

Development of socio-spatial polarisation in Czechia

KAREL MAIER, DANIEL FRANKE

Czech Technical University in Prague, Faculty of Architecture, Department of Spatial Planning, Czechia; e-mail: maier@fa.cvut.cz, frankdan@fa.cvut.cz

ABSTRACT The objective of this article is to analyze the process of spatial polarization following the initial transition that took place in Czechia in the 1990s. The authors seek to verify whether the trend of spatial polarization, consisting of the selective migration of young people with higher education to the capital and accompanied by massive suburbanization in the hinterland of the capital and regional cities, continued into the period between 2011 and 2021, or how changes in this period compared to the previous 2001–2011 period. With the use of census data, the development of this polarization is monitored using indicators describing the development of the share of inhabitants and dwelling units, economic activity, demographic age, and the university-educated population for individual micro-regions. On the basis of these indicators, types of micro-regions are identified and wider areas with similar characteristics are defined. The resulting findings show that the gap between growing and shrinking micro-regions widened in the 2010s, and that the “soft” factors expressed by the proxies of demographic age and education will affect their future prosperity.

KEY WORDS socio-spatial polarization – spatial convergence/divergence – territorial cohesion

MAIER, K. FRANKE, D. (2025): Development of socio-spatial polarisation in Czechia. *Geografie*, 130, 1, 35–63.

<https://doi.org/10.37040/geografie.2025.004>

Received November 2024, accepted March 2025.

1. Introduction

As a result of the socio-economic transformation that began in the 1990s in the countries of Central and Eastern Europe, polarisation processes began taking place. These were manifested by a growing degree of social inequality and, at the same time, a growing contrast between individual regions. The attractiveness and prosperity of metropolitan and agglomeration areas increased, on the other hand, in a number of cases spatially concentrated forms of social disadvantage emerged (Gorzelač 1996, Jasz 2010, Penzes 2013, Sokol 2001).

In Czechia, the transformation process increased inequalities in social terms (affecting the prospects of individuals) and in regional terms (geographical disparities increasing regional inequality in the distribution of economic activities). The economically booming large cities and their suburbs have been developing gradually as a place of residence and for the professional activities of the upper classes, while the old industrial cities as well as rural peripheries became places of residence for the less fortunate (Kostelecký, Šimon 2016). Economic restructuring has hit these regions with disadvantageous economic specialisation the hardest, namely regions traditionally focused on mining and heavy industry, as well as regions with a strong agricultural specialisation. At the same time, social differentiation tended to show more variability than did regional differentiation (Hampl 2007).

The objective of this article is to analyse the process of spatial polarisation following the initial transition of the 1990s. These processes have manifested themselves in shifts in regional / spatial disparities within Czechia. The dynamics of the change is the central concern of our research, which is manifested by the comparison between the periods of the 2000s and the 2010s. While most analyses focus on polarisation on regional level, this article attempts to fill this research gap by zooming to a smaller territorial scale vis-a-vis various proxy indicators of their prosperity.

The period from 2001 to 2021 is examined using proxy data relevant to overall prosperity (population, housing) and to determining future potential (age structure, education). The two decades (the 2000s, i.e. 2001–2011 and the 2010s, i.e. 2011–2021) are studied and compared as a basis for identifying trends in different types of geographical areas.

2. Background: settlement system, polarisation theories and spatial disparities

We follow the idea of Musil (1977) that modern urbanisation is a universal process that forms settlement systems in a very similar manner in all developed countries (cf. also Enyedi 1996, Musil 2001). Long-term historically rooted processes such as

the establishment of the settlement system, industrialisation, and urbanisation were similar in both Western and Eastern Europe. These processes formed Czech cities even before the division of the continent into Western and Eastern blocs. As a result, settlement structures are largely comparable between western and post-socialist cities (Timár, Váradi 2001); therefore, the general development of the settlement system is often studied in a similar fashion, for example using the stage theories of urban development (van den Berg et al. 1982) or differential urbanisation (Geyer, Kontuly 1993, 1996).

The development of the settlement system provides a background for the social and economic processes. In Czechia, as in other East Central European countries, the period of 'command socialism' created barriers that distorted or at least slowed the social and economic changes that were taking place in the rest of Europe. The radical change that came after 1989 removed these barriers and thus exposed these countries to enormous pressure from market forces, with only weak counterbalances from government regulators (Maier 1998). Regional policies were (re)introduced as a tool for influencing spatial socio-economic development in connection with individual countries' accession to the EU, but their effectiveness and efficiency vary from country to country (Gorzelaek 2021).

Polarisation theories are essentially based on a dichotomous concept of space, dividing it into economically prosperous cores on the one hand and lagging peripheral territories on the other (Bernard, Šimon 2017). Myrdal's (1957) theory of cumulative causes presupposes the existence of economic, demographic and institutional factors that tend to act centripetally in favour of the centres at the expense of the periphery. They manifest themselves in a larger labour supply and greater purchasing power in the centres, associated migration to the centres and at the same time, a higher relative tax burden on the periphery. Similarly, Friedmann (1973) suggests that there are interrelated economic and non-economic cumulative effects that lead to the extraction of resources from the periphery and the growth of regional inequalities to their detriment and, conversely, to an increase in the economic performance and innovative capacity of the centres. Hoekveld and Bontje (2016), on the basis of a mix of quantitative and qualitative methods pointed out that the recent population decline can be explained as a backlash of the past when industrialisation resulted in a massive population boom in certain hotspots.

Polarisation is typically manifested by socio-economic disparities. In Czechia, after the initial burst resulting from liberalisation of economy, the disparities declined somewhat after 2010, despite the economic recession in 2012–2013 (Fialová, Želinský 2019, p. 745). Regional income inequalities did not change significantly in Czechia between 2006 and 2016 (Fialová, Želinský 2019, p. 763). However, this analysis was based on rather large NUTS2 regions, which may hide a variety of changes on the micro-regional or even local level.

The geographical scale of the research on the recent evolution of disparities in East-Central Europe is important, as many researchers have shown: while a general trend towards convergence was observed at the national level, polarisation prevailed at the regional level, with dynamic growth mostly confined to metropolitan regions (Gorzela, Smetkowski 2010; Monastiriotis 2011; Blažek, Netrdová 2012; Setkowski, Wojcik 2012). The extremes of socio-spatial poverty traps emerged mainly at the level of particular buildings or blocks of buildings (Ouředníček et al. 2016 for Prague; Temelová et al. 2011 for other Czech cities, and for various other East-Central European cities Marcińczak, Sagan 2011; Grossmann, Kabisch 2011; Krišjāne, Bērziņš, Kratovits 2016).

3. Measuring polarisation

The most prevalent evidence of regional / spatial disparities is manifested by migration-driven population change, i.e. by 'foot voting' (in the European context cf. e.g. ESPON ATTREG 2012; ESPON DEMIFER 2015; ESPON EMPLOY 2017; for Poland cf. Szymańska, Michalski 2019). In Czechia, where natural population change does not vary among regions, the areas with a booming population are represented by some metropolitan and urban agglomerations at the expense of rural peripheries and de-industrialising regions. Within metropolitan and urban agglomerations, previously rural suburban areas adjacent to their central cities have experienced population growth, while the population of some central cities has stagnated or even declined. In the case of the agglomerations of Karlovy Vary and Zlín, the population of the entire urban agglomeration including the central city declined between 1991 and 2011, even though these agglomerations are considered development areas in the national Policy of Spatial Development (Maier, Franke 2017).

In the case of the Prague metropolitan region, the residential population in suburban municipalities increased from 1,314,000 in 2008 to 1,438,000 in 2016. The annual intensity of migration to the suburbs gradually increased from 2.8% between 1997 and 2008 to 3.7% in the 2009–2016 period. Based on the share of in-migrants per 100 permanent residents, Ouředníček, Klsák, Špačková (2019) estimated that about one-third of the population in suburban municipalities were newcomers, which is about 5% of the total Czech population. As the intensity of this movement was very high, especially within the zone closest to the core city, they estimated that the 'suburbanisation process is far from ended and will no doubt play a significant role in the future' (Ouředníček, Klsák, Špačková 2019).

Residential suburbanisation not only multiplied the number of inhabitants of formerly rural villages, but also fundamentally changed the composition of their inhabitants. From the time the process started in the 1990s, the suburbanites

were mostly young, educated and well-off families with children; however, now their children are reaching the age when they are looking for their own housing, and their experience of daily commutes and the lack of urban amenities in the suburbs motivates them to consider a return to the city (Heider 2019, Kährlik et al. 2016). Research conducted by Bursa (2024) showed that young adults living in Prague's hinterland mostly prefer moving to the city of Prague. The housing crisis in Prague and the resulting exorbitant housing prices will select for the social groups who can afford to live there, favouring the economically better-off. This may change the pattern of movement of higher-earning people back to the core city in the future. However, this will not affect the social polarisation between the metropolitan region, including the metropolis itself, and the peripheral regions as the mobility of educated young people will be inside the region.

The other side of the booming metropolitan and agglomeration areas are varying types of stagnation or decline: old industrial or rural borderlands and remote internal peripheries. These are characterised by population decline caused by out-migration of mostly young people and, consequently, ageing without the opportunity of profiting from natural population increase. Population decline is accompanied by a decline in infrastructure and a shrinking job market, resulting in deteriorating access to services, jobs and education (Musil, Müller 2008, p. 345; Bernard et al. 2018).

