

DIVERGENT URBAN TRAJECTORIES IN CENTRAL AND EASTERN
EUROPE: A COMPLEX TYPOLOGY OF SMALL TOWNS IN BULGARIA
AND HUNGARY

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The current study aims to develop a comparative typology of small towns in Bulgaria and Hungary in order to explore the spatial differentiation of their demographic, urbanistic, and socio-economic trajectories. A set of 21 indicators divided into 5 groups (demographic, urbanistic, infrastructural, socioeconomic, and administrative-functional) was used for classification. As a result, six clusters are identified by applying the Partitioning Around Medoids (PAM) clustering procedure. After determining the number of towns included in every cluster, a brief analysis was provided describing their strengths and weaknesses according to the mentioned indicators. The typology reveals substantial internal differentiation within both national contexts. Bulgarian towns form five clusters, including a unique outlier dominated by tourism-driven dynamics, while Hungarian towns are represented in all six clusters, with one cluster comprising exclusively Hungarian settlements. The findings demonstrate that small towns in Bulgaria

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and Hungary constitute heterogeneous socio-spatial systems shaped by demographic features, infrastructural disparities, and varying degrees of integration into regional networks.

Keywords: urban settlements, typology, socioeconomic disparities, Bulgaria, Hungary

РАЗНОПОСОЧНИ ГРАДСКИ ТРАЕКТОРИИ В ЦЕНТРАЛНА И ИЗТОЧНА ЕВРОПА:
КОМПЛЕКСНА ТИПОЛОГИЯ НА МАЛКИТЕ ГРАДОВЕ В БЪЛГАРИЯ И УНГАРИЯ

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Абстракт: Малките градове играят важна, но често недостатъчно проучена, роля в пространствената организация на селищната мрежа в Централна и Източна Европа. Техните траектории на развитие са оформени от демографските особености на населението, преструктурирането на местните икономики, инфраструктурните неравенства и променящите се модели на пространствена организация на селищната мрежа в двете държави. Настоящото проучване предлага подробна типология на малките градове в България и Унгария (с население 10 000–30 000 д.), с цел да се разкрият както социално-пространствената хетерогенност на изследваните градове, така и сходствата в тяхното развитие. За целите на типологията са използвани 21 показателя, които са разделени в пет групи: демографски, урбанистични, инфраструктурни, социално-икономически и административно-функционални. Тъй като наборът от данни включва както бинарни, така и метрични променливи, анализът прилага клъстеризация по метода „Разделяне около медоиди“ (Partitioning Around Medoids), използвайки разстоянието на Гоуър (Gower distance; Gower, 1971). С цел да се осигури сравнимост непрекъснатите променливи са стандартизирани независимо за всяка държава. Изчислените средни ширини на силуета определят избора за обособяването на шест клъстера с различен профил и разпределение на малките градове в България и Унгария. Получената класификация показва ясно изразена диференциация на изследваните градове в двете държави и групирането им в 6 клъстера с различна специфика: демографски и социално-икономически уязвими градове, периферни градове със структурни предизвикателства, регионални центрове със социално-демографски проблеми, градове с различен икономически профил и развитие, разположени предимно в субурбанизационни ареали, динамични „центрове на растеж“ в обхвата на най-големите градски агломерации и традиционни пазарни центрове, разположени в райони с развито земеделие. Българските малки градове попадат в пет клъстера, единият от които – Несебър – образува отделен тип поради специфичните си демографски и урбанистични характеристики, обусловени от силното развитие на туризма. Унгарските малки градове са по-равномерно разпределени във всички клъстери, като последният (шести) клъстер е съставен изцяло от унгарски селища, характеризиращи се с

периферно местоположение и исторически центрове на територии със селскостопанска специализация. Наблюдаваните различия между клъстерите ясно показват, че регионалната политика не бива да разглежда малките градски селища като хомогенна категория и това налага диференциран подход на интегрирано градско развитие, който е съобразен с местната специфика. Така, докато някои малки градове се нуждаят от инвестиции в основна инфраструктура и социална интеграция, за други се изисква разработването на специализирани стратегии за устойчиво развитие или управление на урбанизационните процеси. Малките градове в България и Унгария играят ключова роля в регионалното развитие на всяка от страните, но при значителни различия в техните функции и съвременни проблеми. Настоящото изследване доказва, че прилагането на подходящ клъстерен анализ е ефективен инструмент за идентифициране на социално-икономическите различия, но резултатите трябва да се тълкуват критично, като се отчитат контекстът и функционалните разлики между градовете. Резултатите от проведеното проучване са подходяща основа за бъдещи изследвания, фокусирани върху факторите, които трансформират малките градове в България и Унгария, поставяйки акцента върху важната им роля в демографското, селищното и социално-икономическото развитие в двете страни.

Ключови думи: градски селища, типология, социално-икономически неравенства, България, Унгария

INTRODUCTION

The evolution of settlement networks in Europe was a long, historically determined process that shaped the current spatial organization and hierarchical subordination of cities. The different regions of the European continent developed unique and divergent trajectories of spatial transformation of their towns. As a result, the national typologies of urban settlements use different criteria and indicators for categorization, mostly related to their size of population, socioeconomic, and administrative functions. In this context, scientific studies on the importance and role of small cities on a European scale have received insufficient attention to date (Gareis and Milbert, 2020; Wagner and Growe, 2021), particularly in comparative and cross-national perspectives.

The post-socialist changes have profoundly diverted the role and performance of small cities in Central and Eastern Europe (CEE). The settlements' significance and role in regional and spatial development were substantially affected by the restructuring of regional economies, population decline, urban sprawl, and migration flows (Sandu, 2024; Máté and Trócsányi, 2025). The uneven development patterns and increasing inequalities in the CEE small towns indicate the need for more comprehensive and complex typologies, beyond demographic or functional approaches. Analyzing similarities in political, economic, and urban transformation, Bulgaria and Hungary provide an appropriate context for a comparative study of their small cities. For both

countries, the definition of small cities as urban settlements with 10,000 to 30,000 inhabitants guarantees a suitable framework to elucidate the implicit differentiation and a more nuanced understanding of their population's features, socioeconomic performance, the provision of infrastructure facilities, and administrative capacity that are often omitted by existing classifications.

