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SPATIAL PATTERNS OF HOUSING VULNERABILITY IN SERBIA: IMPLICATIONS FOR SOCIAL HOUSING POLICY PLANNING

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INTRODUCTION AND BACKGROUND

01

Vulnerable population groups

Older adults
Unemployed people
Persons with disabilities
Low-income households

02

Overlapping disadvantages

Demographic
Socioeconomic
Health-related
Housing conditions

03

Geographical differences

Regional disparities
Municipal inequalities
Different local needs

Housing vulnerability is multidimensional and geographically uneven.

RESEARCH AIM AND QUESTIONS

RESEARCH AIM

To identify and map housing vulnerability across Serbian municipalities and explore its spatial patterns and their implications for social housing policies.

RQ1

Spatial distribution

How is housing vulnerability spatially distributed across Serbia?

RQ2

Vulnerability dimensions

What are the principal dimensions of housing vulnerability across Serbian municipalities?

RQ3

Spatial clustering

Does housing vulnerability exhibit significant spatial clustering?

RQ4

Housing resources

Where do high vulnerability and low housing stock coincide?

DATA AND INDICATORS

168 municipalities

2022 Population, Households and Dwellings Census
(Statistical Office of the Republic of Serbia, 2022)

Demographic

Population aged 65 and over

Socio-economic

Unemployment · Low education
Illiteracy · Computer illiteracy

Health

Persons with disabilities

Housing deprivation

Dwellings lacking basic facilities (piped water supply, sewage, and bathroom)

ADDITIONAL INDICATOR FOR RQ4

Dwellings under public and other types of ownership per 100,000 inhabitants

METHODS

1 **Principal Component Analysis**

Seven indicators → Two components → **One Housing Vulnerability Index – HVI (0–1)**

2 **Global Moran's I**

Global spatial autocorrelation → **Is HVI spatially clustered?**

3 **Getis–Ord Gi***

Hot Spot analysis → **Where are significant hot and cold spots of HVI?**

4 **Bivariate mapping**

3 × 3 quantile classification → **Where do vulnerability (HVI) and housing resources overlap?**

Software: Jamovi, ArcGIS Pro 3.6

RESULTS

RQ1 – SPATIAL DISTRIBUTION OF HOUSING VULNERABILITY

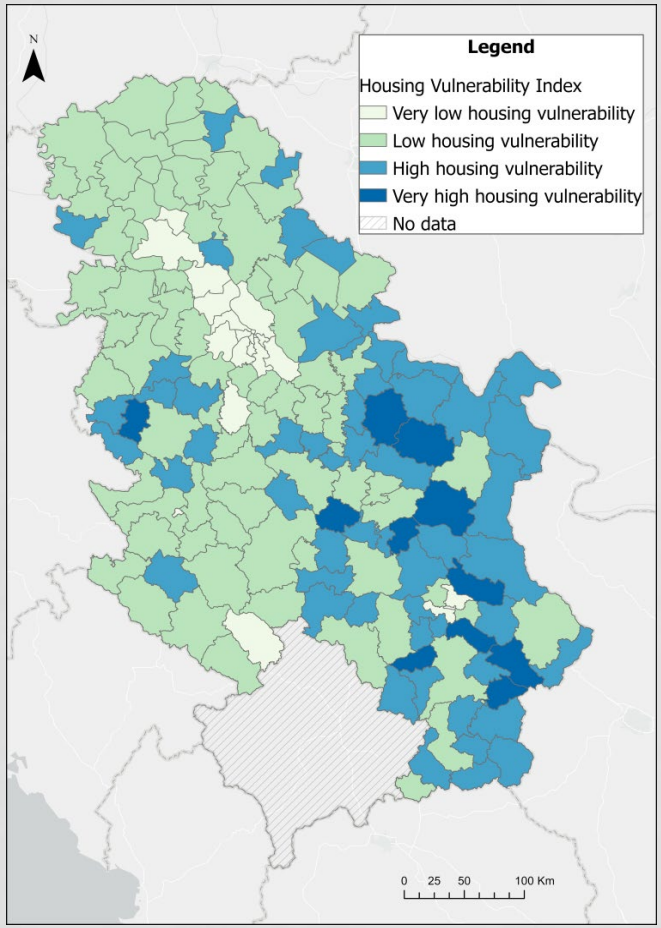


Figure 1. Spatial distribution of the Housing Vulnerability Index across Serbian municipalities

39.3%
of municipalities have high or very high housing vulnerability

Higher values are concentrated mainly in **eastern and southeastern Serbia**.

