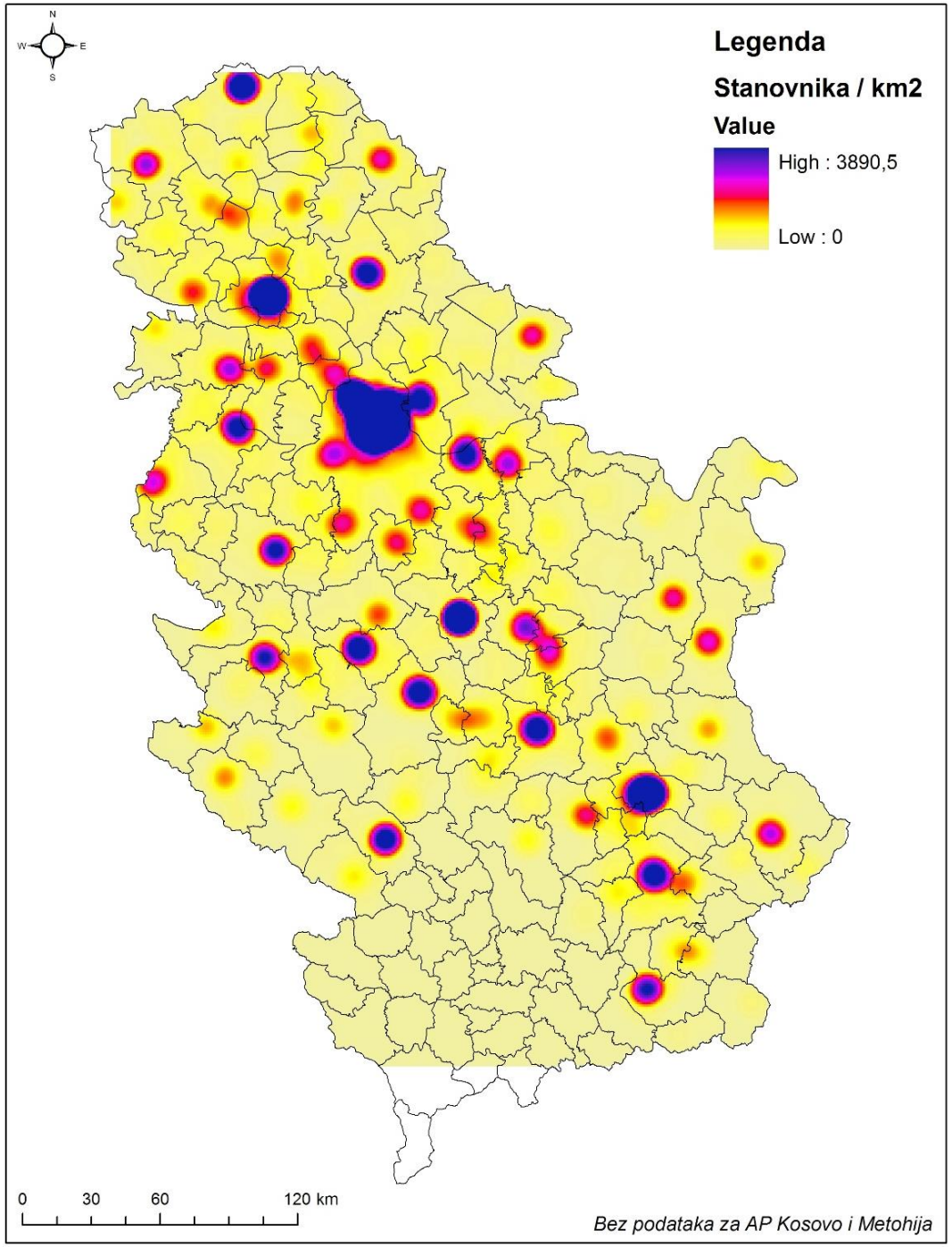


Mapping Population dynamics by geostatistical methods – spatial factors of population distribution