The basic theoretical starting point that applies to peripheries and their empirical analysis as well is usually formed by theories of geographical polarisation (Bernard, Šimon 2017). Discussions of peripheries and their creation or disappearance are always related to the existence of spatial inequalities and their dynamics (Havlíček, Chromý 2001). The process of peripherisation is explained by the existence of mutually influencing problems, such as depopulation, ageing of the population and decline of economic, social and cultural activities in the territory (Ouředníček, Špačková, Feřtřová 2011, p. 795). These characteristics are considered common to all types of declining areas, not just remote peripheries.

The concept of the periphery itself suffers from two major shortcomings. Firstly, it presupposes the existence of a single type of periphery, characterised by a lack of employment opportunities, a complicated demographic structure and inadequate housing stock. Secondly, the one-dimensionality of the definition of the periphery may conceal a large internal heterogeneity within the defined territory and thus necessarily to a suboptimal setting of public policies aimed at mitigating the social consequences of peripherality (Bernard, Šimon 2017). Thus, Vidovičová (2020) emphasises the diversity of stagnating and/or declining areas, which need not necessarily be associated with a subjectively lower quality of life (Vidovičová 2020, pp. 278–279).

Neither the centres nor peripheries form homogeneous territories: the emergence and decline of peripheries is a complicated, multidimensional process in

which, in addition to economic factors and socio-cultural aspects, discursive practices and various formal and informal institutions play an important role (Bernard, Šimon 2017). To obtain a more comprehensive picture of the position of a specific territory in a polarised environment, Bernard and Šimon (2017) compiled a set of multiple indicators to measure disadvantaged regions in rural areas. They concluded that there are three clusters of data indicating peripheries: age structure, unemployment and exclusion, and qualification plus living standard. These three sets of indicators are complemented by the indicators of physical access to education and health facilities, jobs and services. They distinguished different temporal dynamics of spatially differentiated processes: long-term polarisation, economic restructuring and the current trend towards population deconcentration (Heider 2019).

Ageing may be another factor in future spatial behaviour. Finding that ‘in senior age, there is a strengthening of the correlation between the person and the environment, i.e. the loss of resources associated with age leads to an attachment to the social world and physical space in which they are anchored, and they benefit from this affiliation’. As a result, restricted migration mobility of a growing cohort of population is expected in future (Vidovičová et al. 2014).

Apart from the growing share of seniors in the population, there is a component of highly qualified economically active residents with higher education. These people take advantage of the relaxed spatial links between residence and workplace and the possibility of working from virtually anywhere, which evolved during the Covid pandemic measures (Sladká, Kreidl 2022). Flexible working, and especially working from home, is fast becoming a common form of work to which many people have access (Franken et al. 2021; Kyzlinková, Veverková, Vychová 2020). This may change the existing close spatial relation between homes and working places in terms of commuting time. The resulting volatile spatial behaviour cannot be captured by traditional residence tracking in the census, and their statements about the direction of commuting may not be relevant.

4. Data and methodology

The selection of data and the chosen method of analysis follow the previous research covering the period of 2001–2011 (Maier, Franke 2015), with a more significant geographical overlap for spatial comparison of changes in the territory. The 2001, 2011 and 2021 censuses of population, houses and dwellings (henceforward ‘censuses’) were primary source for the analyses (ČSÚ 2024). The use of census data makes possible the establishment of a sequence of comparable data from the three census years for the same territorial units of micro-regions represented by the administrative territories of municipalities with extended powers (ORP,

henceforth 'micro-regions'). These micro-regions were chosen as the basic territorial unit for analysis because they provide sufficiently detailed information in a national context and because – at least in the area outside metropolitan and urban agglomerations – they approximately correspond to the basic functional spatial arrangement. The analyses on the micro-regional level were complemented with detailed 'zooming' into individual municipalities in selected metropolitan areas.

The population data used the category of the permanent resident population so that compatibility could be maintained, as the 2001 census did not collect data on usual residence. Besides, an analysis of the difference between the permanent and usual resident population was elaborated for the census years of 2011 and 2021. It showed remarkable differences mainly in suburban areas, while in other areas the differences were marginal (cf. also Ouředníček, Pospíšilová, Špačková 2013).

Following the results of the research of the theories on spatial polarisation indicators mentioned above, as well as the limited scope of the census data, the following data were selected and analysed as the source of indicators related to 'hard' and 'soft' development factors (Dziembowska-Kowalska, Funck 1999; Rumpel, Slach, Koutský 2008).

The 'hard' factors relate to numbers of inhabitants, working population and dwellings. They express existing state of the art as a result of previous development, serving as a necessary fundament and precondition for the future functioning of a territory. Their indicators are: resident population – its change results mostly from the migration balance; economically active population – an indicator of immediate capacity to produce value necessary for wealth and prosperity; permanently inhabited flats – a precondition for staying at a place: the change of their numbers indicates satisfied demand for housing.

'Soft' factors capture human potential that determines the future socio-economic viability of the respective territory. These factors are expressed by proxies for demographic change expressed by the child population from 0 to 14, the senior population aged 65 and over and the compound age index (share of seniors aged 65 and over to children 0–15) – these indicators show the potential for future natural population change; a population over 15 with higher education represents the potential for increased added value in the knowledge economy and, at the same time, it serves as a proxy indicator of the wealth of its citizens (data not available on the micro-regional and local level).

In order to obtain a relevant picture of changes within the context of the whole country, the primary census data for the respective micro-regions or municipalities were converted into shares of the national totals for the respective feature. Consequently, to describe the dynamics of change, changes in the share of the national value of the same feature were mostly observed. If a value of the index of change in the share is equal to one, it means that the feature for the observed territory has maintained the same share in comparison with the whole of Czechia,

i.e. its value has increased or decreased over the observation period at the same rate as the whole country. A similar procedure has been followed even where the observed phenomenon, i.e. the input value for indexation, was an index (in the case of the age index), so that the resulting value is actually an index of indices.

The indices describing changes of share make it possible to compare the dynamics of changes between individual territories without distortion caused by changes that have occurred at the national level during the observation period. Absolute changes (increase or decrease) and changes expressed as percentages complete the overall picture only where necessary.

In the next step, the correlation of trends for the different micro-regions was examined by cluster and outlier analysis. Given the set of weighted features, the analysis identifies statistically significant hot spots, cold spots, and spatial outliers using Anselin Local Moran's I (Anselin 1995). Spatial autocorrelation was chosen due to the nature of the data, which makes it possible to consider the data on the surrounding area in order to discover spatial relationships and differences (Blažek, Netrdová 2009).

To determine the degree of spatial clustering, the local Moran's I criterion was used to test the null hypothesis. The evaluation of the degree of spatial clustering in each index was created in ArcGIS using the Geostatistical Analyst superstructure.

Analysis of spatial autocorrelation trends identifies the following types of spatial autocorrelation: type 'high-high' – positive spatial autocorrelation contains statistically significant occurrence of micro-regions with high index values; type 'high-low' – negative spatial autocorrelation contains statistically significant micro-regions with high index values surrounded by micro-regions with low index values; type 'low-high' – negative spatial autocorrelation contains statistically significant micro-regions with low index values that are surrounded by micro-regions with higher index values; type 'low-low' – positive spatial autocorrelation contains statistically significant occurrence of micro-regions with low index values. For each micro-region in the dataset, the z-score, p-value, local mean and global mean were calculated. For outliers (e.g. negative z-scores < -1.96), the value of the target micro-regions compared to the local mean. Thus, those micro-regions with values higher than the local mean are classified 'high-low', and those with values lower than the local mean are classified as 'low-high'. For clusters with similar values (positive z-scores > 1.96), the local mean is compared to the global mean. Those micro-regions with local means higher than the global mean are classified as 'high-high', and those with local means lower than the national mean are classified as 'low-low' (Ebdon 1985).

Clustering serves not only to identify territorial units with similar trends, but also to identify municipalities that should be examined at a more detailed level. Those that fall into the "high-high" category are selected and the internal structure at the municipal level is assessed using the same methods as in the case of the

micro-region. For that assessment, one indicator from the “soft” characteristics, which is tertiary education, and one indicator from the “hard” characteristics, which is total population, were selected.

Finally, a multivariate clustering method (Caliński, Harabasz 1974; Jain 2009) was used to analyse the typology, which looks for natural clusters of micro-regions based only on the attribute values. Thus, the number of clusters is not determined during data analysis but was entered into the analysis by the user. A value of seven clusters was chosen to be consistent with previous research and to allow for comparisons and identification of trends.

5. Working hypotheses

The following hypotheses serve to determine whether and to what extent the developmental trends of socio-spatial polarization changed in the first two decades of the 21st century.

H1 – The trend of socio-economic polarisation observed in the decade 2001–2011 continued in the following decade 2011–2021.

H2 – The typology of micro-regions elaborated for the period 2001–2011 (Maier, Franke 2015) remained in effect in the 2011–2021 decade, with just minor shifts among the categories.

H3 – The residential suburbanisation, which originally affected the immediate hinterlands of metropolises and growing regional centres, later expanded to more distant parts.

All the hypotheses were tested using the national census data.