RESULTS

RQ2 – PRINCIPAL DIMENSIONS OF HOUSING VULNERABILITY

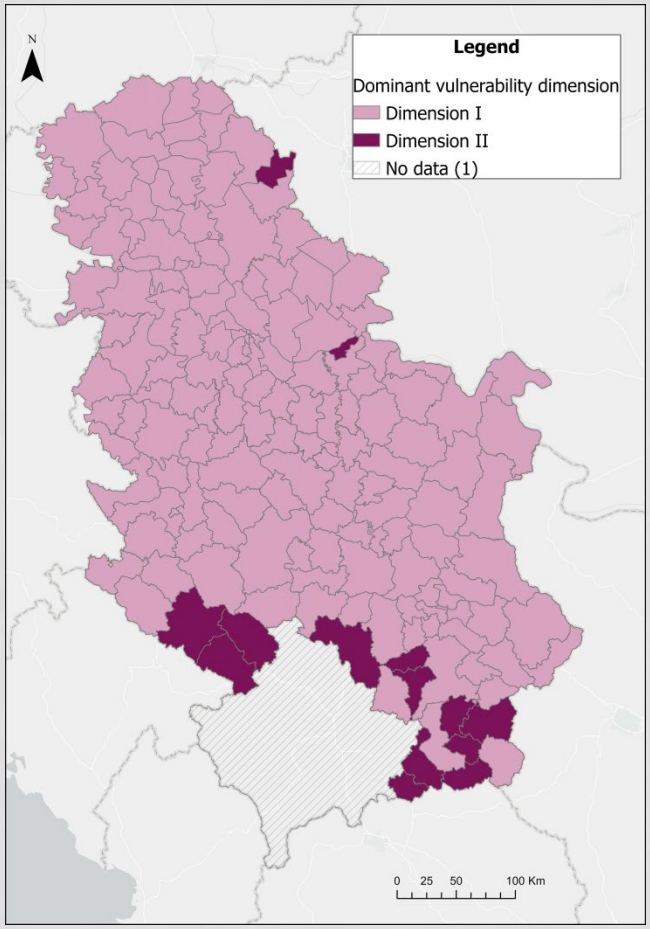


Figure 2. Dominant dimensions of housing vulnerability across Serbian municipalities

154 municipalities (91.7%)
Dimension 1: demographic ageing with educational, health-related, and housing disadvantages

14 municipalities (8.3%)
Dimension II: unemployment and illiteracy. Concentrated mainly in southwestern and southeastern Serbia.