Therefore, the paper aims to analyze urban trajectories in Central and Eastern Europe by elaborating a methodological framework and constructing a complex (cluster-based) typology for comparative analysis of small towns in Bulgaria and Hungary.

DATA AND METHODOLOGY OF THE RESEARCH

Small towns play an important, yet insufficiently studied, role in the spatial organization of the settlement network in Bulgaria and Hungary. Their urban development trajectories are framed by demographic characteristics, the restructuring of local economies, infrastructure inequalities, and changing patterns of spatial organization of the settlement network in both countries. The paper offers a detailed typology of small towns in Bulgaria and Hungary (with a population ranging from 10,000 to 30,000 and 147 in total number, 2024), intending to highlight both the socio-spatial heterogeneity of the cities and the similarities in their evolution. In pursuit of elaborating an appropriate typology for the studied towns, it is necessary to develop a set of indicators (that reflect the key features of subjects) and select an adequate methodology to generate an accurate scientific classification of cities.

SELECTION AND DESCRIPTION OF INDICATORS

The selection of indicators for the aims of this study was based on the availability of data in both countries, as well as their relevance to the research goal, i.e., the grouping of small towns in Hungary and Bulgaria into groups (types) where the studied urban settlements exhibit similar demographic, urbanistic, and socio-economic features. Although no indicators are considered universally appropriate for the overall description of the studied urban settlements, the selected indicators have been deemed adequate for the purposes of the study. Their availability is key, since some indicators may be appropriate, but the lack of availability of data on the values of such indicators at the settlement level (city/town) makes them inapplicable. Thus, a set of 21 indicators was created, where all indicators can be divided into groups, depending on their nature: demographic, urbanistic, infrastructural, socio-economic, and administrative-functional (Table 1).

The main sources of information regarding the selected indicators are as follows:

- For small towns in Hungary - Hungarian Central Statistical Office (www.ksh.hu); Hungarian Land Administration Database (<https://en.foldhivatal.hu>); TakarNet (www.takarnet.hu); European Environment Agency. Data Hub. Corine Land Cover (www.eea.europa.eu); GeoX DSMMatrix (<https://geox.hu>); National Spatial Plan (<https://lechnerkozpont.hu>), Ministry for National Economy (<https://kormany.hu/kormanyzat/nemzetgazdasag-miniszterium>), and the National Gazetteer of Hungary (<https://lechnerkozpont.hu>);
- For small towns in Bulgaria – National Statistical Institute (www.nsi.bg); Ministry of Health (www.mh.government.bg); Employment Agency-Ministry of Labor and Social Policy (www.az.government.bg); Municipality Integrated Development Plans 2021-2027 (<https://www.strategy.bg>); Industrial Parks according to the Register of the Ministry of Economy and Industry (<https://www.mi.government.bg/register/registar-na-industrialnite-parkove-po-chl-21-1-ot-zakona-za-industrialnite-parkove>); Schools and Universities Register (<https://registarnauchilishtata.com>); Executive Agency “Maritime Administration” (<https://www.marad.bg/bg>); National Railway Infrastructure Company (<https://www.rail-infra.bg>); Google Maps (<https://www.google.com/maps>); National Tourism Register (<https://ntr.tourism.government.bg/CategoryzationAll.nsf/mn.xsp>).

The demographic group of indicators consists of 5 indicators which describe population dynamics and density, age and educational structure of the population (Table 1). The urbanistic group of indicators consists of 3 indicators describing the dynamics of new construction, green areas, and soil-sealing in the studied urban settlements. The infrastructural group of indicators is the largest, and consists of 11 indicators describing various aspects of the infrastructural development of the studied cities – transport connectivity, educational and healthcare facilities, tourism functions, etc. The so-called socio-economic group of indicators only consist of 1 indicator (unemployment rate), mostly due to the lack of data for other potentially appropriate indicators, and so is the so-called “administrative-functional” group of indicators, consisting of one indicator - administrative functions/hierarchical level of the studied urban settlements (NUTS 3 center or LAU 1 center only).

Table 1.

Selected indicators by group

GROUP	INDICATOR
DEMOGRAPHIC	Population number (2024)
	Relative change of the population number between the two latest censuses (%)
	Age dependency ratio (people aged 0-14, and 65+/15-64) - latest census (%)
	Relative share (%) of the population with a higher (tertiary) education (university degree) of the total population aged 7+ years old (latest census)
	Population density in the urbanized area (people/sq. km)
URBANISTIC	Relative share of new residential construction (2020–2023) in the 2023 housing stock (%)
	Relative share of green areas and parks of the total settlement area (%)
	Relative share of impervious (sealed) areas of total settlement area (%)
INFRASTRUCTURAL	Access to NUTS 3 administrative center (time needed using the shortest road route) – in minutes
	Railway services (number of railway stations/stops)
	Relative share of dwellings connected to public sewerage (%)
	Access to municipal wastewater treatment plant - YES/NO
	General hospital – YES/NO
	Secondary schools – number
	University (or branch) – YES/NO
	Bed capacity in accommodation facilities - number of beds
	Industrial parks – YES/NO
	Access to airport services (time needed using the shortest road route) – in minutes
	Maritime/River port facilities - YES/NO
	SOCIO-ECONOMIC
ADMINISTRATIVE-FUNCTIONAL	Administrative functions (NUTS 3 center or LAU 1 center only)

CLUSTERING METHOD

To identify development typologies of small towns in Bulgaria and Hungary, we applied a Partitioning Around Medoids (PAM) clustering procedure using a set of demographics, infrastructural, urbanization, and socio-economic indicators. Since the dataset contains both binary and metric indicators, we first standardized all continuous variables to ensure comparability. Since the average values for metric variables showed significant differences between the two countries, we standardized the data separately for each country to produce a common typology. The dissimilarity structure among towns was then computed using Gower distance (Gower, 1971), which accommodates mixed data types by

combining normalized absolute differences for numeric variables with matching coefficients for binary indicators.

PAM was selected because it is well-suited to regional and socio-economic datasets that contain heterogeneous and potentially noisy information. Unlike k-means, which relies on abstract centroids, PAM identifies medoids, i.e., actual observations that minimize within-cluster dissimilarities (Kaufman and Rousseeuw, 1990). This feature increases robustness to outliers and enhances interpretability, as each medoid represents a “typical” town in its cluster.