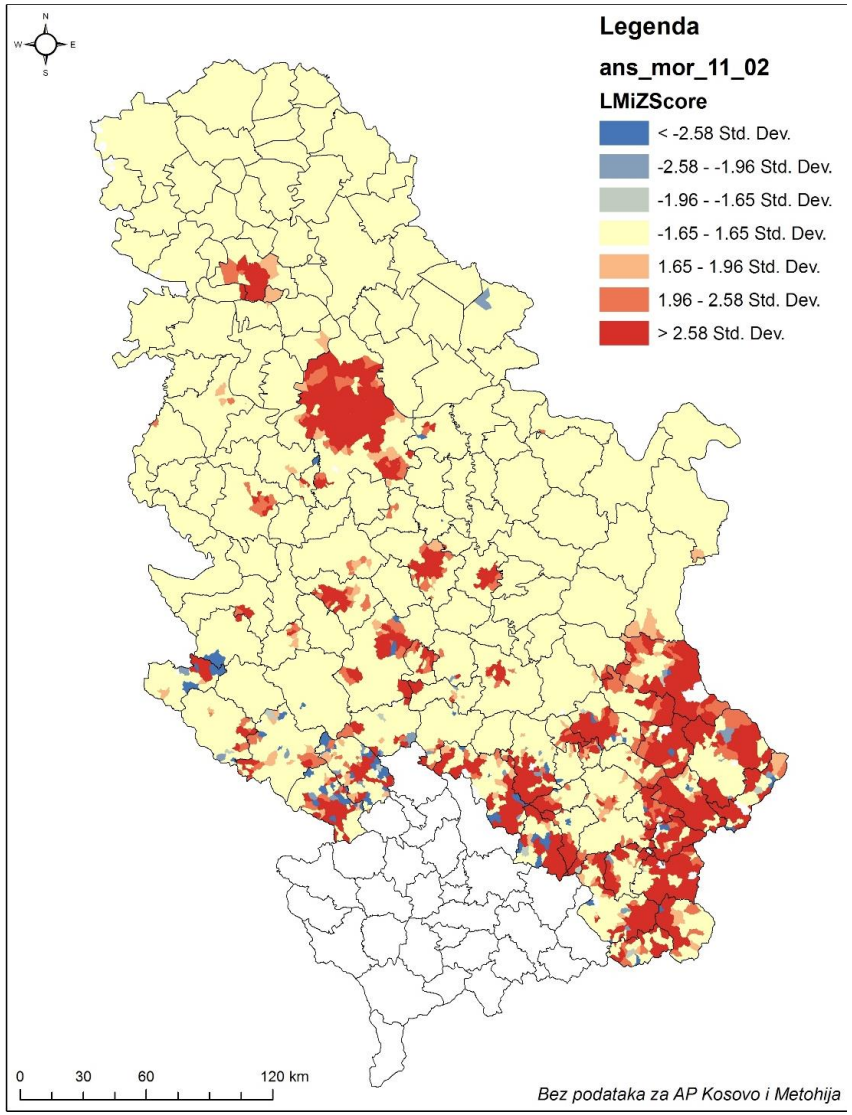


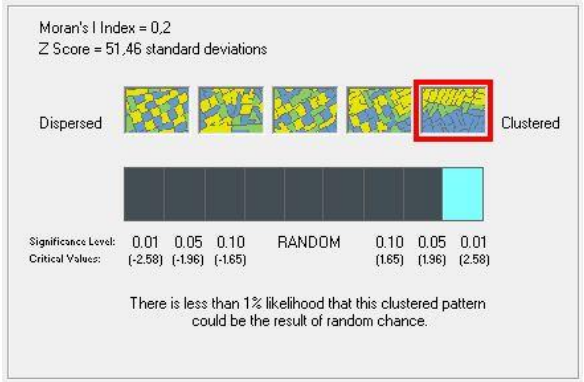


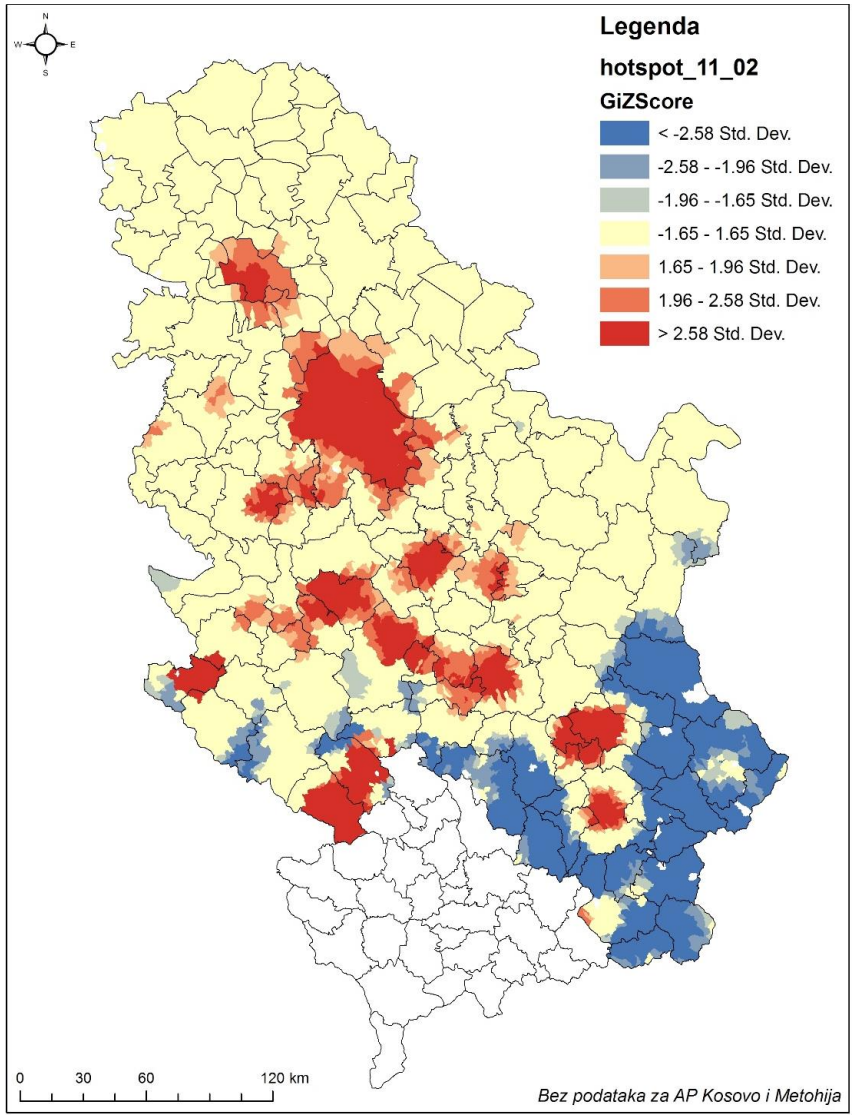
Determination of population concentration zones – Kernel Density (point)



