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Comparison of the Spatial Distribution of Thyroid Cancer Morbidity and Geochemical Factors in Areas of the Bryansk Region (Russia)

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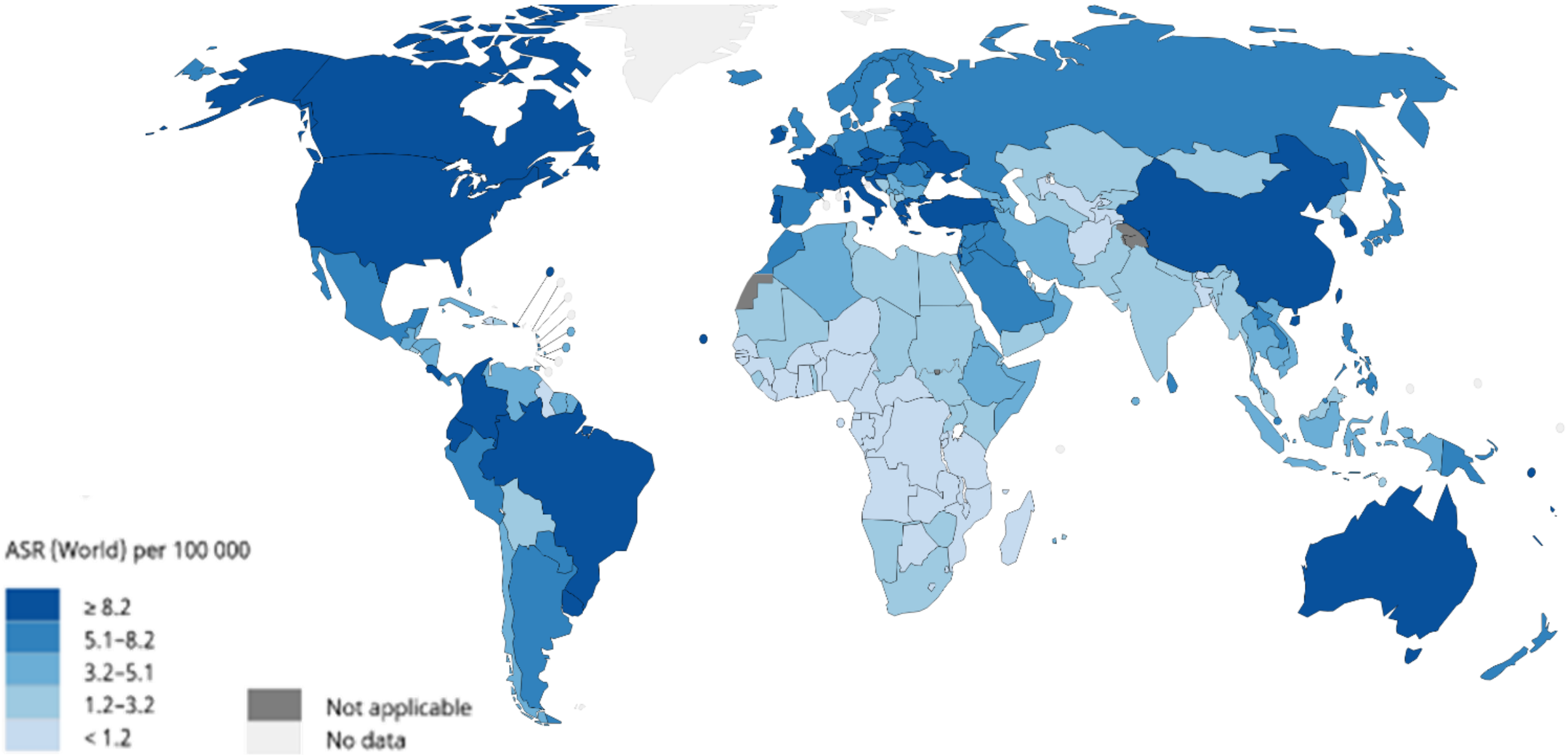
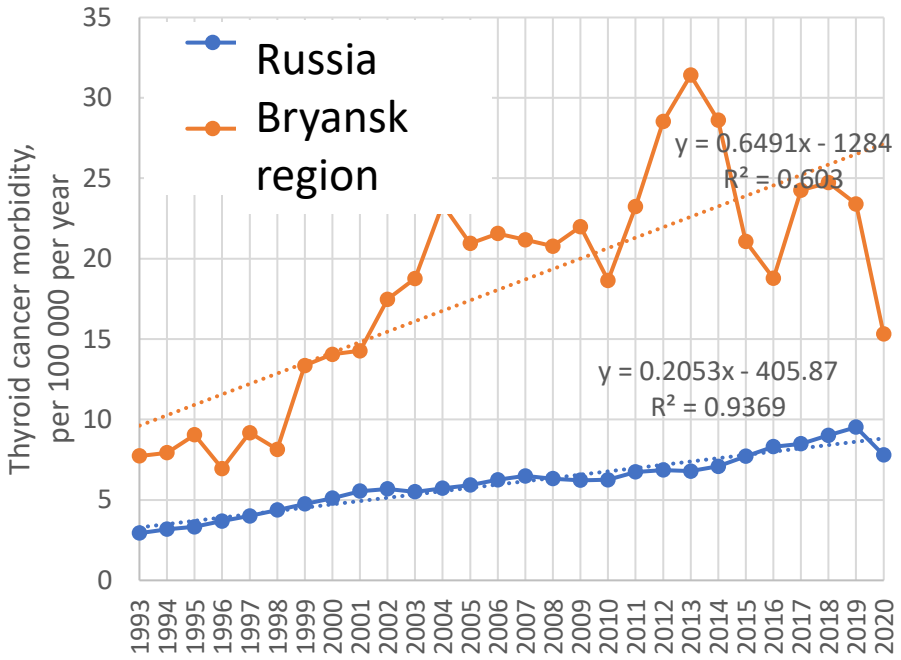
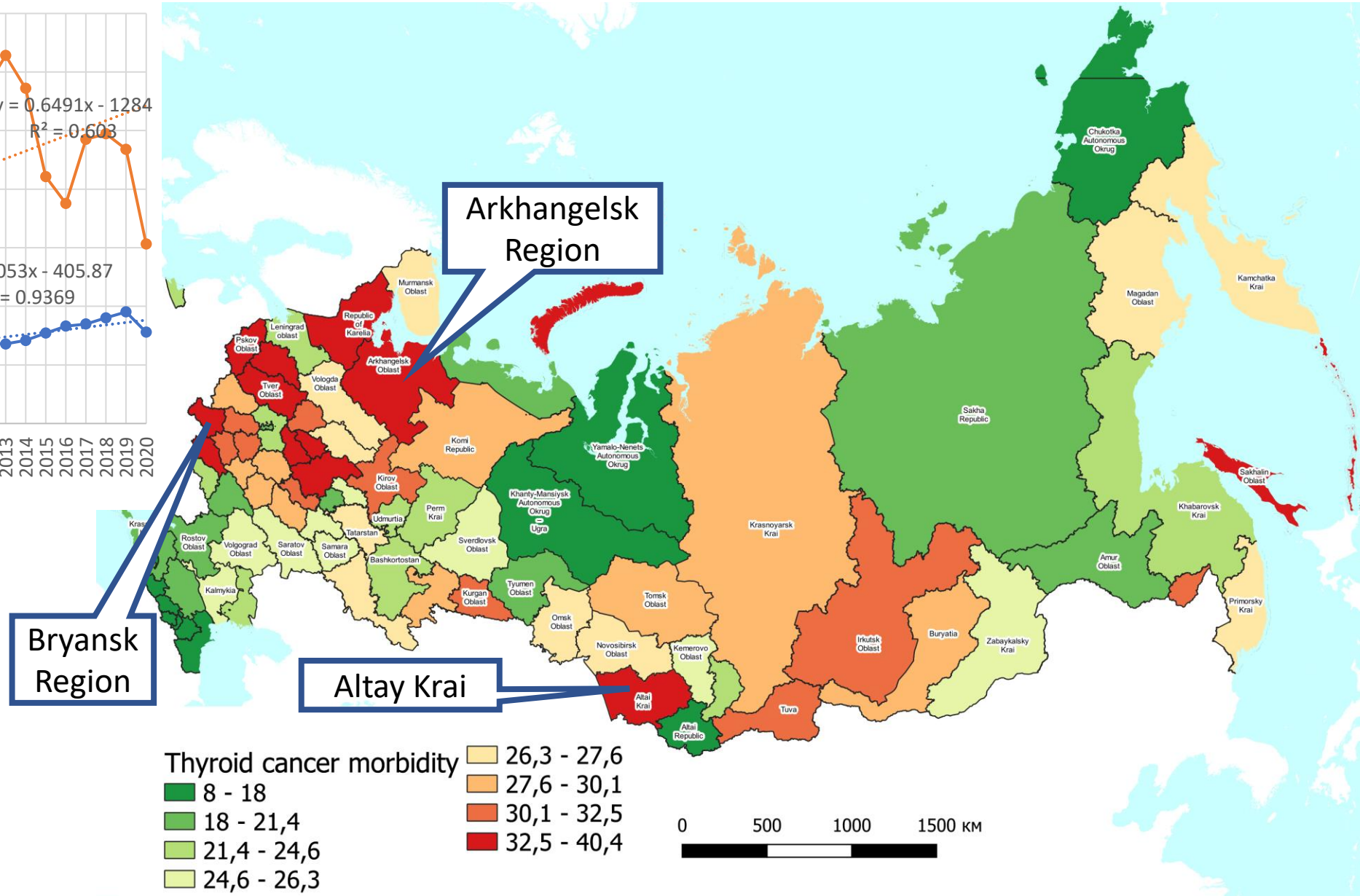
Thyroid cancer spatial and temporal dynamics