The clustering process consisted of two main steps. First, PAM’s build stage selected an initial set of medoids by minimizing the total dissimilarity within clusters. Second, the swap stage iteratively evaluated replacements between medoids and non-medoids to further reduce clustering cost. After convergence, each town was assigned to the nearest medoid according to the Gower dissimilarity matrix.

To determine the appropriate number of clusters, we computed average silhouette widths for solutions with varying numbers of clusters. The final number of clusters was chosen based on the maximization of the silhouette coefficient, balancing within-cluster cohesion and between-cluster separation. The resulting clusters were interpreted using both the medoid towns and the mean values of the original indicators, enabling a substantive characterization of development types.

RESULTS

To determine the appropriate number of clusters, we computed average silhouette widths across a range of solutions. The six-cluster model achieved the highest silhouette value, indicating a balanced structure with strong internal cohesion and clear separation between types. Based on this result, we adopted the six-cluster solution as the final typology (Table 2).

Table 2.

Cluster distribution of small towns in Hungary and Bulgaria

Cluster number	Bulgaria	Hungary
Cluster 1 Demographically and socioeconomically vulnerable cities	Aytos, Botevgrad, Cherven Bryag, Chirpan, Dupnitsa, Harmanli, Ihtiman, Sevlievo, Svilengrad, Gorna Oryahovitsa, Troyan, Razlog, Gotse Delchev, Karlovo, Karnobat, Kavarna, Nova Zagora, Samokov, Panagyurishte, Parvomay, Peshtera, Petrich, Pomorie, Radnevo, and Rakovski	Törökbálint, Dunaharaszti, Várpalota, Veresegyház, Nagykőrös, Tapolca, and Balatonfüred
Cluster 2	Bankya, Bansko, Kostinbrod, Novi Iskar, and Radomir	Balmazújváros, Hajdúszoboszló,

Suburban transition towns with mixed economic development		Balatonalmádi, Tiszavasvári, Abony, Isaszeg, Kiskőrös, Pilis, Bicske, Püspökladány, Gárdony, Monor, Hajdúhadház, Maglód, Göd, Gyömrő, Nagykáta, Pilisvörösvár, Tolna, Vecsés, Sajószentpéter, Sárbogárd, Albertirsa, Lajosmizse, Újfehértó, Törökszentmiklós, Sárospatak, and Tiszakécske
Cluster 3 Peripheral towns with structural challenges	Lom, Kozloduy, Popovo, Sandanski, and Velingrad	Mezőtúr, Karcag, Kalocsa, Makó, Bonyhád, Kazincbarcika, Siófok, Dombóvár, Marcali, Sárvár, Komló, Balassagyarmat, Hajdúnánás, Kapuvár, Orosháza, Mohács, and Kiskunhalas
Cluster 4 Demographically declining regional hubs	Lovech, Razgrad, Silistra, Smolyan, and Svishtov	Gyula, Sátoraljaújhely, Gyöngyös, Ajka, Kisvárd, Jászberény, Keszthely, Tata, Hatvan, Szekszárd, Szarvas, Esztergom, and Pápa
Cluster 5 Dynamic suburban growth poles	Nessebar	Pécel, Pomáz, Halásztelek, Diósd, Budakeszi, Szigethalom, Tököl, Szentendre, Budakalász, Kistarcsa, and Kerepes
Cluster 6 Traditional agricultural market towns	-	Hajdúböszörmény, Paks, Csongrád, Komárom, Biatorbágy, Dabas, Mór, Békés, Dorog, Berettyóújfal, Úlló, Körmend, Szentes, Nyírbátor, Kőszeg, Ráckeve, Százhalombatta, Mátészalka, Mezőkövesd, Budaörs, Kiskunfélegyháza, Kiskunmajsa, Gyál, Tiszaújváros, Tiszafüred, Fót, Oroszlány, Hajdúsámson, Gyomaendrőd, and Bátortereny

Cluster 1, “Demographically and socioeconomically vulnerable cities”, contains a higher proportion of Bulgarian towns (25) than Hungarian ones (7). This group of settlements shows average performance across the examined dimensions. The Hungarian cities in this cluster are primarily located in the country's central region, while Bulgarian towns exhibit a more dispersed territorial distribution.

Cluster 2, “Suburban transition towns with mixed economic development”, comprises 5 cities in Bulgaria and a higher number of Hungarian ones (28). Most of the Hungarian cities in this cluster are located in the northeastern region of the country and in the transitional catchment area connected to the Budapest agglomeration from the east. Except Bansko, Bulgarian towns are part of the functional urban area of Sofia city.

Cluster 3, “Peripheral towns with structural challenges”, contains a higher proportion of Hungarian towns (17) than Bulgarian ones (5). The cities in the third cluster have a peripheral location and are far from the respective capitals, Sofia and Budapest. As for Hungarian towns, which can be considered to show slower progress in terms of socio-economic and urbanization development, the Bulgarian towns exhibit a more diverse pace of current transformation.

The fourth cluster, “Demographically declining regional hubs”, is made up of 18 small towns and accounts for 12.2% of their total number in both countries (and ranks second to last among all clusters). It comprises 5 Bulgarian and 13 Hungarian small cities with distinctive features and urban development. They stand out as the most populous small towns, but show unfavorable demographic trends, and are significant regional employment hubs.

The fifth cluster, “Dynamic suburban growth poles”, consists exclusively of 11 small towns in the Budapest agglomeration, and only one city in Bulgaria – Nessebar. All of them are characterized by rapid population growth, and their position is determined not only by good accessibility but also by outstanding socio-economic development. The rate of commuting for Hungarian small towns is remarkably high, with most of the workforce living in these cities taking up employment in Budapest.

The sixth cluster, “Traditional agricultural market towns”, consists exclusively of Hungarian cities (30 in number). These cities, as a rule, are traditional centers of agricultural territories, and this fact affects their geographical distribution. The towns in this cluster are experiencing significant emigration, and the regional labor market is struggling with structural problems.