RESULTS

RQ3 – SPATIAL CLUSTERING OF HOUSING VULNERABILITY

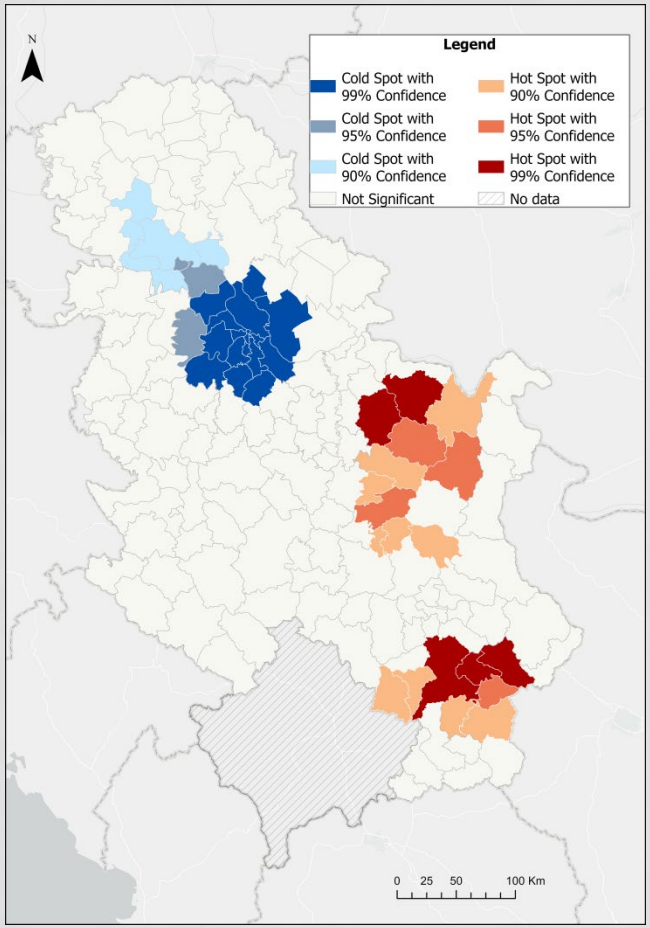


Figure 3. Spatial clusters of housing vulnerability identified by Getis–Ord Gi* Hot Spot Analysis