Thyroid cancer spatial and temporal dynamics in Russia

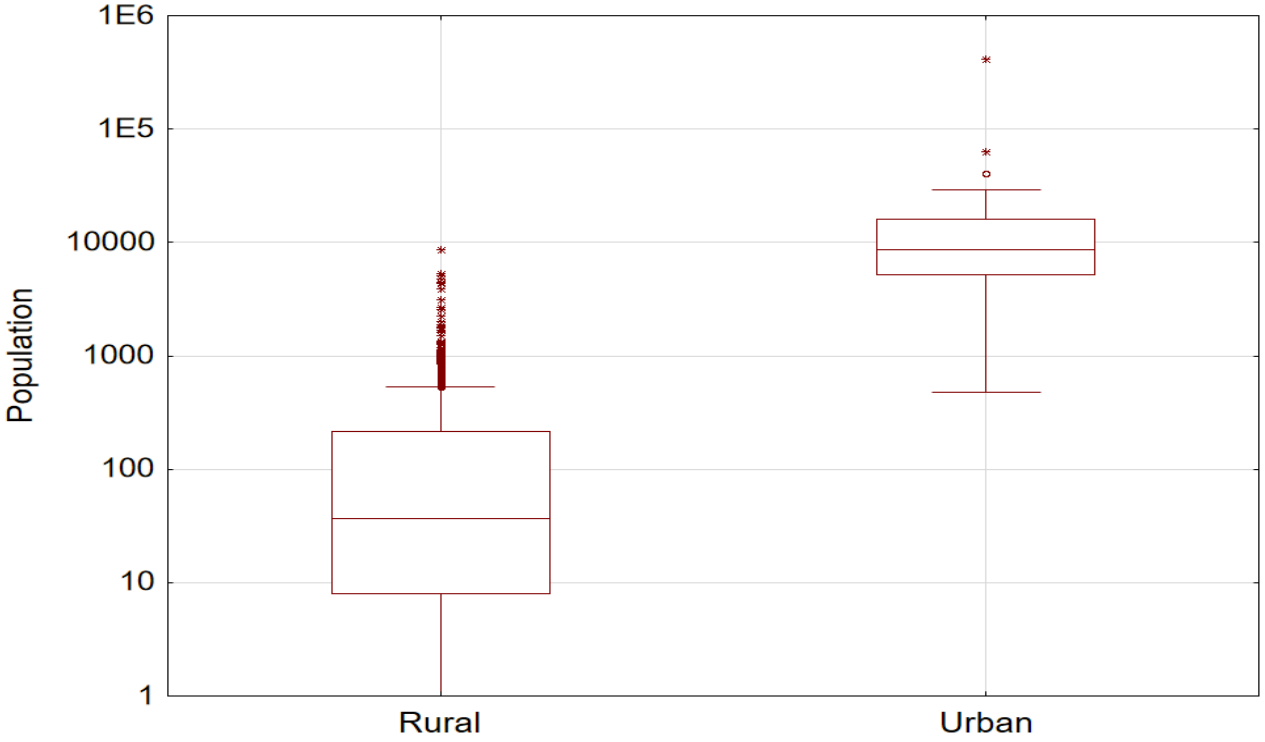


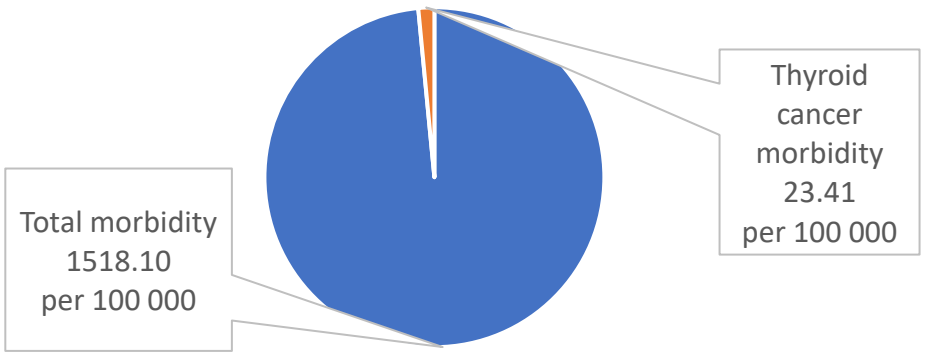


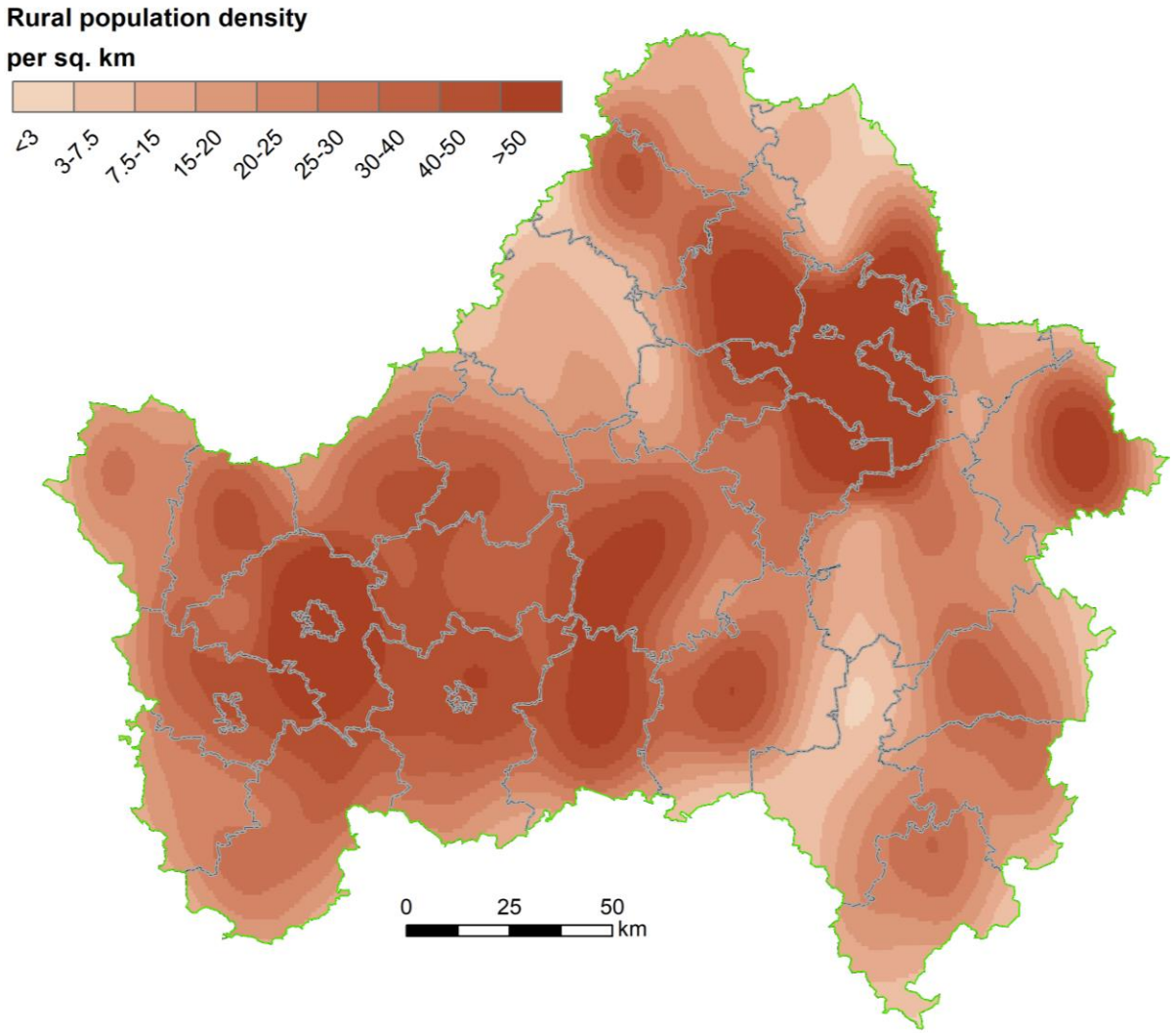
The goal

The assessment of the relationship between the spatial differentiation of the cancers in rural settlements accounting of natural and anthropogenic environmental parameters that could provoke endemic diseases