Although the clusters include towns from both Bulgaria and Hungary, several are dominated by towns from one country, reflecting structural differences in demographic performance, infrastructure availability, and socio-economic conditions. The medoid towns provide an intuitive reference for interpreting each cluster's development profile, illustrating the typical indicator combinations within each type (Table 3).

Table 3.

Medoids and dimensional indicators for six clusters

Cluster	Medoid	Demography	Urban	Infra	Economic
1	Panagyurishte	0,16	0,11	0,30	-0,13
2	Bicske	0,03	-0,15	0,18	-0,07
3	Dombóvár	-0,11	-0,28	0,55	-0,26
4	Gyöngyös	-0,22	0,09	0,80	0,05
5	Kerepes	0,59	0,69	0,09	1,46
6	Mór	-0,23	-0,08	0,37	-0,21

Overall, the six-cluster PAM solution yields a coherent, empirically grounded typology. It highlights the diversity of development trajectories among small towns and provides a systematic basis for comparing local conditions across the two countries (Fig. 1 and Fig. 2).

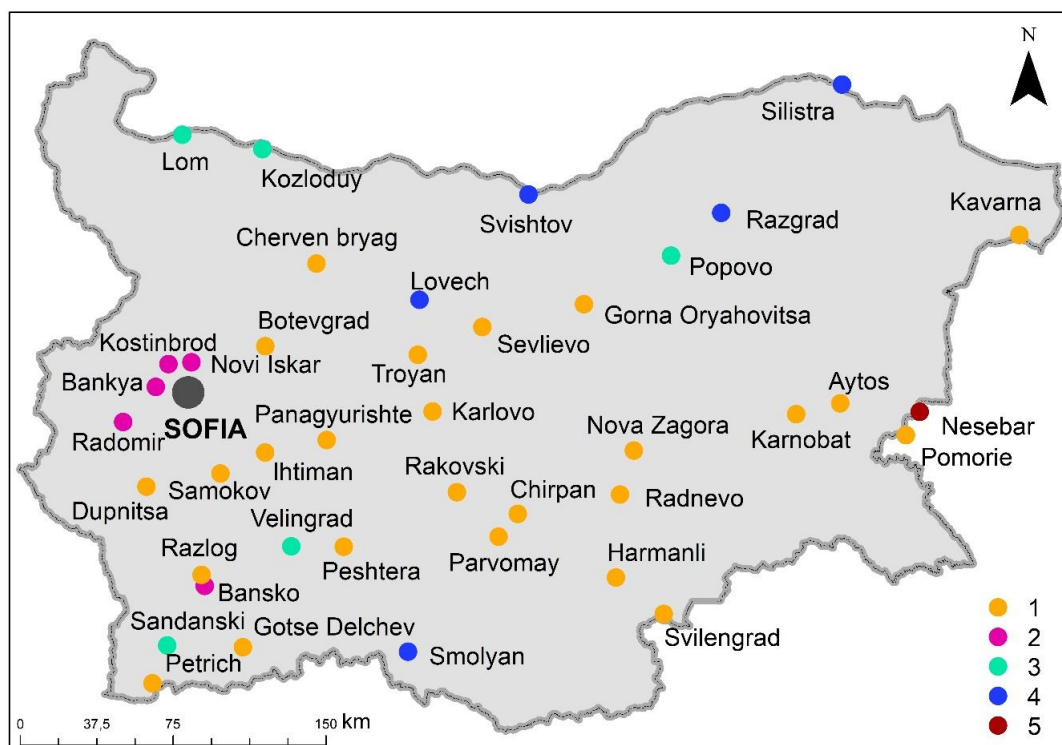


Fig. 1. Territorial distribution of small towns in Bulgaria (according to clusters)

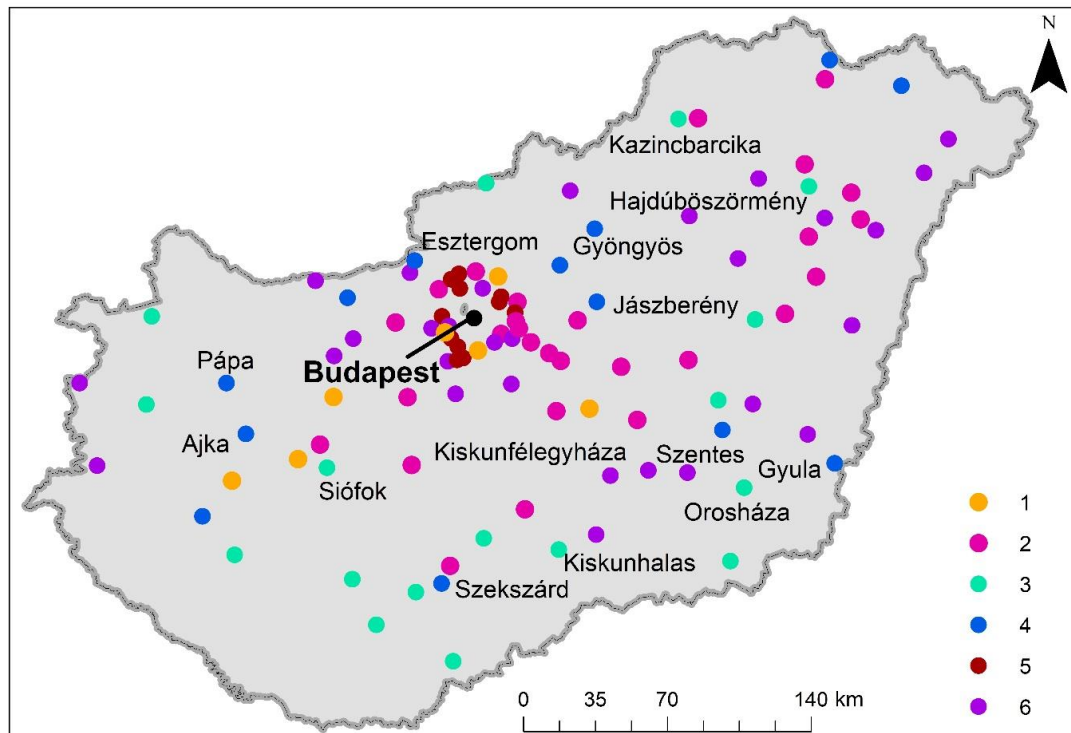


Fig. 2. Territorial distribution of small towns in Hungary (according to clusters)