6. Results

While the total population of Czechia has been rather stable, its junior component was slightly decreasing in the first decade and slightly increasing in the second, and the share of senior population aged 65 and over increased dynamically. The change in the economically active population was similar to the share of the junior population: decline in the first decade, followed by a slight increase. The most dynamic increase was noted in the share of the population with tertiary education aged 15 and over (see Figure 1).

The dynamics of change was obviously much higher for the “soft” features represented by higher education and age of population (here the engine of change was the increasing share of seniors). From the “hard” features, only dwelling stock showed a significant increase, while the other features remained rather stable with minor upward or downward changes during the periods.

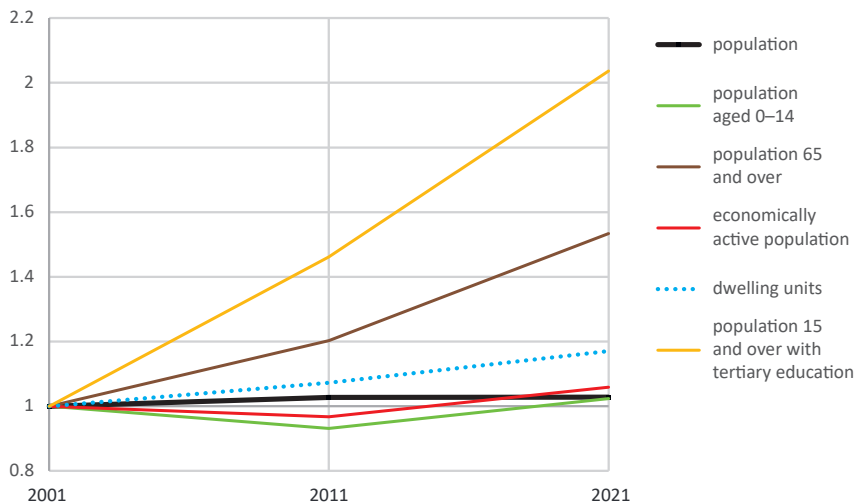


Fig. 1 – Overall national trends of changing population, economic activity, dwelling stock and tertiary-educated population in the period 2001-2021 (the starting year 2001 is normalised to 1)

The following overview with graphical interpretation including spatial autocorrelation trends (see Fig. 2 and Fig. 3) deals with the shares of data on the ORP micro-regions of the national equivalent, i.e. population, dwellings, higher education. The shares of the national values compensate for the effects of the changes on the national level.

The first group contains the indicators where higher values and growth can be evaluated positively: shares of total population, economically active population, permanently occupied dwellings, population aged 0-14 years.

6.1. Share of total population

The total population of Czechia did not change significantly in the first two decades of the 21st century. International migration has increasingly contributed to the balance of population numbers, compensating for natural population decline. The number of migrants makes up 5.8% of the Czech population (ČSÚ 2020), which is higher than the 5.2% average percentage representation of migrants in the EU (Eurostat 2020). The number of migrants with permanent residence has been increasing over the long term, indicating a longer and more secure stay in Czechia.

The population development in the 2010s was similar to the previous 2000s' period. The growth in the metropolitan hinterlands of Prague and Brno continued and even increased in the fringe areas of the Brno metropolitan region, but the

previously large growth rate has slowed in the immediate hinterland. The cities of Brno and Plzeň experienced a slight increase after a previous slight decrease.

The trends outside the metropolitan regions and agglomerations varied. The population along the motorway from Brno to Prague increased, and there was a slight change towards positive trends noticed even in the declining population of the Jeseníky mountains north of Olomouc. Conversely, the positive effects of the Bavarian border area from the period 2001–2011 became exhausted both in the immediate vicinity of the border and, to a certain extent, further inland. The Karlovy Vary region turned out to be a geographically continuous area of decline, with certain parts of rural border micro-regions showing an even further strengthening of the long-term trend toward depopulation (Fig. 2a).

6.2. Share of economically active population

The total economically active population of Czechia in the first two decades of the 21st century was first declining in the 2000s and then slightly increasing in the 2010s. However, the changes were spread unevenly among the regions and micro-regions. In the problem areas of the Karlovy Vary, Ústí nad Labem and Moravia-Silesia regions, the share of the economically active population was on the decrease. This is in contrast to the prosperous central Bohemia, Brno, Plzeň, České Budějovice and Mladá Boleslav urban agglomerations (Maier, Franke 2015). This contrast becomes less sharp for the 2010s' decade of 2011–2021, making comparison between the two decades slightly rosier, with most of the three problem regions showing certain improvement. However, the disparity between the prosperous and problematic parts of the country remains a reality (Fig. 2b).

6.3. Share of permanently occupied dwellings

The amount of permanently occupied dwellings in Czechia increased steadily by 7.2% in the first decade and 9.1% in the second. Large differences among micro-regions distinguish the growing Central Bohemia, Brno metropolitan region and most agglomerations of regional centres plus Mladá Boleslav from the rest of the country, including the regional centres in the structurally disadvantaged regions. The share of non-suburban micro-regions in the housing stock generally decreased.

In the 2010s, the previous boom in suburban housing construction in the hitherto most attractive immediate hinterlands of the prosperous centres of Prague, Brno, Plzeň and Mladá Boleslav declined somewhat, but still the increases are remarkable. The structurally weak Ústí nad Labem and Karlovy Vary regions, on the other hand, saw a slight turnaround from the previous sharp decline (Fig. 2c).

6.4. *Share of total population aged 0–14 years*

The child population in Czechia decreased by 6.9% in the 2000s and then increased by 9.9% in the following decade of the 2010s. However, a large increase (around 10 percentage points) showed in the 2000s decade for Central Bohemia as well as for the hinterlands of Brno and Plzeň. Most other micro-regions were losing their share of the youngest population (Maier, Franke 2015).

The decline of the share of the youngest population became omnipresent in rural and peripheral micro-regions. The rate of decline of the youthful population has increased especially in north-west Bohemia, while in most Moravian and some Silesian micro-regions, the rate of decline has slowed down considerably (Fig. 2d).

6.5. *Share of population with higher education*

In the three decades from 1991 to 2010, the number of university students almost quadrupled (Prudký, Pabian, Šíma 2010, p. 17). From 2010 to the present, the number of students has slightly decreased (Kohoutek et al. 2021). Following the census data, the share of the population with a tertiary education doubled in the first twenty years of the 21st century. The speed of the growth was by 46% in the 2000s respectively 39% the 2010s.

Showing the shares of national higher educated population compensates for these nation-wide changes. While the growth in the share of tertiary graduates in the 2000s was more concentrated in the hinterland of large cities (cf. Maier, Franke 2015), the growth between 2011 and 2021 was more widespread. There was even a slight slowdown in the hinterland of Prague and Brno. On the other hand, a certain growth may be observed in the border regions, being more pronounced, for example, in the Karlovy Vary region (Fig. 2e).

The second group contains the indicators where lower values and decrease can be evaluated positively in terms of future prosperity: shares of total population aged 65 and over and age index.

6.6. *Share of total population aged 65 and over*

The population aged 65 and over in Czechia has been growing steadily with an increase of 20.3% between 2001 and 2011 and 27.5% between 2011 and 2021. In this way, Czechia joined, with some delay, the countries of the Western and Southern Europe.

The dynamics of the share of the senior population in micro-regions on the national senior population is not complementary to the share of children in their

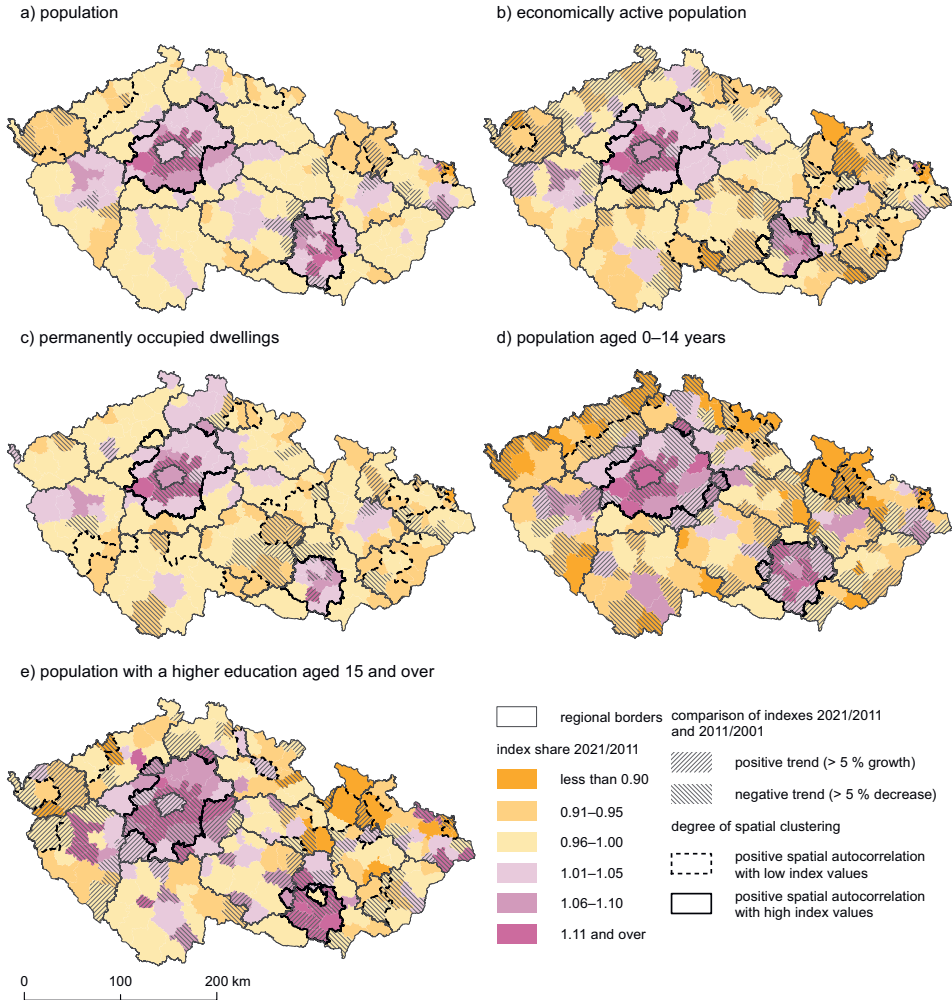


Fig. 2 – Geographical distribution of changes in the share of total national population, economically active population, permanently occupied dwellings, population aged 0–14 years and population with a higher education aged 15 and over: the decade of 2011–2021 and a comparison to the trend with the 2001–2011 decade