Spatial determination of demographic processes – Spatial autocorrelation and cluster analysis (Moran`s I, Local Moran`s I, HotSpot, Getis-Ord GI*)







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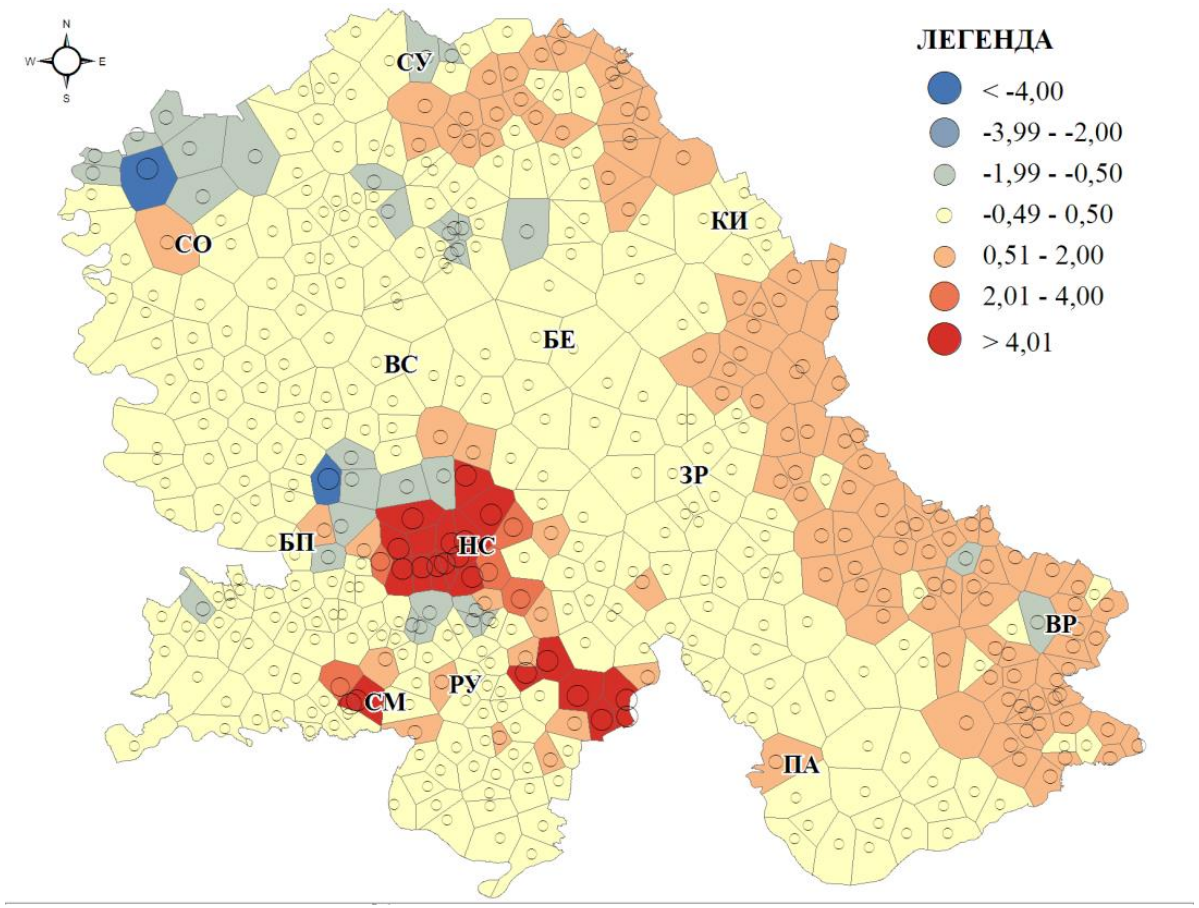
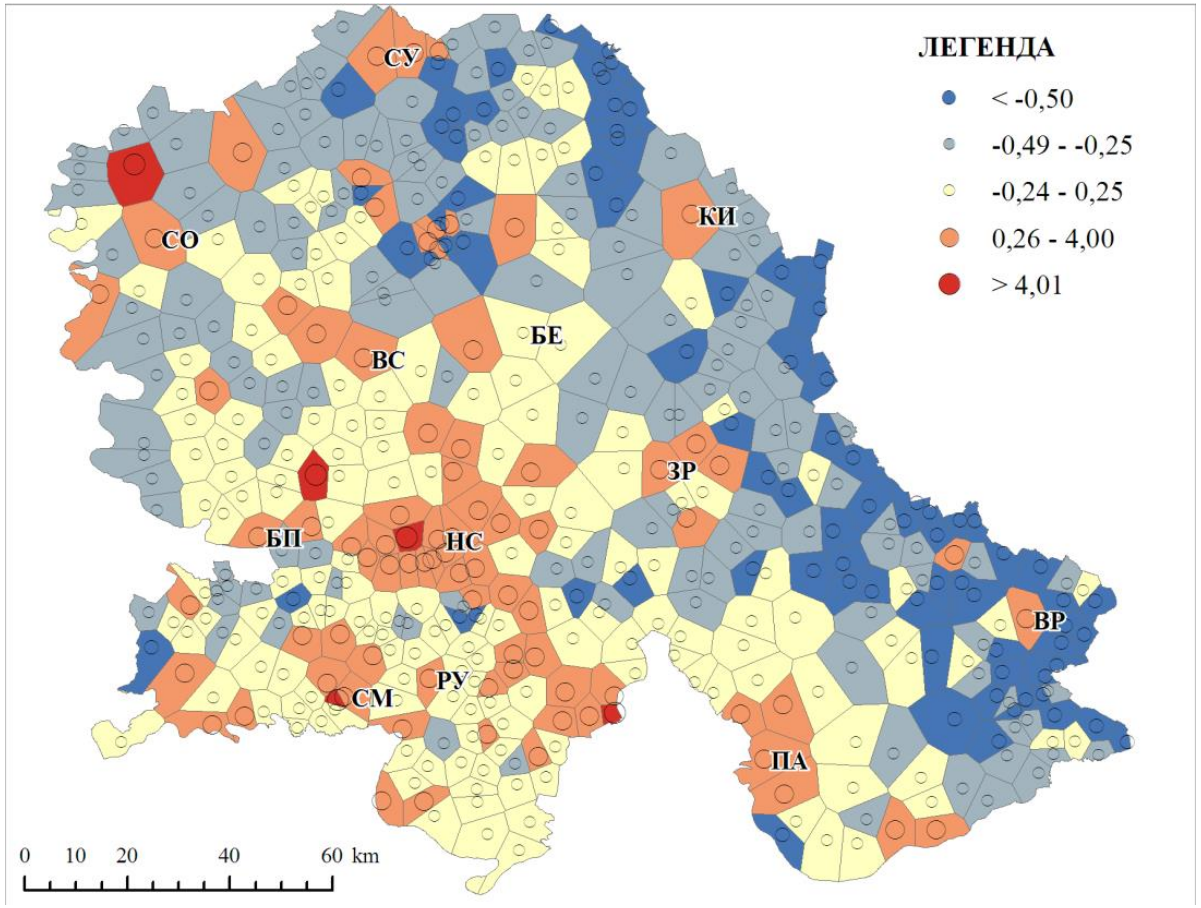
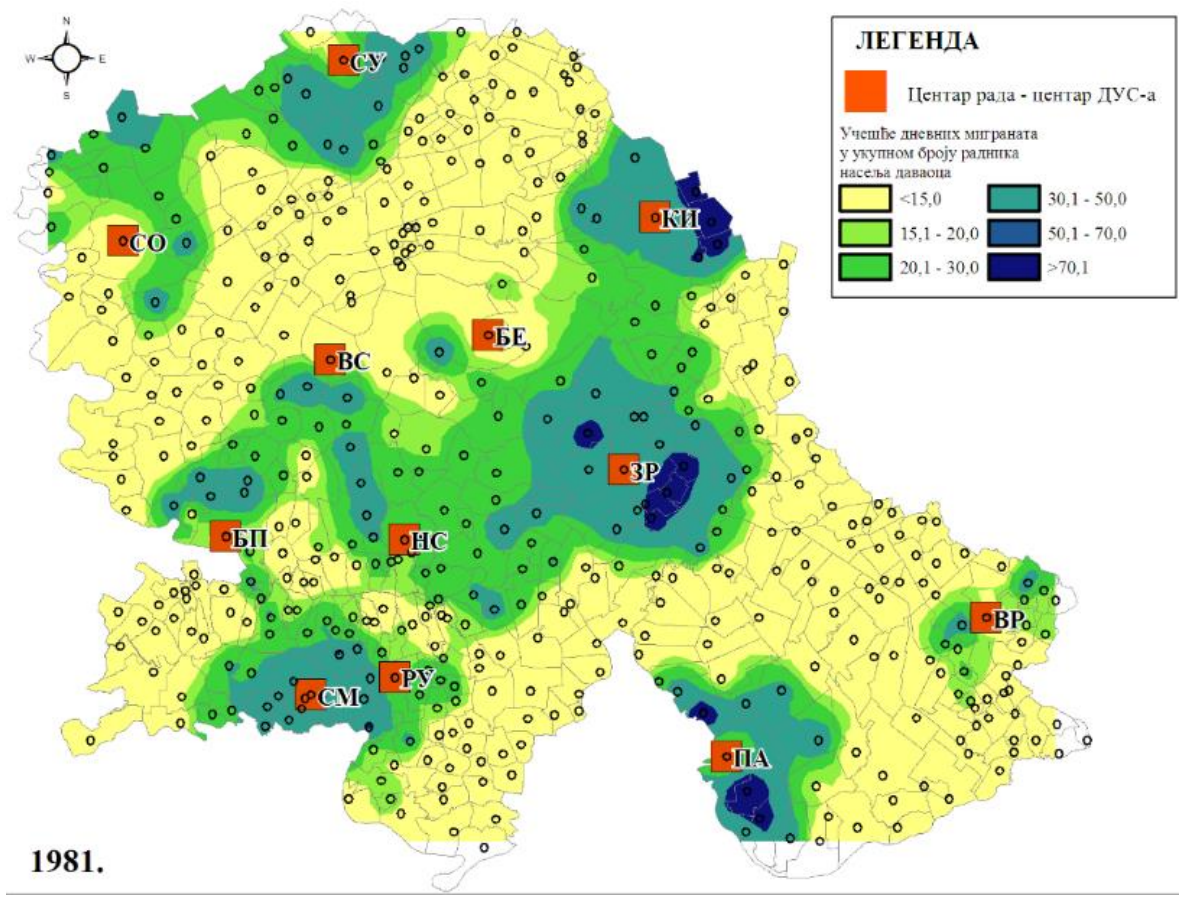
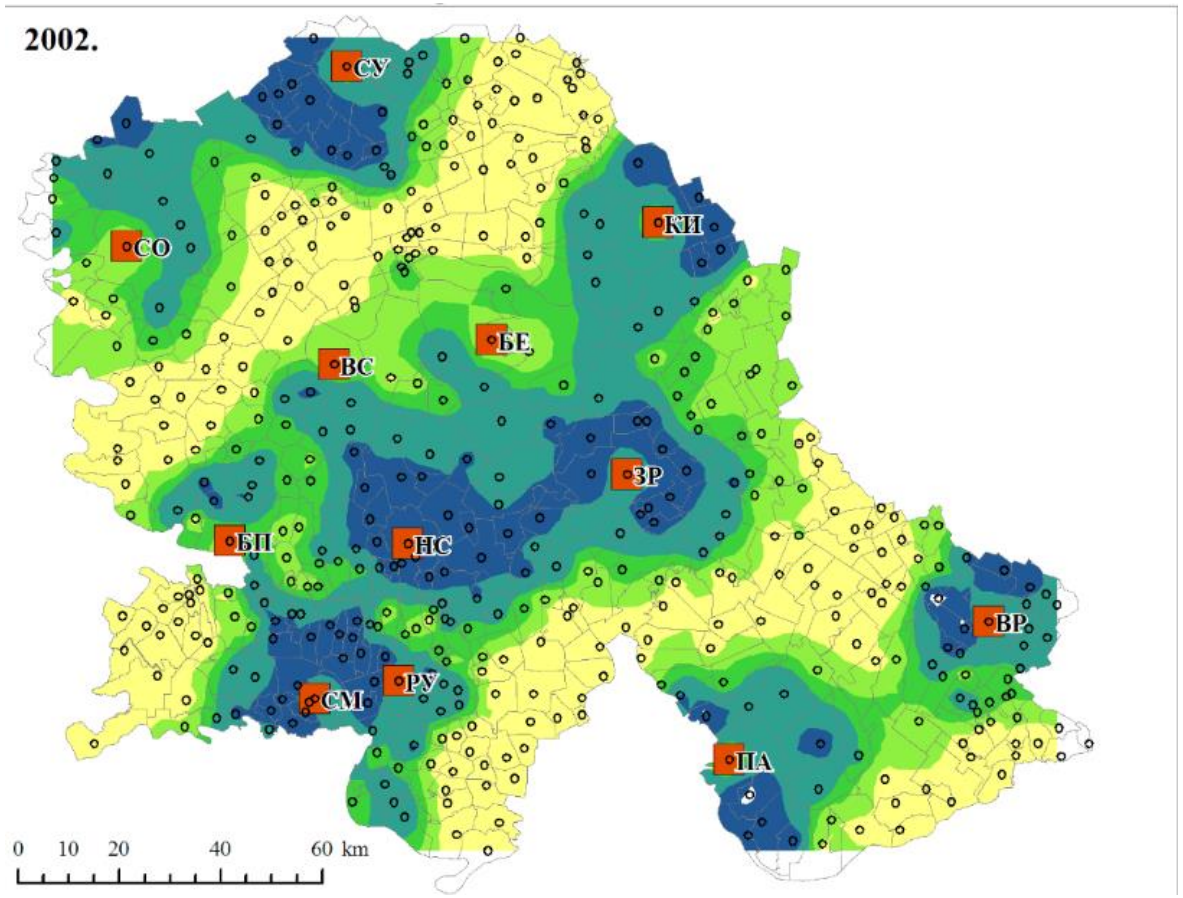