Complexity of the Medical Data Normalization

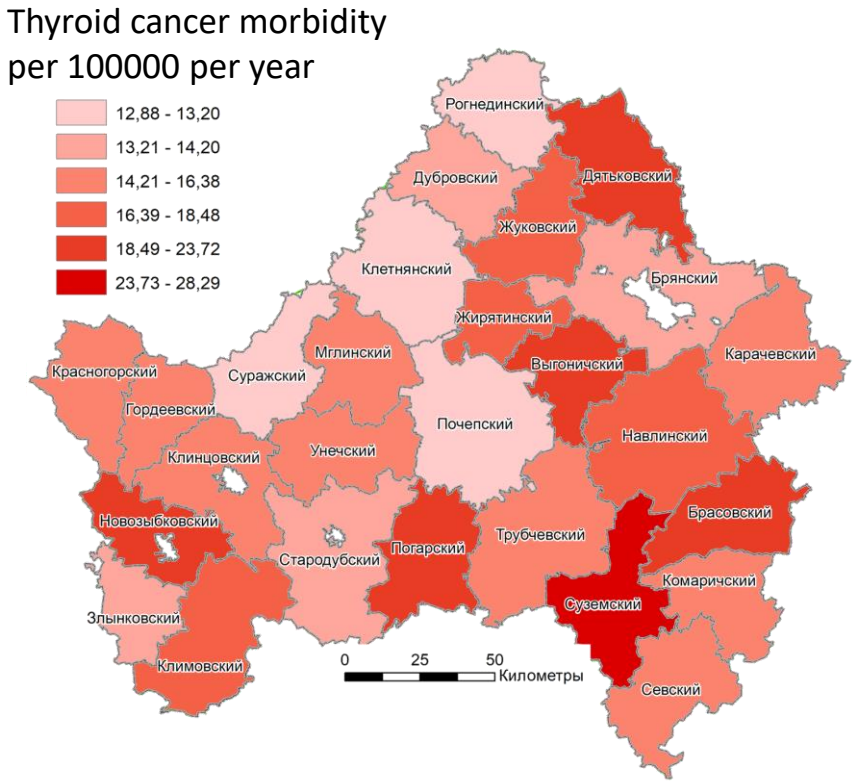




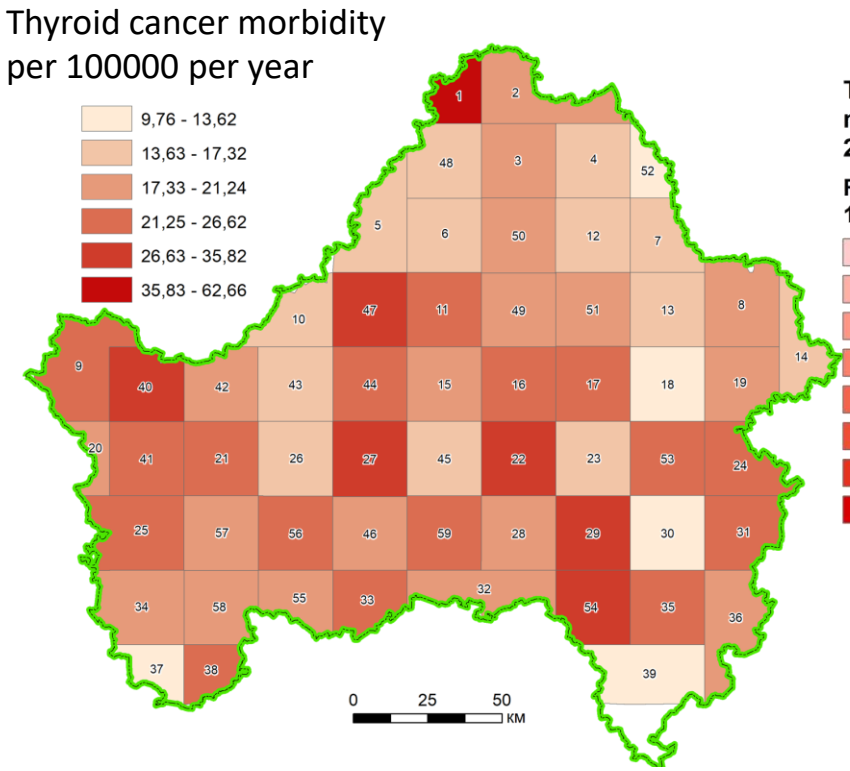


Spatial differentiation of thyroid