population. Increased relative ageing emerged in the hinterlands of Prague, Brno and the rural western and northern borderlands of Bohemia and Silesia. Most of inland rural micro-regions and especially the cities of Prague, Brno and partly also of Plzeň and Ostrava showed the opposite trend, especially in the decade of 2001–2011 (Maier, Franke 2015) while the following decade of 2011–2021 conforms with the change on national scale (Fig. 3a).

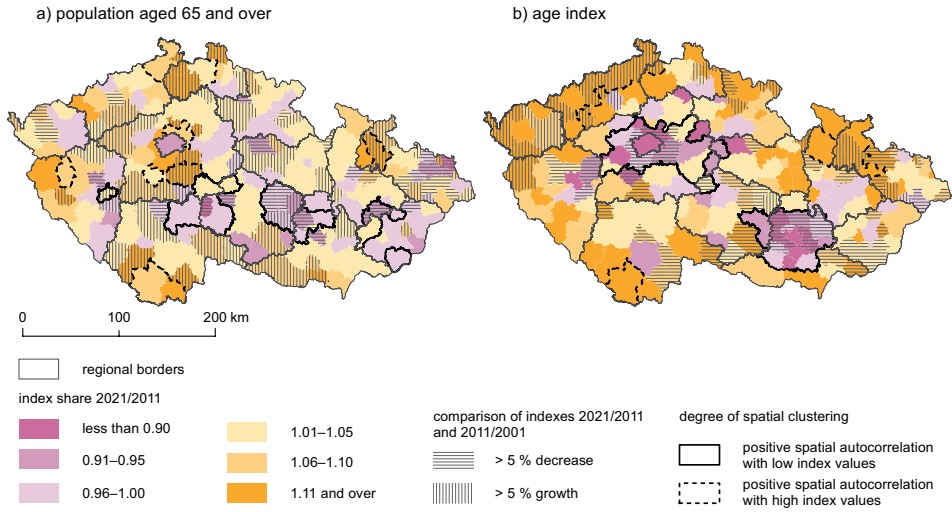


Fig. 3 – Geographical distribution of changes in the share of total national population aged 65 and over, and changes in age index: the decade of 2011–2021 and a comparison to the trend with the 2001–2011 decade

6.7. Development of the age index

The population of Czechia is ageing, similarly to other European countries, with a certain time lag compared to Western and Southern Europe. The national age index rose by 29% in the 2000s and by 16% in the 2010s. The use of shares on national values compensates for this and shows the relative position of micro-regions in the national context.

The ageing of the population affected most the border areas and, to a lesser extent, also the inland peripheries in both decades. This trend somewhat slowed in the eastern part of Moravia in the 2010s. The ageing was much less pronounced or was not even recorded in booming suburbs around Prague, and to lesser extent in those around Brno and Plzeň. However, the 2010s' decade showed a noticeable ageing in the population at the expense of the child population. The hinterland of Brno and Ostrava bucks this trend slightly (Fig. 3b).

6.8. Coincidence of trends

The depiction of the trends in the positions of micro-regions in the national context suggests that the trends coincided among the indicators for population, the economically active population, dwelling stock, higher education, children and

(conversely) the age index. The booming, attractive, younger, and better educated metropolitan regions expand while the remote and old industrial sections of the country were steadily losing in the competition. The second decade, i.e. the 2010s, show a slight decrease of the speed of the polarisation compared to the previous decade of the 2000s.

7. Population and tertiary education change in metropolitan areas

The metropolitan areas of Prague and Brno proved to be the most prosperous parts of the country in the last two decades and they seem to have best prospects for future development. To define metropolitan areas, we use positive spatial autocorrelation areas with high index values of total population change (see Fig. 2, part a) population).

As such, they were selected to show the change on the level of municipalities. The definition of the metropolitan areas is based on the intersection of territories with positive spatial autocorrelation of the high-high type for individual characteristics. Presented are changes of the share of population as a representation of “hard” characteristics and tertiary-educated population aged 15 and over for “soft” characteristics. The maps also show the changes between 2001–2011 and 2011–2021, both in a positive and negative sense (see Fig. 4 and Fig. 5).

Population development in the metropolitan areas did not proceed evenly. Most municipalities recorded growth, but secondary centres in the hinterland of Prague and some municipalities in the hinterland of Brno show population losses as well. By comparing the decades, we find that the cities of Prague and Brno recorded increased growth in some city districts during the period 2011–2021, as did most of the municipalities on the outskirts of the metropolitan area. Conversely, the dynamics of growth in the municipalities in the closer hinterland of the metropolis tended to decline (Fig. 4).

The development of the ratio of the share of the university-educated adult population with respect to the national development in the metropolises itself is rather negative, with a partial positive turn in some urban districts (Fig. 5). The metropolitan hinterlands mostly recorded growth, but its intensity decreased in a number of municipalities. The exception is again the formerly highly industrialised secondary centres in the Prague metropolitan hinterland (e.g. Kladno, Benešov), which remain in negative development, or perhaps this development accelerated even more in the second decade (Nymburk, Poděbrady).

Since we consider the development of the share of the tertiary-educated population as the potential for future prosperity, the observed values and trends indicate a further deepening of polarisation even within – otherwise prosperous as a whole – metropolitan areas.

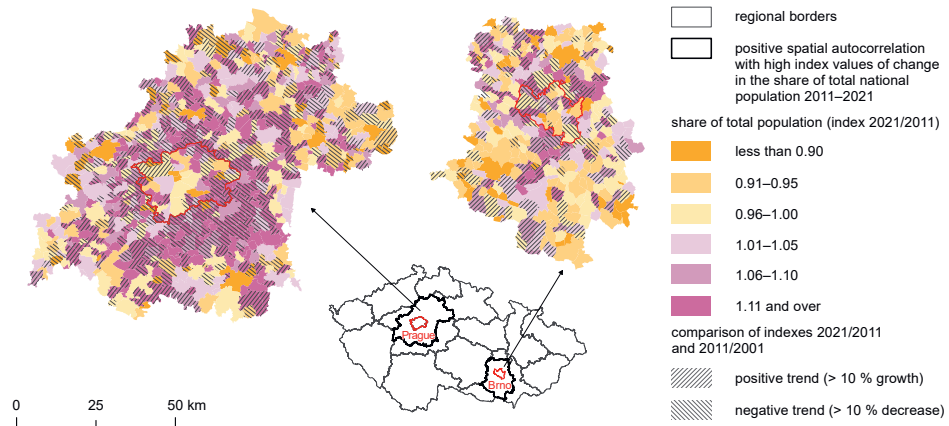


Fig. 4 – Change in the share of the total national population 2011–2021 and a comparison of the trend with the decade of 2001–2011 – Prague and Brno area

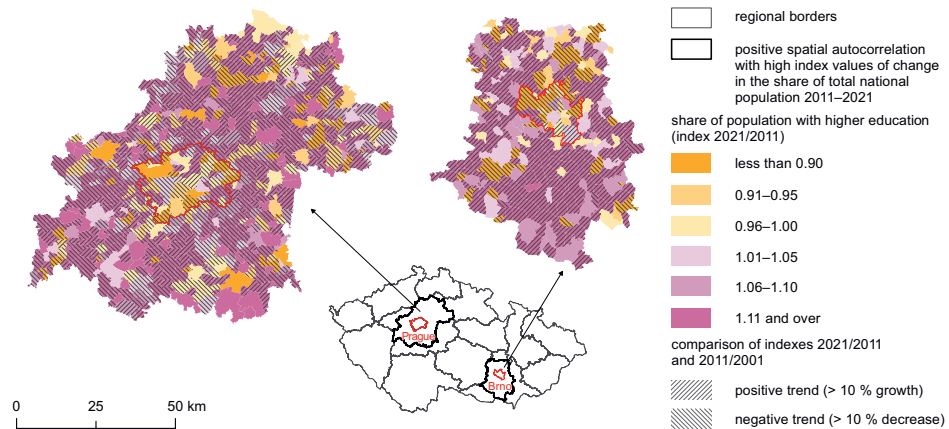


Fig. 5 – Change in the share of the tertiary-educated population 15 and over 2011–2021 and a comparison to the trend with the decade of 2001–2011 – Prague and Brno area