DESCRIPTION OF THE BULGARIAN AND HUNGARIAN SMALL TOWNS BY CLUSTERS

Cluster 1. Demographically and socioeconomically vulnerable cities

The Bulgarian towns in cluster 1 are located in various parts of the country, without a clear spatial distribution pattern. However, the majority of them are located in the Sub-Balkan valleys, the Srednogorie region, the Fore-Balkan and the foothills of the Rhodopes, Rila and Pirin mountains. What the towns in this cluster have in common is that they are located outside the zones of influence of large cities and are relatively distant from the main urbanization axes. Some of them, such as Dupnitsa, Petrich, Parvomay, and Harmanli, do exhibit better transport connectivity, but this does not change their generally peripheral location compared to the main urbanization cores. The cluster includes the most numerous group of towns – a total of 25 (61% of the studied towns in Bulgaria), which largely suggests that this is also the most diverse cluster in terms of individual indicators' values. The average size (population number) of Cluster 1 towns is 16,600.

Cluster 1 towns clearly exhibit demographic challenges related to population decline and strong population aging, which outlines a profile of

relatively vulnerable urban settlements in the long term. The most significant common demographic dimension in this cluster is the high age dependency ratio – the highest value among all clusters – exceeding in some cases 65 (Parvomay and Chirpan). The relative share of population decrease between the last two censuses is significant and amounts to an average of -13%, which indicates a permanent demographic decline, caused by both negative natural growth and net migration rate.

Cluster 1 cities also exhibit the lowest share of the population with higher (tertiary) education – between 10% and 20% of the population, which is significantly lower than the national average, indicating limited social capital for the development of economies dependent on qualified employment. Exceptions such as Botevgrad, Dupnitsa, Gorna Oryahovitsa, and Troyan – where the share of university graduates reaches 21–22% – create some internal variation but do not change the general profile of the cluster in that aspect as a whole.

In general, cluster 1 is characterized by twice as high unemployment as the national average, with significant inter-cluster variations – some towns, such as Sevlievo (3.9%), Gorna Oryahovitsa (5.1%), Pomorie (5.2%), and Troyan (5.1%) – exhibit low unemployment rate values, normally seen in better functioning local economies. At the same time, Cluster 1 also includes settlements with significantly higher unemployment – Cherven Bryag (14.1%), Rakovski (11.0%), Razlog (8.8%), Karlovo (8.5%), Petrich (8.2%), etc. These values signal structural economic problems, unemployment related to a limited industrial base and a lack of sustainable investments.

The cluster 1 towns show a well-developed basic infrastructure but with a relatively limited functional capacity, which reflects their profile of small- to medium-sized municipal centers. Car access to a NUTS 3 regional center is 47 minutes on average but varies in a wide range from 25 minutes to over an hour, which places most settlements within the framework of moderate transport accessibility. That temporal distance to NUTS 3 regional centers allows for relatively easy daily travel but is not good enough for the population to fully benefit from the potential and opportunities provided by a nearby regional center. Access to railway services is favorable – almost all towns in this cluster have a railway station, with the exception of a few isolated cases. This emphasizes the good inclusion of cluster 1 in the national railway transport network, although the actual intensity of rail transport use has been decreasing in recent years.

The degree of public sewage connection in cluster 1 towns is relatively high (89%), but still, lower than in the other clusters. Almost all towns have a general hospital, providing health services not only to town's population only but of the municipality in general. The average number of high schools per town, however, is relatively small – an average of 3.1 – suggesting a limited choice for students. There are no universities or university branches in any of the cluster 1 towns, which is to be expected given the general profile of the towns. The tourist capacity, measured by the number of beds in accommodation facilities, shows

significant within-cluster variations: from almost zero (Rakovski) to over 6,000 beds (Pomorie), which is a result of the level of tourist resources availability. The two industrial parks, “Riahovets” (Gorna Oryahovitsa) and “Radnevo” (Radnevo) in the cluster, have limited capacity to attract external investments. Access to an airport is moderate, and the lack of sea or river ports (with the exception of Kavarna and Pomorie) limits connectivity with international transport corridors. The seaside resort town of Pomorie is the only case of close proximity to an international airport (Burgas airport).

The urbanization profile of cluster 1 reveals a picture of relatively poorly modernized and unevenly developed urban areas, where the processes of renovation, greening and spatial restructuring are taking place with limited intensity only. The share of new construction for the period 2020–2023 is extremely low in almost all settlements in this group – the values vary between 0.1% and 1%, which indicates minimal urban modernization and limited investment interest. Only a few towns – such as Kavarna (2.2% – a tourist center), Gotse Delchev (2.4%), Razlog (2.2%) and Svilengrad (2.3%) – demonstrate more significant construction activity, but even there the pace remains moderate. This indicates significant barriers to the renovation of the housing stock and the development of the urban environment, which is in line with the observed demographic trends of population decline and aging. Green infrastructure in cluster 1 towns is limited – the share of green areas in the urbanized territory is low for – below 10%, and in a number of cases it even drops below 5% (e.g. Cherven Bryag – 1.8%, Harmanli – 2.9%, Petrich – 1.2%, and Pomorie – 1.0%). This suggests that the towns in this cluster suffer from insufficient greening, which affects the quality of life, urban microclimate, and environmental sustainability. Exceptions, such as Nova Zagora (20.5%), Botevgrad (15.8%), Gorna Oryahovitsa (14.4%), and Sevlievo (9.6%), show potential for a more balanced urban environment, but they do not change the general profile of the cluster as a whole. The share of soil sealing is another key characteristic that clearly highlights the functional structure of cluster 1 towns. In most cases, sealed areas occupy 40–55% of the urbanized territory, which indicates compact but highly densified urban cores and relatively limited green or recreational areas. Towns such as Panagyurishte (60.7%), Pomorie (59.7%), Peshtera (56.2%), and Nova Zagora (55.8%) show a particularly high share of sealed areas, which positions them among the most intensively densified urban structures within the cluster. Others, such as Troyan (28.1%) and Cherven Bryag (32.6%), demonstrate lower densification, but often at the expense of a lack of new construction or undeveloped territories. Taken together, these three indicators highlight that cluster 1 brings together towns with a low rate of urban renewal, low levels of greening and a high degree of soil sealing – a combination typical of small and medium-sized towns with limited economic activity, weak investment flow and aging urban structures. This makes them more vulnerable both in terms of demographic sustainability and quality of the urban environment. The comparison

between the clusters shows that cluster 1 positions itself as a group of towns with the slowest rate of modernization and the greatest deficit of an urban green system.