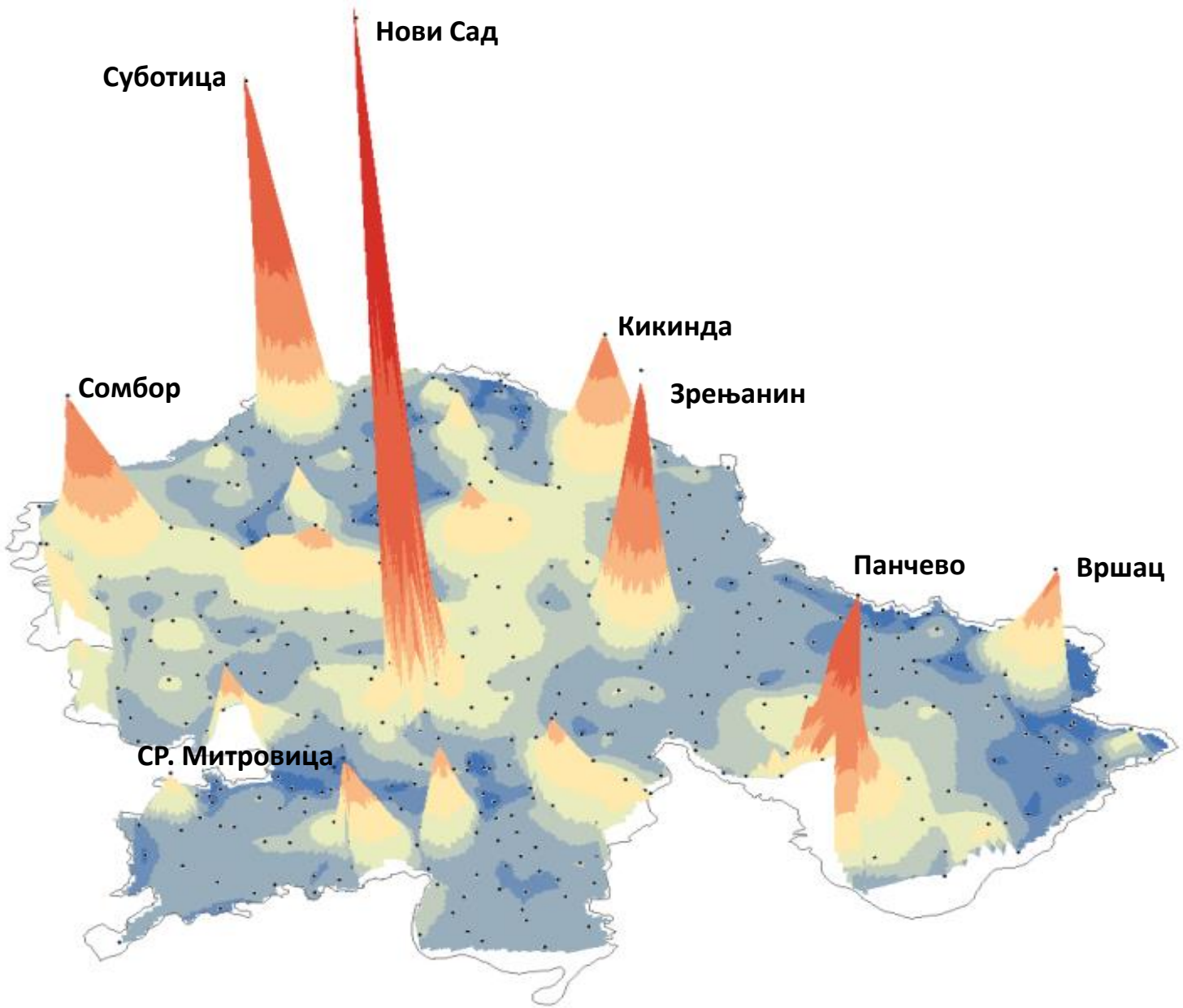


Spatial determination of demographic processes – Mapping daily urban system - commuting