8. Typology of areas in terms of development trends

Spatial clustering analysis is used to identify inputs to the typology analysis created by multivariate clustering. From the clusters described above, those with similar clustering were selected. Thus, the population over 65 and the age index were excluded from the typology analysis. Using a cluster analysis of the trends in the indicators described above, seven types of micro-regions were identified (Fig. 6 and Fig. 7):

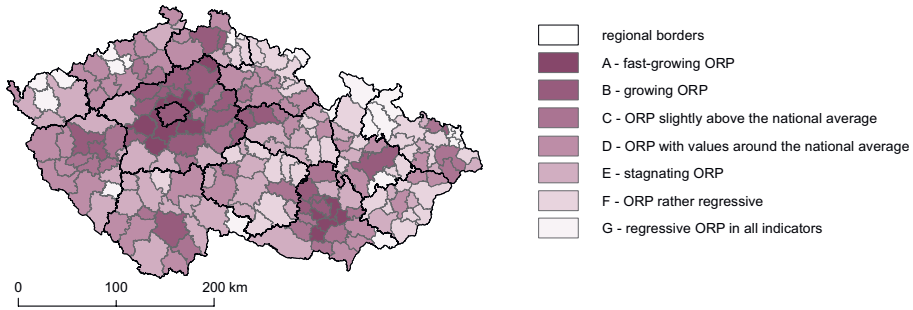


Fig. 6 – Typology of micro-regions

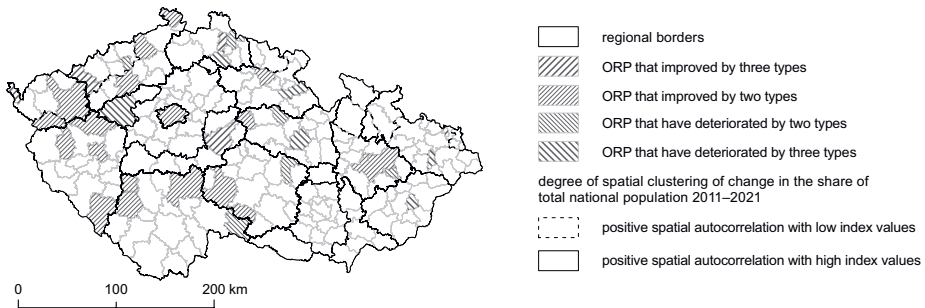


Fig. 7 – Development trends in individual types of the ORP micro-regions

A – fast-growing, socially on the rise metropolitan hinterlands around Prague and Brno, the trend of an expanding hinterland. Compared to the 2015 research (Maier, Franke 2015), micro-regions with a high share of industry, especially the automotive centre of Mladá Boleslav, have fallen out of this type, as the trend of rapid growth has shifted to the surrounding micro-regions.

B – growing agglomerations which, together with type A, form a ‘growth area’ covering the territory of most of central Bohemia, with outliers in the Plzeň and Liberec regions and, outside this area, agglomerations linked to other regional centres, České Budějovice, Pardubice and Brno, and sporadically other ‘island’ agglomerations in Moravia and Silesia.

C and D – with values around or slightly above the national average. In Bohemia, most of the micro-regions in these groups are located south and east adjacent to the ‘growth’ area of Plzeň–Central Bohemia–Liberec. In Moravia, this is mainly the wider hinterland of Brno on the Vienna–Brno–Olomouc axis. This ‘non-dynamic’ group also includes, surprisingly, the micro-region of the regional centre of Hradec Králové.

E – stagnating micro-regions in the ‘old industry’ regions, mainly in the northern half of the country and in the eastern part of Moravia.

F – characterised by rather regressive development, mainly in rural areas.

G – peripheral areas with relatively regressive development in almost all indicators. In the regions of Karlovy Vary, Ústí nad Labem and Moravia-Silesia, classified as structurally disadvantaged in the sense of regional policy (SRR 2020), there regressive micro-regions merge to cover almost the whole regions.

9. Development trends in particular types of areas

The types of micro-regions show diverse trends as depicted in the following Figure 8. Each graph shows a changing share of national values of population and dwelling stock; the starting year 2001 is normalised for the feature of population to 1; other features are related to the population feature.

The fast-growing micro-regions around Prague and Brno classified as type A show an increase in all observed indicators, except for the period 2001–2011 for the economically active population. However, the gradient of increase declined in the second decade for tertiary education, total and junior population, while the growing share of aged population even slightly increased.

The growth area of central Bohemia and the wider hinterlands of some regional centres comprises the largest part of population among the types; therefore, even apparently small relative change may bring about big changes in an absolute sense. Type B shows relative improvement of trends in the decade 2011–2021 in the share of the national economically active population and the population with tertiary education. The trend in the share of the national total population as well of junior population has steadily been growing.

Types C and D together make up a rather compact group geographically. Their initial positions in 2001 having been similar, they have differed in trends of change. For type C, trends are stable or increasing in the case of the share of tertiary educated, whereas type D shows generally negative trends in comparison with national values.

Type E represents mostly the old industrial regions in the northern part of the country. It is characterised by a worsening share on national values in all indicators, aggravated with a very low starting share of the highly educated population. The negative trends were strengthening in the second decade.

Types F and G represent the rural peripheries. They are also characterised by a worsening share on national values in all indicators. Type F shows a lower share of the child and senior population but without significant influence on the

economically active. Rapidity of decline is highest in type G, which has a very large share of the senior population; the initial value of the share of the junior population was quite high, but even this potential was diminishing.

10. Discussion

In the context of Czechia, the typology of territories from a sociological perspective often involves the categorisation of regions according to various socio-economic and geographical criteria. The article here presented belongs to the group of articles that deal with the tracking of changes over time to create a typology of territories that allows for a more accurate description of dynamic phenomena in the territory. Following the division into metropolitan areas, metropolitan hinterland, urbanised territory and rural areas (Hampl, Marada 2015; Perlín et al. 2010), it offers a more detailed classification based on 'hard' and 'soft' factors, and their dynamism. The resulting typology and its comparison over time support the theory of expanding suburbanisation with a tendency to move further away from metropolitan centres. At the same time, there appears a clear trend towards re-urbanisation as time passes since the peak of suburbanisation (Hornáková, Sýkora 2021) not only in Czechia, but also abroad (Haase et al. 2018).

The use of national census data determined the scope of indicators that were applied in the analyses. On the one hand, the 10-year periods over which the trends are monitored eliminate to some extent the cyclical fluctuations (crisis in 2009, subsequent boom before 2020). On the other hand, the persistent unreliability and incompleteness of the census data collected through census declarations is problematic, but it can be assumed that these defects on the data quality are roughly evenly distributed across the territory. More pronounced inaccuracies can be expected when 'zooming in' to the scale of municipalities (especially small ones), but the purpose of the analysis was to provide rather an overall picture showing whether the local development was geographically homogeneous or whether there were significant disparities even on this scale.

The use of spatial autocorrelation methods (Moran's I statistics) and multivariate clustering to identify spatial relationships for different areas representing different demographic variables is a method that has been validated many times (Kurek, Wójtowicz, Gałka 2021; Webber, Burrows 2018). As this article focuses mainly on the socio-demographic dimension, it does not use indicators from the economic sphere, as, for example, data on employment and unemployment. These economic topics are dealt with from a similar analytical perspective in Ženka and Slach (2018) or Netrdová and Nosek (2020).