cancer morbidity in rural settlements

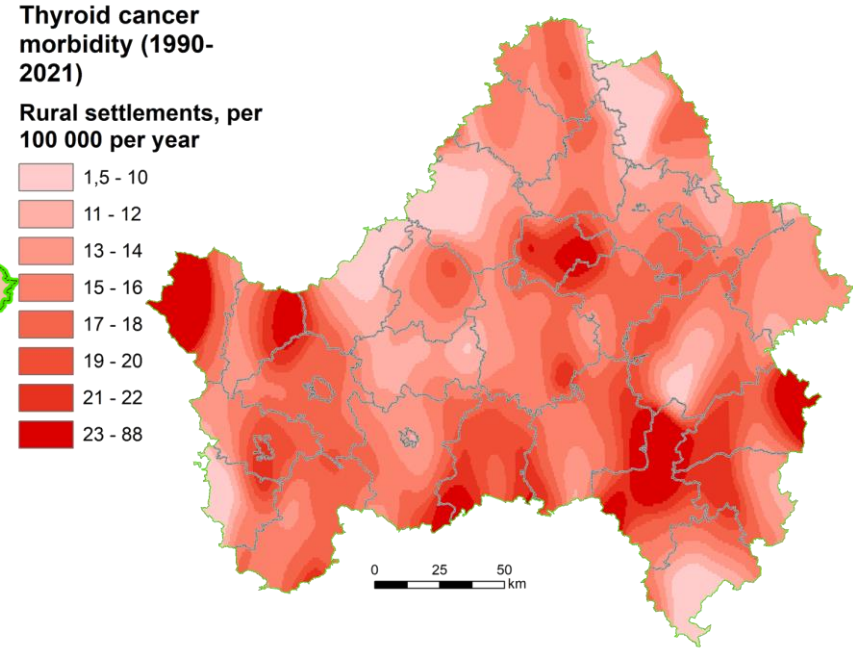
Administrative districts



Regular fishnet



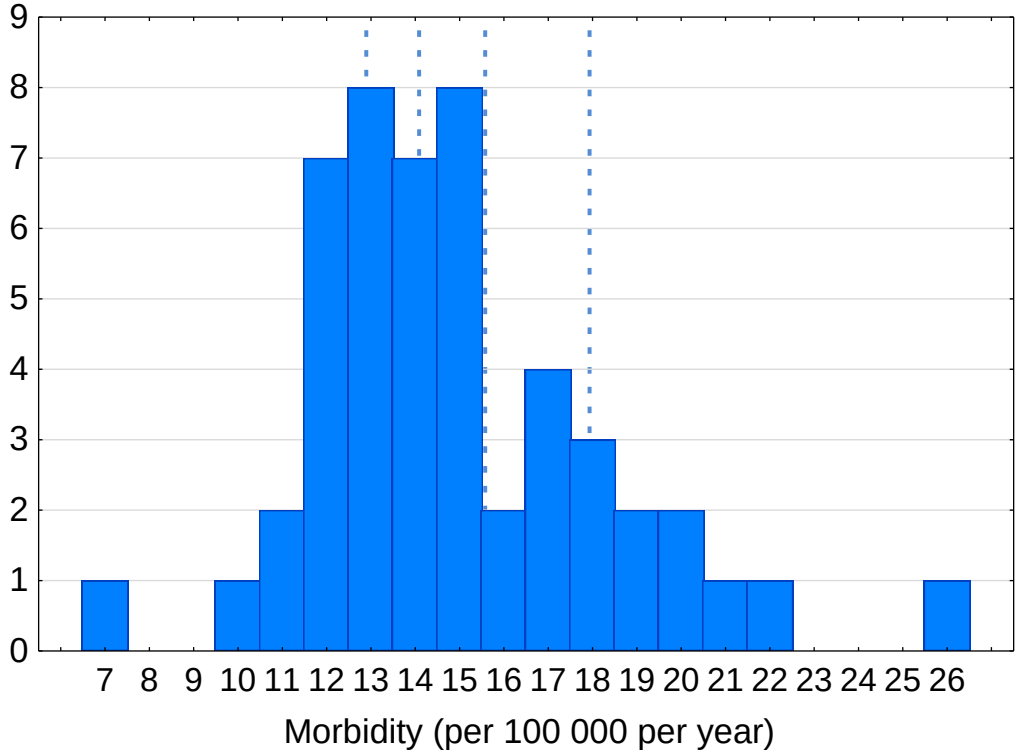