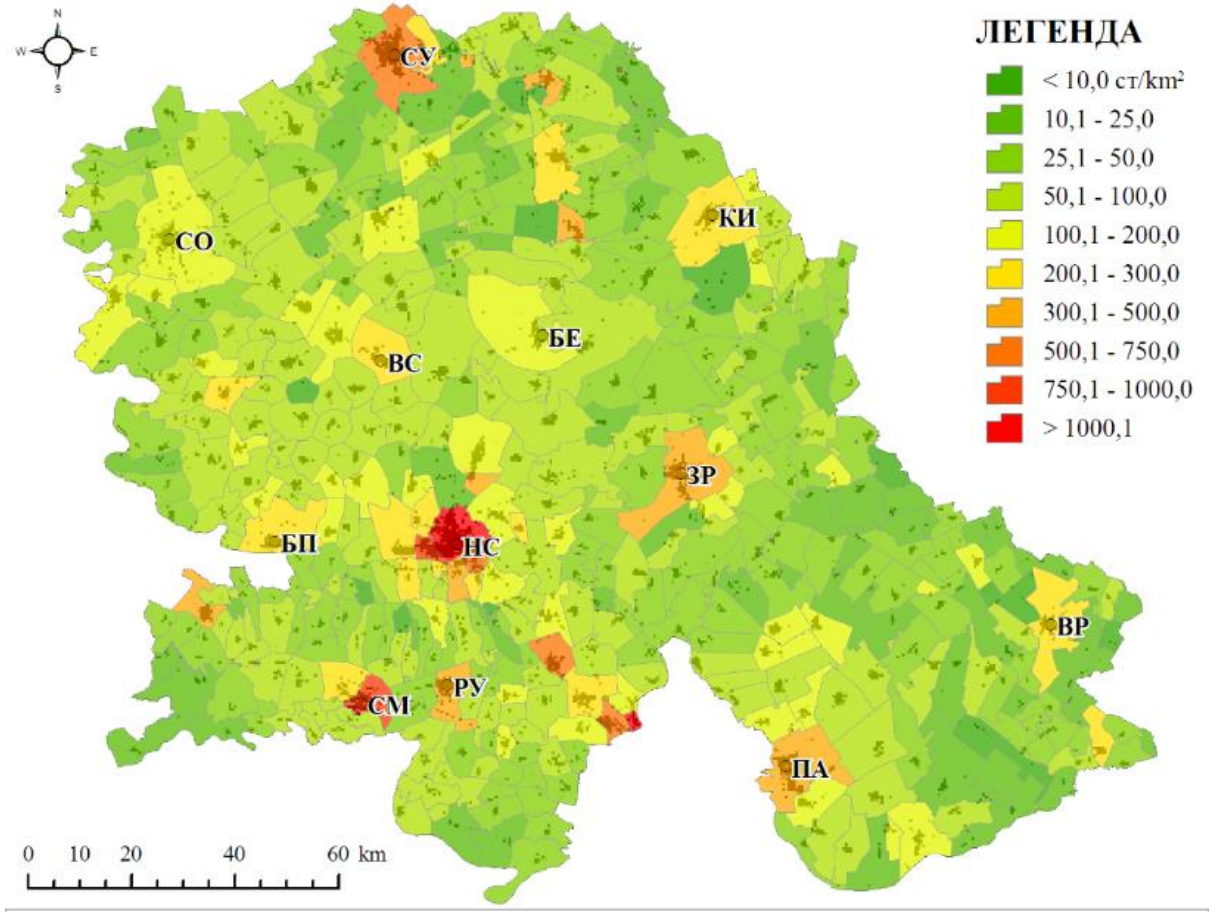


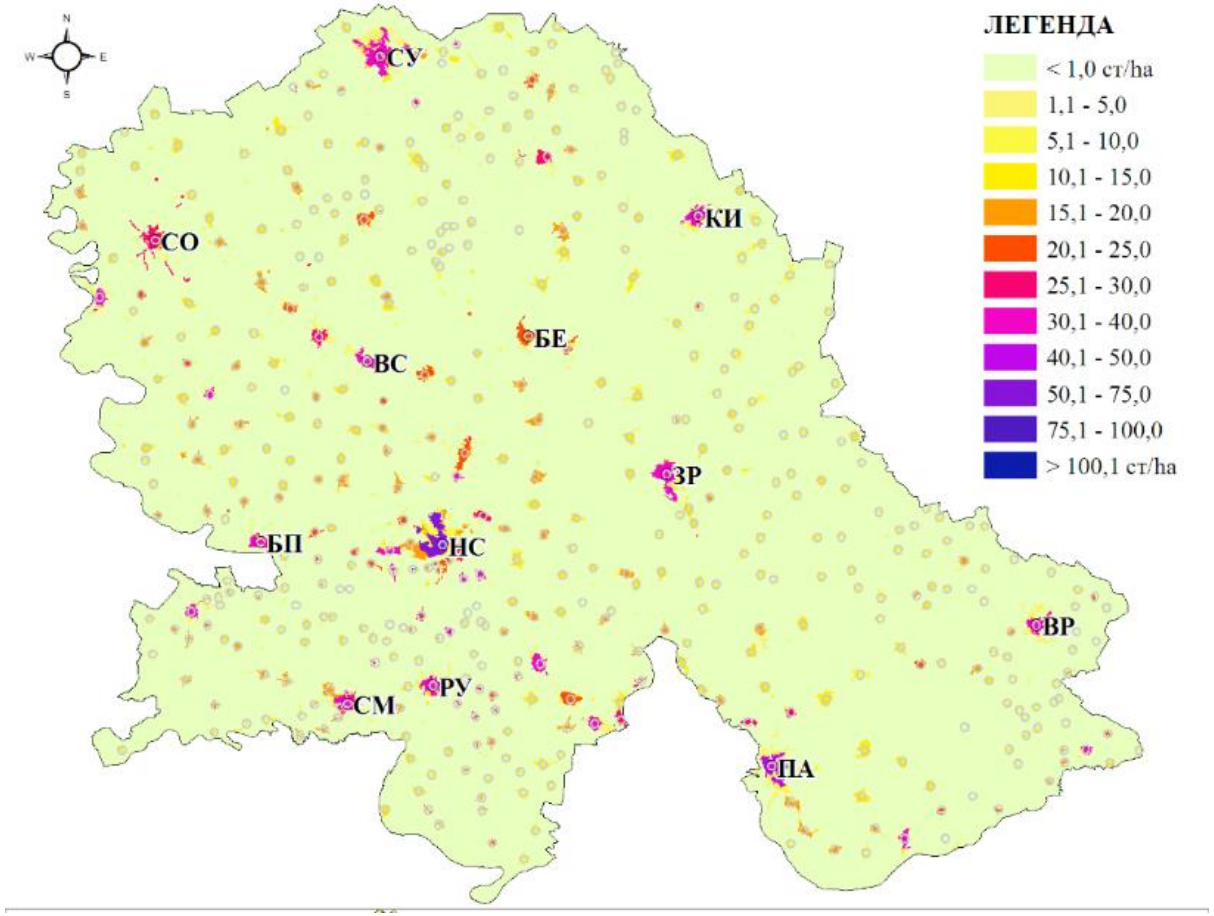


Modelling population concentration in 3D – Demographic relief