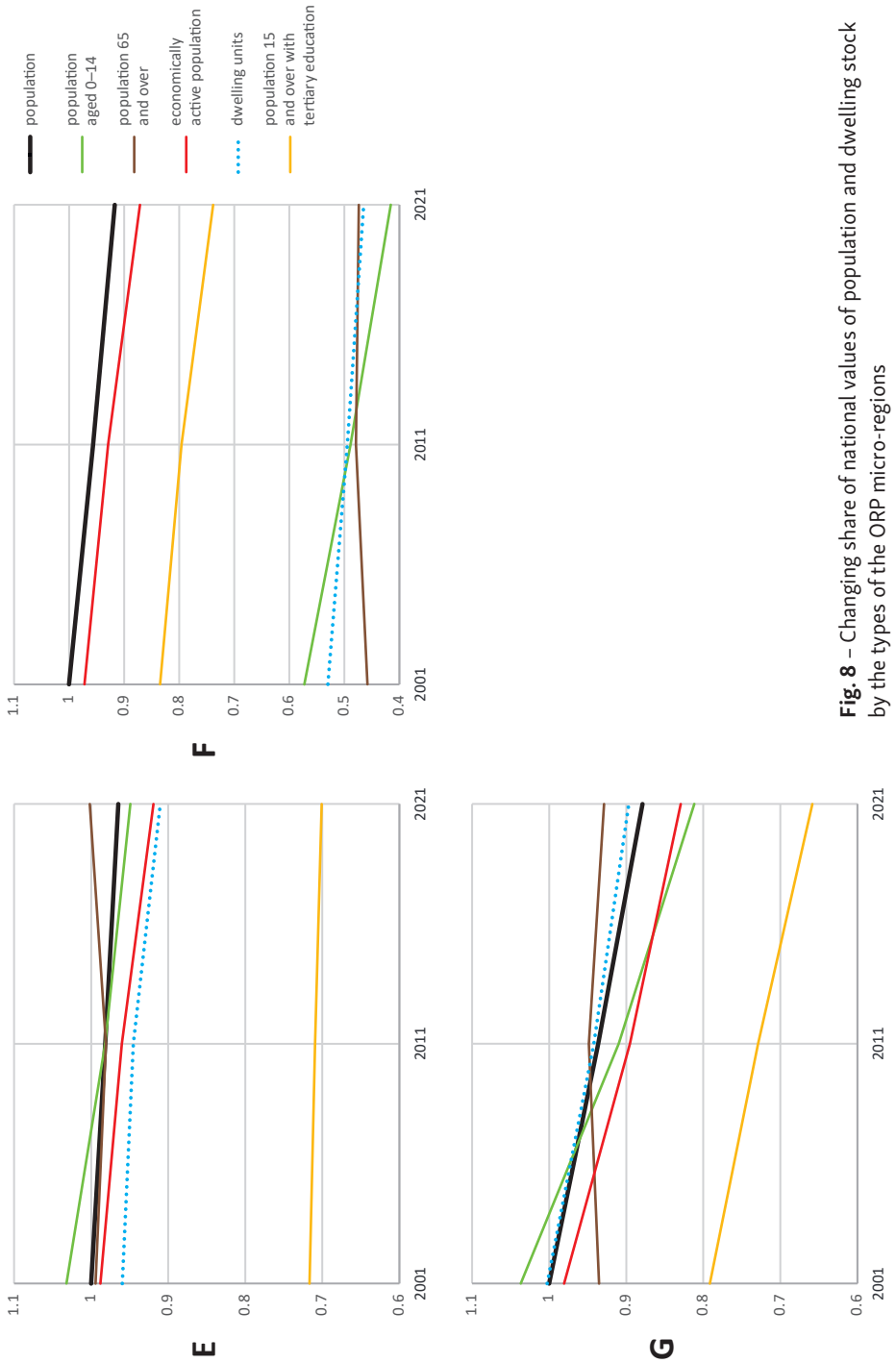


Fig. 8 – Changing share of national values of population and dwelling stock by the types of the ORP micro-regions

11. Conclusion

11.1. Verification of the hypotheses

- H1 - As shown for particular types of the micro-regions (see Fig. 8), the gap has been increasing between the growing and attractive types A, B, and to a certain extent also C, on the one hand, and the 'losing' types D, E, F, G on the other. The rate of growth eased somewhat in type A and B 'winning' territories, but the rate of decline in the 'losing' types remained unchanged. The share of the senior population even increased in the types D and E.
- H2 - The general distinction has remained between the 'winning' types of micro-regions that improved their position on the national scale and those 'losing'. However, certain shifts were identified (see Fig. 8), with promoting the micro-regions adjacent or encroached upon by prosperous neighbours or stimulated by improved accessibility (Tábor, Pelhřimov). Conversely, some rural peripheries further deteriorated; certain positive shifts in some micro-regions of the western borderlands prove an exception to this. In general, the process of spatial polarisation continues, manifested by the creation and growth of compact clusters of prosperity surrounded by areas of permanent deterioration. At the same time, "soft" characteristics in the 'losing' areas deteriorate at a greater rate than "hard" ones. The micro-regions with highest ageing and low share and outmigration of educated people coincide with the micro-regions with highest education failures. This worsens the outlook for their position in the future. However, there are some signs of a slowing in the regression processes in the most affected regions of Karlovy Vary and Moravia-Silesia, both in terms of population quality and educational success (Korbel 2023).
- H3 - The expansion of suburbanisation areas (types B and C) can be shown on the Figure 8. The zooms on the Prague and Brno metropolitan areas show that the municipalities closer to the core cities often slowed down their growth while the growth of more distant municipalities rather increased in the decade of 2011–2021.

11.2. Lesson from the analysis

Analysis of spatial autocorrelation shows that there are clearly defined territories in Czechia that show the same trends, whether they be upward or downward. These territories emerged by clustering micro-regions to larger areas. The indicators showing spatial autocorrelation are those for total population, population aged 0–14, the economically active population, permanent dwellings and the population with higher education. There is a noticeable cluster of increasing

values near Prague and most of central Bohemia, as well as the area of Brno and its surroundings. There is a cluster of decreasing values in the population data in the Karlovy Vary and Ústí nad Labem regions as well as the western mountainous part of the Moravian-Silesian region, all of which labelled as structurally disadvantaged regions by regional policy. It is interesting to note that the other regional cities do not show any significant clustering, but rather fluctuating values. The Moravian-Silesian region is very uneven by many indicators, with the largest micro-regional disparities in Czechia.

Compared with the autocorrelation executed for the decade of 2001–2011 (Maier, Franke 2015), the areas of the clusters centred around Prague and Brno have increased, more recently also including the core cities and some rural micro-regions on the fringe. Specifically, this relates to the shares of total population, population aged 0–14, permanently occupied dwellings, the economically active population and the population with a tertiary education. The other indicators do not show such an increase in the clusters. A certain turn from decrease towards increase was noticed in the northern border mountains, for shares of total population, population aged 0–14, and, to lesser extent, also the population with higher education.

The evidence provided by the above analysis shows that the effects of regional policy are ambiguous. The regional policy fuelled by the EU Structural Funds contributed to the creation of a number of jobs, especially in industry in the structurally disadvantaged regions, which may contribute to slowing down the decline in the economically active population, particularly in the Karlovy Vary and Ústí nad Labem regions, but it was not enough to cease or even slow population decline as well as the ageing of the population there. As the prevailing nature of the jobs created in this way has not created an attractive opportunity for people with higher education, it resulted in a continuous decline in the share of these regions of the national tertiary-educated population. Even massive support for the development of higher education in regional centres outside the traditional university cities (i.e. Prague, Brno and Olomouc) proved unable to reverse the trend.

11.3. Polarisation: from 'hard' to 'soft' factors

Recent migration trends in the country as well as the migration flows since the beginning of industrialisation have been driven by the availability of jobs. Consequently, migrants were typically young adults who were looking for employment. As in the 19th century, most emerging jobs were in industry and the migrants became labourers, which gradually changed the social structure of the urban population from bourgeois towards a social mix (cf. Macháčková, Matějček 2010). Later, during the inter-war Czechoslovak Republic, the flow of labourers to

urban areas declined relatively in favour of the middle-class (Kárník 2000), and this lasted even under Communist rule.

The post-1989 decades witnessed a different social profile of migrants: these were mostly well-educated with incomes allowing them to obtain a mortgage for a new home or at least an apartment (Ouředníček 2013). However, they were not moving to the core cities, but rather to their suburbanising hinterlands in order to fulfil their suburban dream of living close to the countryside, with a good job in the city. This reverted the previous dichotomy between cities and their rural hinterlands or, rather, it expanded the urban living to peri-urban areas.

Most of the current debate on suburbanisation has revolved around (quantitative) population growth in the perimeter of metropolises and regional centres to the detriment of peripheries and old industrial regions (cf. Szymańska, Michalski 2019; Ouředníček, Pospíšilová, Špačková 2013). On the basis of our research and similar research elaborated by Martynov and Sazonova (2023) for Poland, in future this may be increasingly the 'soft' factors expressed by the proxies of demographic age and education that will distinguish the prosperous parts of the countries from the structurally weak ones.

Unlike the pre-1989 pattern, the receiving areas of migration have been extending to large pools of metropolitan areas, likewise, the source areas of migration merge to larger territories, especially in the northern peripheral parts of the country.

Following the concept of Marsden, Lowe, Whatmore (1990) on rural restructuring, similar spots of prosperity and social well-being can emerge within the declining areas of types E and F, contrasted with localities of social exclusion in the booming types A and B as well as the in-between types C and D to accommodate the emerging precariat (Keller 2010, Standing 2011). For the Prague metropolitan region, Kostelecký and Vobecká (2017) describe these phenomena, which could not be captured on the scale of our research.