Global Moran's I = 0.503

$p < 0.001$

Local Moran's I

Hot spots

Eastern and southeastern Serbia

Cold spots

Belgrade–Novi Sad area

RESULTS

RQ4 – HOUSING VULNERABILITY AND EXISTING HOUSING STOCK

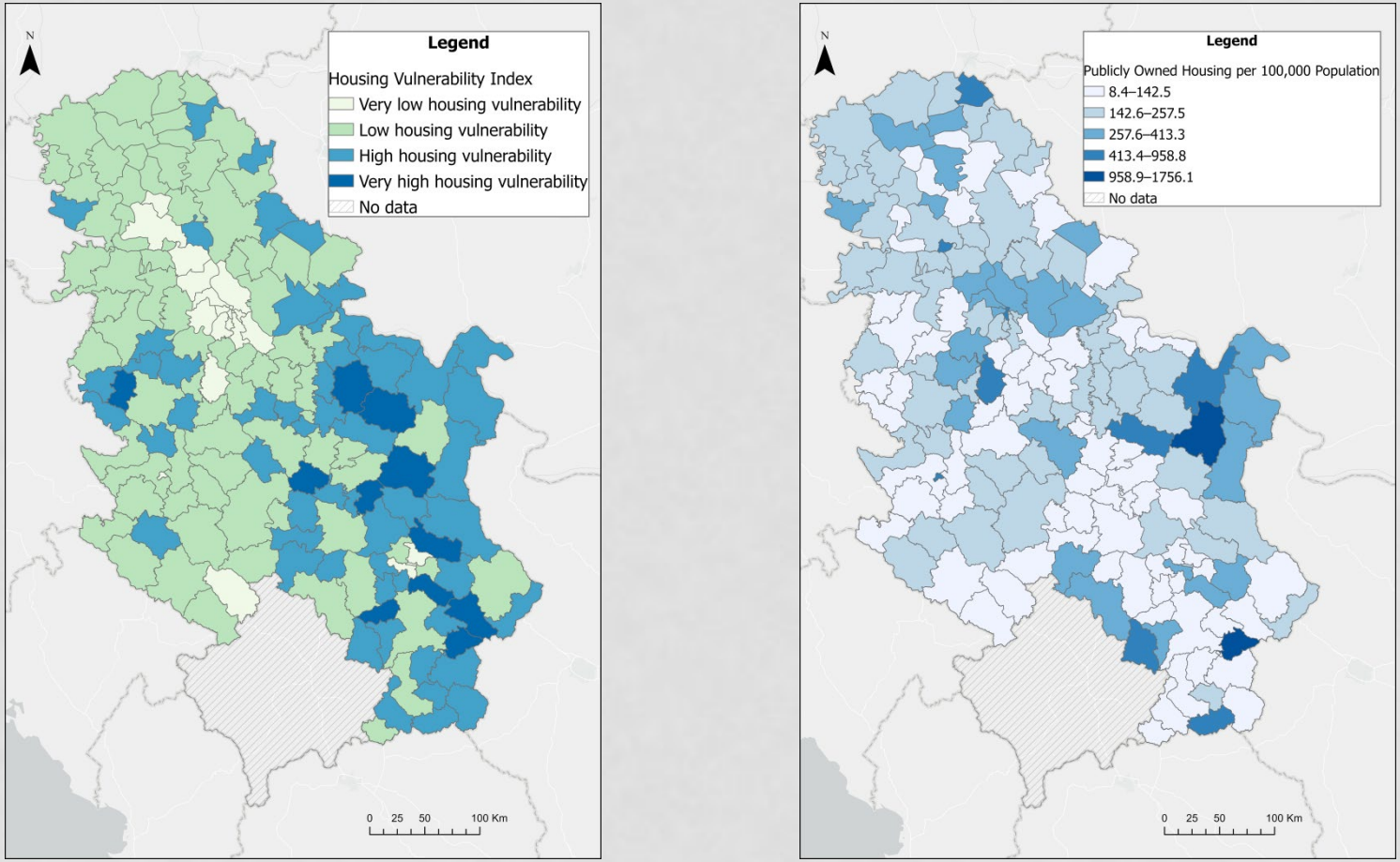


Figure 4. Spatial distribution of the HVI (left) and dwellings under public and other types of ownership per 100,000 population (right)

RESULTS

RQ4 – HOUSING VULNERABILITY AND EXISTING HOUSING STOCK

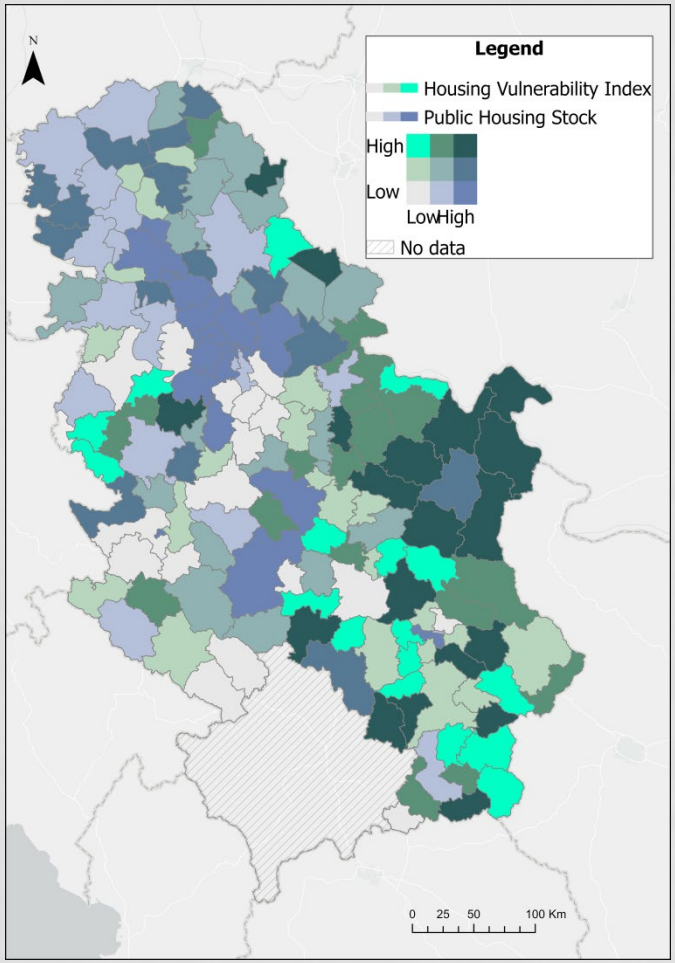


Figure 5. Bivariate choropleth map

17 municipalities (10.1%)

High vulnerability + Low relative housing stock

High vulnerability + Low housing stock

Potential mismatch between housing-related needs and existing resources

MAIN FINDINGS

- Housing vulnerability differs considerably across Serbia;
- Different municipalities face different challenges;
- Vulnerability forms distinct geographical clusters;
- Housing needs and existing resources do not always coincide.

Social housing policies need to respond to local needs.

Thank you for your attention!

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