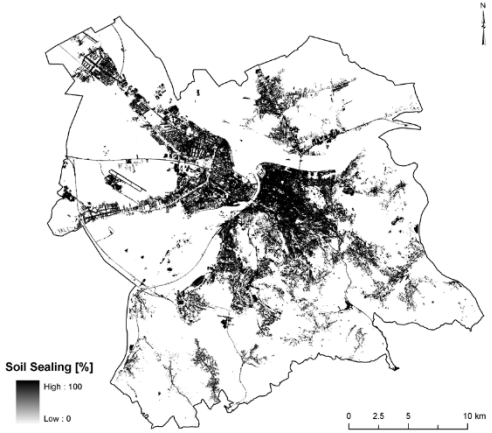


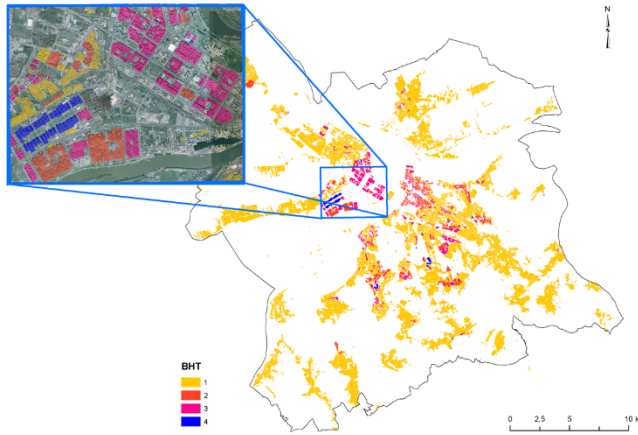
Population Density – Dasimetric vs. Choroplet mapping