References

- ANSELIN, L. (1995): Local Indicators of Spatial Association – LISA. *Geographical Analysis*, 27, 2, 93–115. <https://doi.org/10.1111/j.1538-4632.1995.tb00338.x>
- BERNARD, J., ŠIMON, M. (2017): Vnitřní periferie v Česku: Multidimenzionalita sociálního vyloučení ve venkovských oblastech. *Sociologický časopis / Czech Sociological Review*, 53, 1, 3–28. <https://doi.org/10.13060/00380288.2017.53.1.299>
- BERNARD, J., KOSTELECKÝ, T., MIKEŠOVÁ, R., ŠAFR, J., ŠIMON, M., TRLIFAJOVÁ, L., HURRLE, J. (2018): Nic se tady neděje... Životní podmínky na periferním venkově. Sociologické nakladatelství (SLON), Praha.
- BLAŽEK, J., NETRDOVÁ, P. (2009): Can Development Axes Be Identified by Socio-economic Variables? The Case of Czechia. *Geografie*, 114, 4, 245–262. <https://doi.org/10.37040/geografie2009114040245>

- BLAŽEK, J., NETRDOVÁ, P. (2012): Aktuální tendence lokální diferenciacie socioekonomických jevů v Česku: směřuje vývoj k větší mozaikovitosti prostorového uspořádání? *Geografie*, 117, 266–288. <https://doi.org/10.37040/geografie2012117030266>
- BURSA, O. (2024): Migrační trajektorie mladých dospělých v pražském zázemí. *Sociologický časopis / Czech Sociological Review*, 60, 5, 507–530. <https://doi.org/10.13060/csr.2024.006>
- CALIŇSKI, T., HARABASZ, J. (1974): A dendrite method for cluster analysis. *Communications in Statistics*, 3, 1, 1–27. <https://doi.org/10.1080/03610927408827101>
- ČSÚ (2020): Vývoj obyvatelstva České republiky – 2020, Český statistický úřad, <https://csu.gov.cz/produkty/vyvoj-obyvatelstva-ceske-republiky-2020> (5. 11. 2024).
- ČSÚ (2024): Veřejná databáze, Český statistický úřad, <https://vdb.czso.cz> (5. 11. 2024).
- DZEIMBOWSKA-KOWALSKA, J., FUNCK, R.H. (1999): Cultural Activities: Source of Competitiveness and Prosperity in Urban Regions. *Urban Studies*, 36, 8, 1381–1398.
- EBDON, D. (1985): *Statistics in Geography*. Blackwell, Oxford. <https://doi.org/10.1080/0042098993042>
- ENYEDI, G. (1996): Urbanization under Socialism. In: Andrusz, G., Harloe, M., Szelenyi, I. (eds.): *Cities After Socialism: Urban and Regional Change and Conflict in Post-Socialist Societies*. Wiley-Blackwell. <https://doi.org/10.1002/9780470712733.ch4>
- ESPON ATTREG (2012): Attractiveness of Regions to Migrants and Visitors, <https://archive.espon.eu/topics-policy/publications/maps-month/attractiveness-regions-migrants-and-visitors> (5. 11. 2024).
- ESPON DEMIFER (2015): Demographic and migratory flows affecting European regions and cities, https://archive.espon.eu/sites/default/files/attachments/daniel_rauht_demifer.pdf (5. 11. 2024).
- ESPON EMPLOY (2017): The Geography of New Employment Dynamics in Europe, <https://www.espon.eu/employment> (5. 11. 2024).
- EUROSTAT (2020): Migrant integration statistics – 2020 edition, <https://ec.europa.eu/eurostat/documents/3217494/12278353/KS-06-20-184-EN-N.pdf/337ecde0-665e-7162-ee96-be56b6e1186e?t=1611320765858> (5. 11. 2024).
- FIALOVÁ, K., ŽELINSKÝ, T. (2019): Regional Patterns of Social Differentiation in Visegrád Countries. *Sociologický časopis / Czech Sociological Review*, 55, 6, 735–789. <https://doi.org/10.13060/00380288.2020.55.6.491>
- FRANKEN, E., BENTLEY, T., SHAFAEI, A., FARR-WHARTON, B., ONNIS, L., OMARI, M. (2021): Forced Flexibility and Remote Working: Opportunities and Challenges in the New Normal. *Journal of Management & Organization*, 27, 6, 1131–1149. <https://doi.org/10.1017/jmo.2021.40>
- FRIEDMANN, J. (1973): A Theory of Polarized Development. In: Friedmann, J. (ed.): *Urbanization, Planning, and National Development*. CA: Sage, Beverly Hills, 41–67.
- GEYER, H.S., KONTULY, T. (1993): A Theoretical Foundation for the Concept of Differential Urbanization. *International Regional Science Review*, 15, 2, 157–177. <https://doi.org/10.1177/016001769301500202>
- GEYER, H.S., KONTULY, T. (1996): *Differential Urbanization: Integrating Spatial Models*. Arnold, London.
- GORZELAK, G. (1996): *The Regional Dimension of Transformation in Central Europe*. Routledge, London.
- GORZELAK, G. (2021): Regional Policies in East-Central Europe. In: Fischer M., Nijkamp, P. (eds.): *Handbook for Regional Science*. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-662-60723-7_138

- GORZELAK, G., SMETKOWSKI, M. (2010): Regional Development Dynamics in Central and Eastern European Countries. In: Gorzelak, G., Bachtler, J., Smetkowski, M.: *Regional Development in Central and Eastern Europe: Development Processes and Policy Challenges*. Routledge, Oxon.
- GROSSMANN, K., KABISCH, S. (2011): Empirical Investigations on and in Polish and Czech Inner Cities. In: Haase, A., Steinführer, A., Kabisch, S., Grossmann, K.: *Residential Change and Demographic Challenge the Inner City of East Central Europe in the 21st Century*. Routledge.
- HAMPL, M. (2007): Regionální diferenciace současného socioekonomického vývoje v České republice. *Sociologický časopis / Czech Sociological Review*, 43, 5, 889–910. <https://doi.org/10.13060/00380288.2007.43.5.02>
- HAMPL, M., MARADA, M. (2015): Sociogeografická regionalizace Česka. *Geografie*, 120, 3, 397–421. <https://doi.org/10.37040/geografie2015120030397>
- HAASE, A., WOLFF, M., ŠPAČKOVÁ, P., RADZIMSKI, A. (2018): Reurbanisation in Postsocialist Europe – A Comparative View of Eastern Germany, Poland, and the Czech Republic. *Comparative Population Studies*, 42. <https://doi.org/10.12765/CPoS-2018-02>
- HAVLÍČEK, T., CHROMÝ, P. (2001): Příspěvek k teorii polarizovaného vývoje území se zaměřením na periferní oblasti. *Geografie*, 106, 1, 1–11. <https://doi.org/10.37040/geografie2001106010001>
- HEIDER, B. (2019): What drives urban population growth and shrinkage in postsocialist East Germany? *Growth and Change*, 50, 1460–1486. <https://doi.org/10.1111/grow.12337>
- HOEKVELD, J.J., BONTJE, M. (2016): Intra-regional differentiation of population development in Southern-Limburg, the Netherlands. *Tijdschrift voor Economische en Sociale Geografie*, 107, 282–297. <https://doi.org/10.1111/tesg.12149>
- HORNÁKOVÁ, M., SÝKORA, L. (2021): From suburbanization to reurbanization? Changing residential mobility flows of families with young children in the Prague Metropolitan Area. *Norsk Geografisk Tidsskrift – Norwegian Journal of Geography*, 75, 4, 203–220. <https://doi.org/10.1080/00291951.2021.1970014>
- JAIN, A.K. (2009): Data Clustering: 50 years beyond K-Means. *Pattern Recognition Letters*, 31, 8, 651–666. <https://doi.org/10.1016/j.patrec.2009.09.011>
- JASZ, K. (2010): Poverty and Social Exclusion in the Rural Areas of Hungary. *Eastern European Countryside*, 16, 157–174. <https://doi.org/10.2478/v10130-010-0008-2>
- KÄHRIK, A., TEMELOVÁ, J., KADARIK, K., KUBEŠ, J. (2016): What attracts people to inner city areas? The cases of two post-socialist cities in Estonia and the Czech Republic. *Urban Studies*, 53, 2, 355–372. <https://doi.org/10.1177/0042098014567444>
- KÁRNÍK, Z. (2000): *České země v éře První republiky (1918–1938)*. Vznik, budování a zlatá léta republiky (1918–1929). Libri, Praha.
- KELLER, J. (2010): *Tři sociální světy. Sociální struktura postindustriální společnosti*. Sociologické nakladatelství (SLON), Praha.
- KOHOUTEK, J., LOUNEK, V., ŠMÍDOVÁ, M., KOREČKOVÁ, J. (2021): Situace absolventů v podmínkách postmasového vysokoškolského vzdělávání: Stále jen reprodukce elit? *Sociologický časopis / Czech Sociological Review*, 57, 1, 47–73. <https://doi.org/10.13060/csr.2021.002>
- KORBEL, V. (2023): *Mapa vzdělávání*, PAQ Research, <https://www.paqresearch.cz/post/nova-mapa-vzdelavani> (5. 11. 2024).
- KOSTELECKÝ, T., VOBECKÁ, J. (2017): Socio-Spatial Inequalities in the Czech Metropolitan Areas: The Case of Prague Metro. In: Sellers, J.M., Arretche, M., Kübler, D., Razin, E. (eds.): *Inequality and Governance in the Metropolis*. Palgrave Macmillan UK, London, 221–236. https://doi.org/10.1057/978-1-137-57378-0_11