In summary, cluster 1 can be considered the most vulnerable from a demographic perspective, differing from the other clusters through a combination of a high age dependency ratio, persistent population decline, and limited educational and social capital.

There are only seven Hungarian cities in this group, most of which are located in the country's central region, partly in the outer zone of the Budapest agglomeration and partly near Lake Balaton. These are cities with generally favorable indicators, but their central spheres of influence are more limited because they remain in the shadow of one or another larger city.

In terms of demographic trends, the picture is favorable, with the population of the cluster's cities growing by more than 5% on average over the past 10 years (only Tapolca stands out, with a significant population decline of more than 10%). In terms of age structure, the two towns close to Lake Balaton (Balatonfüred and Tapolca) are in a special situation, characterized by a high dependency ratio, partly due to the tendency of older people to move to the region in greater numbers.

The population density of the cities in the cluster is average, and the proportion of green areas is relatively high, with the sole exception of Törökbálint, located in the inner zone of the Budapest agglomeration and strongly affected by suburbanization processes. The proportion of impervious surfaces is also high in the settlements close to Budapest (Dunaharaszti, Törökbálint, and Veresegyház), while it is average in the other cities.

In terms of network infrastructure, sewerage coverage is low (the lowest rate among all Hungarian cities in the cluster). This is mainly because the sewage network in the resort areas of towns near Lake Balaton is not fully developed. In terms of transport and transportation infrastructure, railways play a primary role, with all cities in the cluster having rail connections, none of the towns having river ports, and airport accessibility not being considered favorable.

The cities in the cluster cannot be considered primary institutional centers; these functions are performed by the county seats (Veszprém for Balatonfüred, Tapolca, and Várpalota, and Budapest for the other cities). Accordingly, the network and range of local secondary education institutions can be considered weaker, and only one city (Nagykőrös) has a higher education institution. In terms of tourism infrastructure, there is a significant imbalance within the cluster. While the vast majority of towns in the cluster have low capacity, Balatonfüred (a major tourist destination even on a national scale) stands out with 1,136 beds per 1,000 inhabitants.

Socio-economic development indicators paint a favorable picture. The proportion of people with higher education is significantly above average, except in the former socialist industrial town of Várpalota and the traditional market

town of Nagykőrös in the Great Plain. The unemployment rate is uniformly low in the cluster's cities because, although they cannot be considered significant employment centers, their geographic location ensures access to Budapest and the centers of the Transdanubian development axis. The rate of housing stock expansion is significantly above average, mainly due to towns located in or near the Budapest agglomeration.

Cluster 2. Suburban transition towns with mixed economic development

Cluster 2 includes 5 Bulgarian towns (12.2% of the studied urban settlements in Bulgaria), which are all located in the South-West planning region (NUTS 2). Three of them are under the direct influence of the capital city of Sofia, which has a definitive impact on their development, while the remaining two are located on the periphery of the main regional centers.

The towns in this cluster are distinguished by a more dispersed, suburban or semi-peripheral structure. The cluster unites two types of towns – 1) with a well-developed industry (Konstinbrod and Novi Iskar) and 2) with a distinct tourist function (Bansko and Bankya).

In terms of the demographic situation, the towns of cluster 2 are characterized by a relatively stable demographic profile, due to the spatial proximity of some of these settlements to the capital city. The cluster is distinguished by the lowest average town size (about 11,600 people) compared to the other clusters. Despite that, the cluster exhibits relatively good demographic development: the age dependency ratio has the lowest values (54%) among all other clusters, while the population decline rate (–6%) is the least pronounced. The share of university graduates (19%) is relatively high for this category of towns in Bulgaria. The average unemployment rate (9.1%) in cluster 2 towns is higher compared to the national average, with high variances of the indicator value, due to significant differences in economic development between the local economies in the cluster. Bansko and Radomir are characterized by an unemployment rate between 10 and 11.5%, while Konstinbrod, Bankya and Novi Iskar – the ones closest to the capital city of Sofia – below 6%.

The towns in cluster 2 differ in terms of transport and urban infrastructure development, which are due to their profile as medium-sized municipal centers. In terms of transport infrastructure, all towns have a railway station, and car access to NUTS 3 regional centers is 35 minutes on average but varies in the range of 15 to 55 minutes. Access to an airport is 53 minutes by car on average. The geographical location of the cluster 2 towns determines the lack of sea and river ports.

Public sewerage connection in cluster 2 towns is high – 90% on average. None of the towns, however, has a general hospital, but all have relatively good access to a hospital in a nearby urban settlement. The average number of schools is relatively low – an average of 2.2, which is due to both the small number of

population in those towns and their proximity to the capital Sofia (in most cases), as well as the ongoing reform in the education system. There are no universities or branches in the towns forming this cluster, which is expected, given the overall profile of the towns. Some of the towns in cluster 2 boast a significant tourist potential: the tourist capacity, measured by the number of beds in accommodation facilities, is 2926 per town on average, but that number is affected by the indicator value for the ski resort town of Bansko (14,149 beds). There are no industrial parks in cluster 2 towns, which affects the attraction of foreign investments.

The urbanization profile of the cluster reveals unevenly developed urban areas. The average share of new construction for the 2020–2023 period is low (1.8%), with values varying between 0.08% for Kostinbrod and 4.3% for Bankya. The greening process of the towns in this cluster is proceeding at a slow pace – the average share of green areas and parks in the total area of the settlements is just 2.8%, with the largest share of green areas observed in Radomir (4.9%).

In conclusion, we can summarize that cluster 2 towns are characterized by a relatively good demographic situation, a well-developed transport infrastructure, a gradual stabilization of the economic environment, and well-organized urban areas. The lack of general hospital, undeveloped tourist potential in some of the towns, the slow pace of modernization, and low levels of greening, can be pointed out as weaknesses.