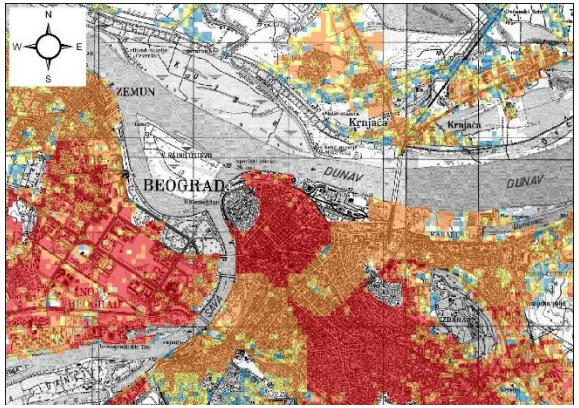


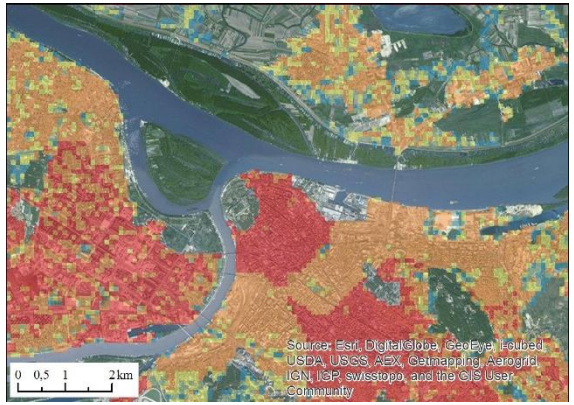


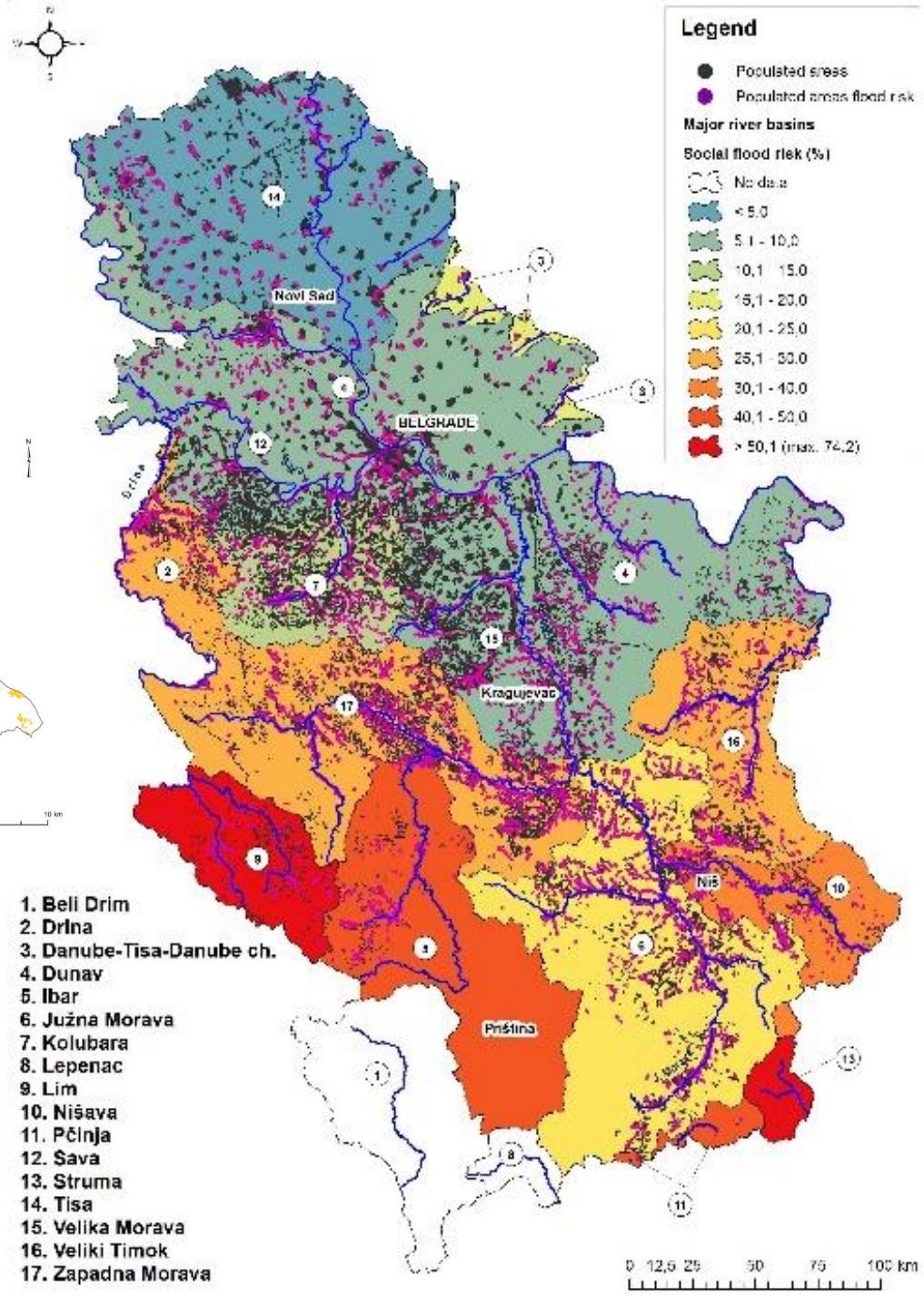
Dasimetric mapping – Modelling spatial distribution of population in urban areas (down) and potential flood risk on population in river basins (right)











Thank you!

Questions and comments…

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