Kernel density estimation



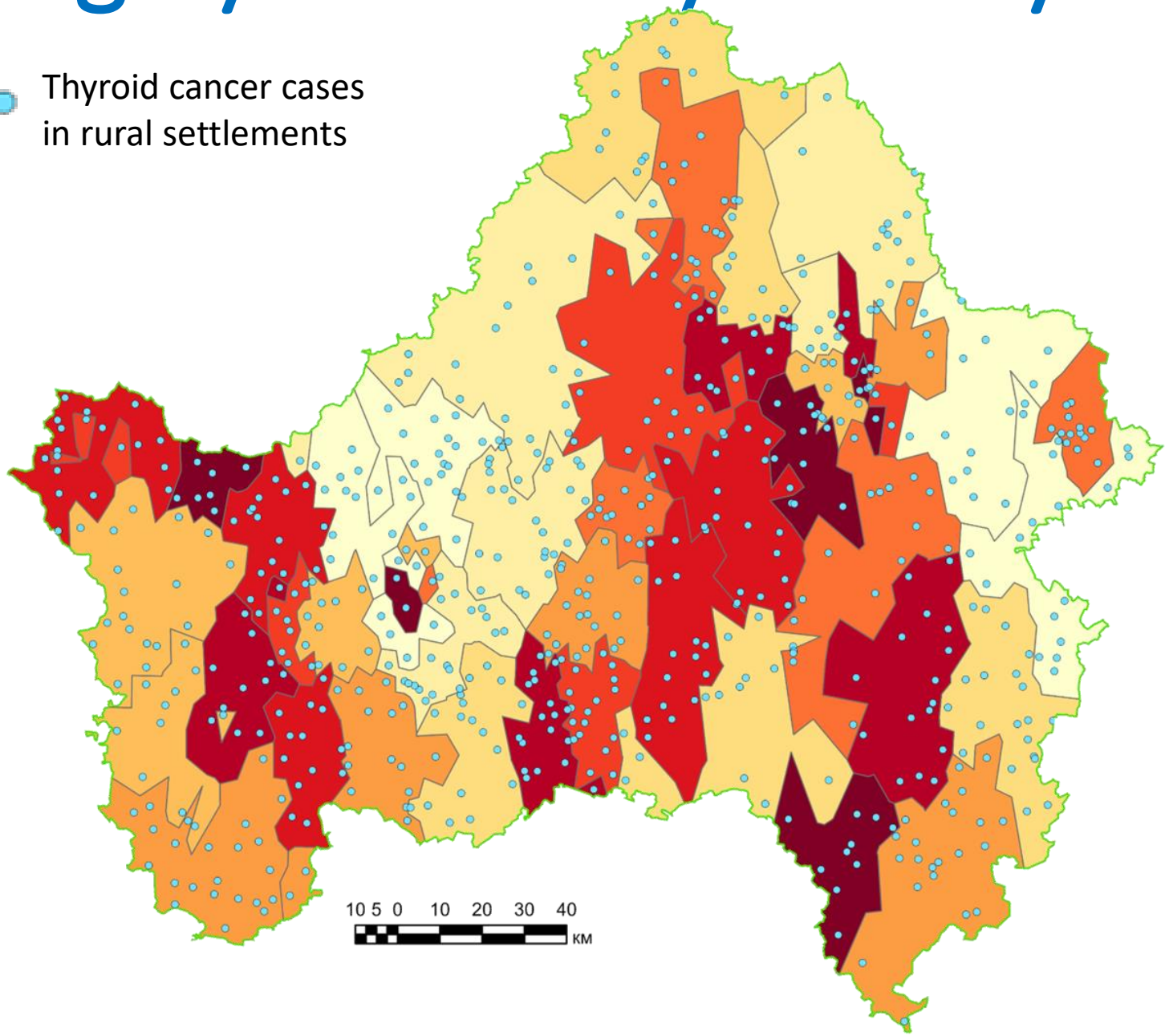
Region redistricting by morbidity density

Thyroid cancer rural morbidity
per 100 000 per year (1990-2021)