In general, the 28 Hungarian cities belonging to the cluster 2 can be said to have a slightly below-average level of development and represent a hierarchical level in the Hungarian city network that classifies them as small rather than medium-sized cities. Their geographical location cannot be considered entirely specific, as they are found in all regions of the country. Still, they are concentrated more significantly in the north-eastern region of the country and in the urban belt extending from the fringes of the Budapest agglomeration to the east.

The average population of the towns (14,290) is the smallest of all clusters, with only four municipalities having a population of over 20,000, three of which (Göd, Gyömrő, and Vecsés) belong to the eastern sector of the Budapest agglomeration, and their rapid population growth can be attributed to the last three decades; before that, they did not have an urban character. In both population change and age structure, a kind of duality can be observed within the cluster. Cities closer to Budapest generally show population growth, while cities in the northeast show population decline, although this is not drastic, except for cities in peripheral locations (Püspökladány and Sáropatak). The age structure can be considered fundamentally young, with a relatively low dependency ratio.

The cities in the cluster have low population density, but the proportions of green areas and impervious surfaces do not paint a favorable picture. The average value of the latter indicator for the cluster is 59.8%, the second-highest, lower only than that of the cluster consisting exclusively of suburban settlements. Of the 28 cities in the cluster, 9 have an urban green space ratio below 1%.

Since the vast majority of cities in the cluster cannot be considered peripheral, they can be said to be in a favorable position with respect to transport infrastructure and accessibility indicators. However, there are significant shortcomings in terms of network infrastructure and institutional systems, with below-average sewerage coverage and no hospitals in any of the towns. The number of secondary schools is well below average, and two towns in the cluster (Göd and Lajosmizse) lack a secondary school. There is one higher education institution in one town (Sárospatak). There are only two towns in the cluster that can be considered tourist centers: Hajdúszoboszló, which has a spa, and Balatonalmádi.

In terms of socio-economic development, the cities in the cluster perform somewhat below average. This is particularly evident in the proportion of people with higher education qualifications, with only a few isolated cases (Balatonalmádi, Gárdony, and Göd) showing above-average figures, while in other instances the indicator is below average. The proportion of newly built dwellings is higher in some settlements closer to Budapest (Albetirsa, Göd, Gyömrő, and Pilisvörösvár), but in most towns it does not reach 2%. The unemployment rate is average, with no significant internal variation within the cluster, except for two eastern towns struggling with industrial restructuring (Tiszavasvári and Hajdúhadház). It is important to note here that the level of economic investment in the cities belonging to the cluster can also be considered low; this is the only cluster in which none of the Hungarian cities have an industrial park.

Cluster 3. Peripheral towns with structural challenges

Cluster 3 includes five Bulgarian towns located in different parts of Bulgaria. Lom and Kozloduy are located in the northwestern part of the Danube Plain on the banks of the Danube River and are part of the Northwestern Planning Region. Popovo is located in the eastern part of the Danube Plain and is part of the Northeastern Region. Sandanski is located in the foothills of the Pirin Mountain in the southern part of the Southwestern Region, and Velingrad is located in the Western Rhodopes and is part of the Southcentral Planning Region. All five towns are characterized by significant distance from large cities and do not fall within their areas of influence.

The average size of cluster 3 towns is around 17,000, an intermediate profile between the first two clusters. The age dependency ratio (58) and the high population decline (-15%) highlight some similarities with Cluster 1, but the moderately high share of the population with higher education (18%) and the moderate density (4,075 inhabitants/km²) signal a certain potential for stabilization. This group includes towns with specific economic functions or regional importance, which allow them to retain part of their population, although the shrinkage processes remain strongly pronounced. The unemployment rate is

10.44%, or about 2 times higher than the national average. The significant difference between the rates for the towns of Sandanski (6.1%) and Velingrad (16.4%) is striking, as they have almost the same profile of SPA and wellness tourism destinations. The economic specialization of Kozloduy is due to the nearby Kozloduy Nuclear Power Plant, the only one in the country. The economic development of Lom is supported by the international port, the brewery, as well as several enterprises from the machine-building and chemical sectors. The agricultural, food, sewing, and machine-building sectors are characteristic of Popovo.

The average distance of Cluster 3 towns from the center of the NUTS 3 region, they belong to, is approximately 1 hour by car, varying between 40 minutes and 75 minutes. In terms of transport infrastructure, Sandanski is the best positioned town - near the Struma highway connecting Sofia and Thessaloniki. Except Kozloduy, all the other towns are part of the country's railway infrastructure with one station each. Lom and Kozloduy have ports on the Danube River, the one in Lom being of national importance. All five towns are more than 100 minutes by car from an international airport (in the case of Kozloduy - almost 3 hours to Sofia Airport).

The level of public sewerage coverage is high (almost 97%), with Lom reaching 100%. All five towns have their own wastewater treatment plants. As municipal centers, they have one general hospital each. The average number of secondary schools is 5.2 per town. No universities are located in cluster 3 towns, which contributes to an additional outflow of young people. The number of beds in accommodation facilities in the towns specialized in tourism is noticeably higher in Velingrad (6075) – more than twice as high as in Sandanski (2908). In the other three towns, these values are significantly lower, considering that they are not tourist centers (90 in Lom and Popovo each and 298 in Kozloduy). Kozloduy and Lom lack industrial parks, which limits their capacity to attract foreign investment. The average share of new dwellings is 0.97% with the highest rates in Velingrad (2.62%) and the lowest in Lom (0.02%). Considering the tourist profile of Sandanski and Velingrad, the higher levels of dwelling construction could also be explained by their demand by residents of other settlements and their use as holiday homes. Kozloduy possesses the highest share of green areas (15.2%). The average share for the cluster is 7.82% and the lowest value is observed in Velingrad (3.5%). The share of impervious surface in cluster 3 towns is not very high (33.24%).

The cities in the third cluster in Hungary are peripheral, situated far from the country's central regions and the capital, with the sole exception of Siófok on the shores of Lake Balaton, which is easily accessible from Budapest and connected to the transport networks. Almost all of these cities can be considered small centers of traditional rural areas, whose settlement networks are dominated by small and medium-sized villages.