- KOSTELECKÝ, T., ŠIMON, M. (2016): Spatial Dimension of Post-1989 Transformation in Czechia. In: Lu, P. (ed.): *Beyond the transition. Social Change in China and Central-Eastern Europe*. Social Sciences Academic Press China, Beijing, 42–60.
- KRIŠŤĀNE, Z., BĚRZIŇŠ, M., KRATOVITŠ, K. (2016): Occupation and ethnicity: Patterns of residential segregation in Riga two decades after socialism. In: Tammaru, T., Marcińczak, S., van Ham, M., Musterd, S. (eds.): *Socio-economic segregation in European capital cities. East meets West*. Routledge, London, 287–312.
- KYZLINKOVÁ, R., VEVERKOVÁ, S., VYCHOVÁ, H. (2020): Práce z domova – popis stavu před pandemií a možné konsekvence do nových poměrů organizace práce, FÓRUM sociální politiky, <https://www.vupsv.cz/2020/10/21/prace-z-domova-%E2%88%92-popis-stavu-pred-pandemií-a-moznekonsekvence-do-novych-pomeru-organizace-prace> (5. 11. 2024).
- KUREK, S., WÓJTOWICZ, M., GAŁKA, J. (2021): Using Spatial Autocorrelation for identification of demographic patterns of Functional Urban Areas in Poland. *Bulletin of Geography. Socio-economic Series*, 52, 123–144. <https://doi.org/10.2478/bog-2021-0018>
- MACHAČKOVÁ, J., MATĚJČEK, J. (2010): *Nástin sociálního vývoje českých zemí 1781–1914*. Karolinum, Praha.
- MAIER, K., FRANKE, D. (2017): Trendy vývoje struktury osídlení v Česku v kontextu polycentrického rozvoje. *Urbanismus a územní rozvoj*, 5, 6–22.
- MAIER, K., FRANKE, D. (2015): Trendy prostorové sociálně-ekonomické polarizace v Česku 2001–2011. *Sociologický časopis / Czech Sociological Review*, 51, 1, 89–123. <https://doi.org/10.13060/00380288.2015.51.1.155>
- MAIER, K. (1998): Účinnost dosavadních a budoucích nástrojů pro snižování regionálních rozdílů v České republice. *Urbanismus a územní rozvoj*, 6, 30–34.
- MARCIŇCZAK, S.Z., SAGAN, I. (2011): The socio-spatial restructuring of Łódź, Poland. *Urban Studies*, 48, 9, 1789–1809. <https://doi.org/10.1177/0042098010379276>
- MARSDEN, T., LOWE, P., WHATMORE, S. (1990): *Rural Restructuring*. Routledge, London.
- MARTYNOV, V.L., SAZONOVA, I.E. (2023): Population change and the settlement system transformation in Poland, as revealed by the 2021 census. *Baltic region*, 15, 2, 41–61. <https://doi.org/10.5922/2079-8555-2023-2-3>
- MONASTIRIOTIS, V. (2011): Regional Growth Dynamics in Central and Eastern Europe, LEQS Paper, 33, London School of Economics and Political Science (LSE), European Institute, London. <https://doi.org/10.2139/ssrn.1802420>
- MUSIL, J., MÜLLER, J. (2008): Vnitřní periferie v České republice jako mechanismus sociální exkluze. *Sociologický časopis / Czech Sociological Review*, 44, 2, 321–348. <https://doi.org/10.13060/00380288.2008.44.2.05>
- MUSIL, J. (2001): Vývoj a plánování měst ve střední Evropě v období komunistických režimů. *Sociologický časopis / Czech Sociological Review*, 37, 3, 275–296. <https://doi.org/10.13060/00380288.2001.37.3.01>
- MUSIL, J. (1977): *Urbanizace v socialistických zemích*. Svoboda, Praha.
- MYRDAL, G. (1957): *Economic Theory and Under-developed Regions*. Gerald Duckwords, London.
- NETRDOVÁ, P., NOSEK, V. (2020): Spatial Dimension of Unemployment: Space-Time Analysis Using Real-Time Accessibility in Czechia. *ISPRS International Journal of Geo-Information*, 9, 401. <https://doi.org/10.3390/ijgi9060401>
- OUŘEDNÍČEK, M. (2013): Výzkum suburbanizace v Česk é republice: současné tendence vývoje a možné aplikace. In: Ouředníček, M., Špačková, P., Novák, J. (eds.): *Sub urbs: Krajina, sídla a lidé*. Academia, Praha.

- OUŘEDNÍČEK, M., ŠPAČKOVÁ, P., FEŘTROVÁ, M. (2011): Změny sociálního prostředí a kvality života v depopulačních regionech České republiky. *Sociologický časopis / Czech Sociological Review*, 47, 4, 77–803. <https://doi.org/10.13060/00380288.2011.474.07>
- OUŘEDNÍČEK, M., POSPÍŠILOVÁ, L., ŠPAČKOVÁ, P. (2013): Trvale a obvykle bydlící obyvatelstvo: praktické užití statistických dat. *Geografické rozhledy*, 23, 2, 30–31.
- OUŘEDNÍČEK, M., POSPÍŠILOVÁ, L., ŠPAČKOVÁ, P., KOPECKÁ, Z., NOVÁK, J. (2016): The Velvet and Mild: Socio-spatial Differentiation in Prague after Transition. In: Tammaru, T., Marcińczak, S., van Ham, M, Musterd, S. (eds.): *Socio-economic segregation in European capital cities. East meets West*. Routledge, London, 261–286.
- OUŘEDNÍČEK, M., KLSÁK, A., ŠPAČKOVÁ, P. (2019): In between city and village: the development of spatial patterns of Czech suburbanisation 1997–2016. *Demografie*, 61, 4, 299–308.
- PENZES, J. (2013): The Dimensions of Peripheral Areas and Their Restructuring in Central Europe. *Hungarian Geographical Bulletin*, 62, 4, 373–386.
- PERLÍN, R., KUČEROVÁ, S., KUČERA, Z. (2010): Typologie venkovského prostoru Česka. *Geografie*, 115, 2, 161–187. <https://doi.org/10.37040/geografie2010115020161>
- PRUDKÝ, L., PABIAN, P., ŠÍMA, K. (2010): České vysoké školství: na cestě od elitního k univerzálnímu vzdělávání 1989–2009. Grada Publishing, Praha.
- RUMPEL, P., SLACH, O., KOUTSKÝ, J. (2008): Měkké faktory regionálního rozvoje. Ostravská universita, Ostrava.
- SLADKÁ, D., KREIDL, M. (2022): Práce z domova, konflikty mezi prací a rodinou a kvalita partnerství v době pandemie covidu-19. *Sociologický časopis / Czech Sociological Review*, 58, 4, 373–399. <https://doi.org/10.13060/csr.2022.024>
- SMETKOWSKI, M., WÓJCIK, P. (2012). Regional Convergence in Central and Eastern European Countries: A Multidimensional Approach. *European Planning Studies*, 20, 6, 923–939. <https://doi.org/10.1080/09654313.2012.673560>
- SOKOL, M. (2001): Central and Eastern Europe a Decade after the Fall of State-socialism: Regional Dimensions of Transition Processes. *Regional Studies*, 35, 7, 645–655. <https://doi.org/10.1080/00343400120075911>
- SZYMAŃSKA, W., MICHALSKI, T. (2019): Population changes in former voivodeship cities in Poland in the context of suburbanization processes and loss of the administrative function. *Environmental & Socio-economic Studies*, 7, 3, 66–78. <https://doi.org/10.2478/environ-2019-0018>
- SRR (2020): Strategie regionálního rozvoje ČR 2021+, Ústav územního rozvoje, <https://mmr.gov.cz/cs/microsites/uzemni-dimenze/regionalni-rozvoj/strategie-regionalniho-rozvoje-cr-2021> (5. 11. 2024).
- STANDING, G. (2011): *The Precariat: The New Dangerous Class*. Bloomsbury Academic, London. <https://doi.org/10.5040/9781849664554>
- TEMELOVÁ, J., NOVÁK, J., OUŘEDNÍČEK, M., PULDOVÁ, P. (2011): Housing Estates after Socialism: Various Trajectories and Inner Differentiation. *Urban Studies*, 48, 9, 1811–1834. <https://doi.org/10.1177/0042098010379279>
- TIMÁR, J., VÁRADI, M.M. (2001): The Uneven Development of Suburbanization during Transition in Hungary. *European Urban and Regional Studies*, 8, 4, 349–360. <https://doi.org/10.1177/096977640100800407>
- VAN DEN BERG, L., DREWETT, R., KLAASSEN, L.H. (1982): *A Study of Growth and Decline*. Pergamon Press, Oxford.
- VIDOVIČOVÁ, L (2020): Recenze. Bernard, J. (ed.): *Nic se tady neděje... Životní podmínky na periferním venkově*. *Sociologický časopis / Czech Sociological Review*, 56, 2, 30–50.

- VIDOVIČOVÁ, L., GALČANOVÁ, L., PETROVÁ KAFKOVÁ, M., SÝKOROVÁ, D. (2014): Stáří ve městě, město v životě seniorů. Sociologické nakladatelství (SLON), Praha.
- WEBBER, R., BURROWS, R. (2018): The predictive postcode: The geodemographic classification of British society. Sage. <https://doi.org/10.4135/9781529714685>
- ŽENKA, J., SLACH, O. (2018): How do various types of regions attract creative industries? Comparison of metropolitan, old industrial and rural regions in Czechia. *Hungarian Geographical Bulletin*, 67, 239–257. <https://doi.org/10.15201/hungeobull.67.3.3>

ACKNOWLEDGMENTS

The article was prepared with the aid of financial support from institutional support for the development of the research organisation, Czech Technical University in Prague, Faculty of Architecture.

ORCID

KAREL MAIER

<https://orcid.org/0000-0002-8353-4539>

DANIEL FRANKE

<https://orcid.org/0000-0002-4127-373X>