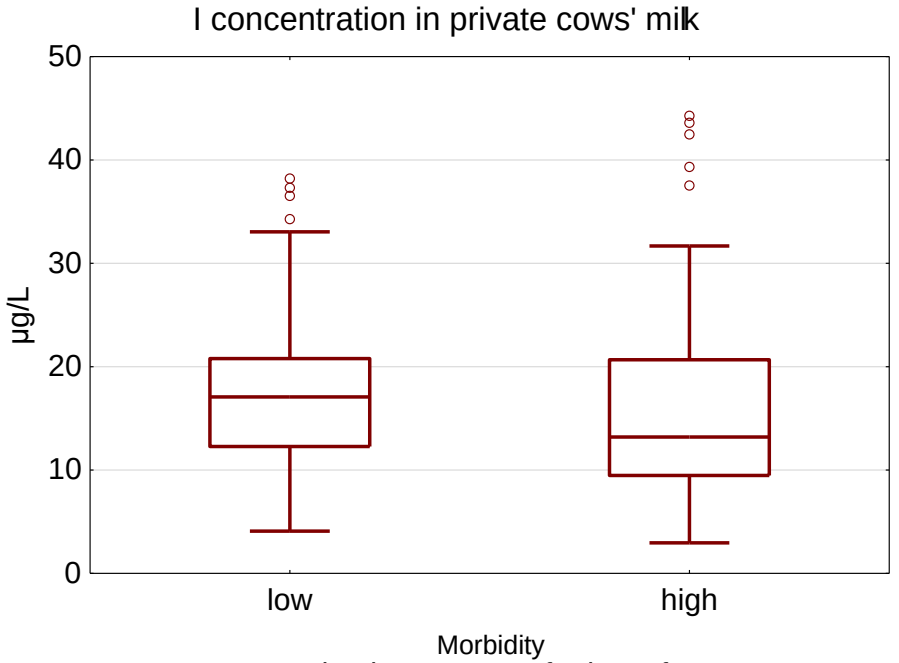
7,33 - 12,01	14,85 - 15,57
12,02 - 12,89	15,58 - 16,61
12,90 - 13,82	16,62 - 17,94
13,83 - 14,08	17,95 - 19,79
14,09 - 14,84	19,80 - 26,55

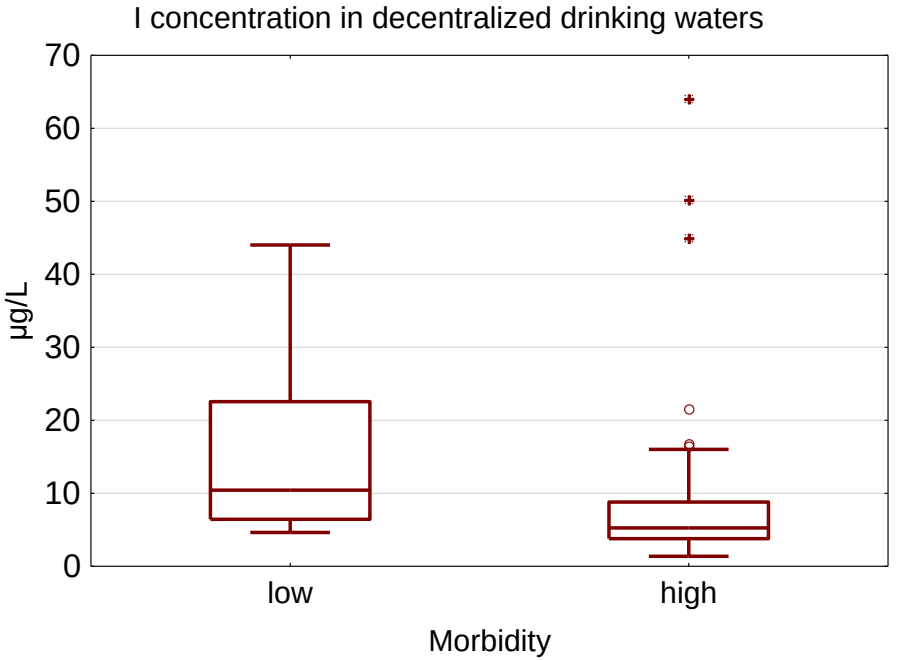


Thyroid cancer cases
in rural settlements

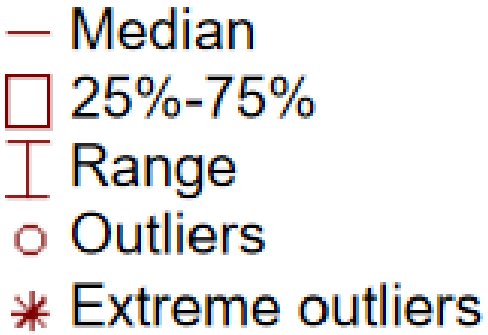


Comparative analysis of geochemical factors in low- and high- morbidity areas





Parameter	z	p-value
I concertation		
Decentralized water supply	-3,16	0,00
Potatoes of private farms	-2,78	0,01
Private farms' soils	-1,57	0,12
Pasture soils	-0,75	0,46
Private cows' milk	-1,87	0,04
I-131 fallout (10.05.1986)	3,24	0,00



The results

- The presence of a positive connection between **anthropogenic contamination** of the territory of the Bryansk region with ^{131}I and the spatial differentiation of thyroid cancer in rural settlements was shown.
- In addition, a **possible significant contribution** of natural factors was found: iodine deficiency in food (potatoes, milk) and natural waters to the spatial differentiation of the distribution of thyroid cancer.
- The preliminary results obtained can be used for a larger scale verification.

Thank you for attention!