In terms of demographic indicators, they are characterized by significant population decline and aging. In terms of population decline, there is a west-east divide within the cluster: the rate of decline is lower in small towns located in the western regions, which are generally in a better economic situation, while it is higher in some towns in the southern Great Plain (Mezőtúr and Orosháza) and in the former socialist industrial towns belonging to this cluster (Kazincbarcika and Komló) have a rate of decline well above 10%. This is primarily due to emigration; in Hungary, the market towns and industrial towns of the south-eastern region have been the most significant sources of population outflow over the past three decades.

Urbanization indicators are generally favorable, with relatively low population density, high green space coverage, and low impervious surface coverage characteristic of the cluster. The situation of the two industrial towns (Kazincbarcika and Komló) is specific in that they have high inner-city population density. Still, the same can be said about their green space coverage. This can be considered a characteristic of socialist urban planning, with housing estates dominating the built-up areas of these towns.

Due to their geographical location, the cluster cities are difficult to reach, both in terms of access to county centers and airports. It can also be said that peripheral, small-village areas have been most affected by railway closures in recent decades, and in many cases, these closures have also affected the centers of these areas. As a result, four cities in the cluster (Kalocsa, Komló, Makó, and Marcali) currently have no rail connections.

In terms of institutional infrastructure, towns in this cluster are in a more favorable position. Since they can, almost without exception, be considered the centers of micro-regions characterized by a sparse network of cities, their central functions are relatively strong. Except for two cities, all of them have hospitals, and several cities in the cluster (Balassagyarmat, Kalocsa, Kazincbarcika, Kiskunhalas, and Makó) are significant educational centers. This cluster also includes two major tourist centers (Sárvár and Siófok), while the touristic role of the other towns is negligible.

From a socio-economic perspective, this cluster is the most disadvantaged. The unemployment rate is highest here, exceeding the average in every city except Kapuvár and Sárvár, two small towns in western Transdanubia that have successfully undergone industrial restructuring, mainly thanks to foreign capital investment. The proportion of people with higher education is lowest in the cities of the third cluster, exceeding 20% only in Siófok.

Cluster 4. Demographically declining regional hubs

Four of five Bulgarian towns in this cluster are located in the northern part of the country (apart from Smolyan), and their geographical location influences the patterns of demographic, socioeconomic, and spatial growth. The town of

Smolyan is located in the Western Rhodopes, at an altitude of over 1000 m above sea level (it is the highest elevated NUTS 3 regional center in Bulgaria), while Svishtov and Silistra owe their urban evolution to being Danube River cities. The cities in cluster 4 play a substantial role in the socioeconomic and spatial development of Bulgaria because they are not only municipality centers (LAU 1) but also NUTS 3 regional centers (apart from Svishtov).

In terms of demography, the towns are distinguished by a population of over 25,500 (excluding Svishtov) and rank first among the studied urban settlements. At the same time, however, the population decline rate in the 2011-2022 period (-22%) is the highest among all other Bulgarian clusters, indicating that these regional centers are experiencing systemic demographic decline. The age dependency ratio of Svishtov and Silistra is higher (63–66%) than both the national average and cluster 4 average (60%), which is a prerequisite for anticipated workforce and social services shortages. The educational infrastructure in cluster 4 towns is favorable and is presented by 36 high schools and university facilities. As a result, it has the highest share of the population with tertiary education (above 25% on average) compared to the other clusters in Bulgaria. Given the economic transformation of these settlements, cluster 4 has an unemployment rate (5.7%) closer to the national average but lower than the rest of the small towns in Bulgaria (7.2%). The availability of multidisciplinary health care services (provided by general hospitals) in cluster 4 towns helps maintain the quality of life of the population in the urban areas, as well as in the surrounding territories.

Compared to the Bulgarian towns in other clusters, cluster 4 towns are distinguished by the highest population density in urban areas (7,711 inhabitants per km²). The share of the impervious urban territory is close to the average for small towns (43.6% and 44.0%, respectively), with a higher relative share of green infrastructure – almost 10% (compared to 6.2% for small towns in Bulgaria in general). The distinguished feature of cluster 4 towns is that those with the highest proportion of sealed territory (Lovech and Silistra, over 48%) also have the largest share of green areas – 18.5% and 13.5%, respectively. An unfavorable feature of urban development is the low rate of new construction (three times lower than the average for small towns in Bulgaria), which reflects the economic difficulties faced by these towns, as well as the slower pace of urban renewal and modernization.

Due to their important administrative functions and spatial location, cluster 4 towns possess a distinctive transport infrastructure profile, influencing transport services in the adjacent areas. Since only Smolyan lacks a railway station, land transport plays a key role in maintaining the towns' connectivity with the rest of Bulgaria. Furthermore, the river ports continue to have a significant impact on the urban development of Svishtov and Silistra. Cluster 4 towns share a common disadvantage in terms of transport accessibility due to their relative remoteness from the main airports in the country, such as Sofia, Varna, and Burgas.

Currently, the town of Razgrad is part of the larger polycentric economic hub “Ruse-Targovishte-Razgrad” and contributes significantly to the country’s economic development (Economic centers in Bulgaria – 2023, 2023). The Lovech and Danube Industrial and Technological Parks (located in Lovech and Svishtov, respectively), combined with better tourist accommodation facilities, have the potential to boost the future socioeconomic wealth of the urban citizens and attract foreign investments. The proximity to Pamporovo – a major winter resort – helps Smolyan in establishing the best-developed accommodation base among all towns in the cluster, reflecting the foremost importance of tourism for the town’s economic specialization.

To summarize, Bulgarian towns in Cluster 4 have the following strengths in comparison to other clusters in Bulgaria: administrative significance, the largest average population size (above 26,000 inhabitants), the highest rate of population with tertiary education (more than 25%), and relatively well-developed transport, educational, health, and green infrastructure. In contrast, the main weaknesses are the long-term population decline, the high age dependency ratio, the limited investments in new constructions, and the unequal economic development.

Like their Bulgarian counterparts, the Hungarian cities in the cluster are also the largest settlements in the group of small-sized cities. Their average population is close to 23,000, with only three cities (Kisvárd, Sátoraljaújhely, and Szarvas) having fewer than 15,000 inhabitants. Most towns are secondary centers of their counties, in many cases serving as a territorial counterbalance, or, in larger counties, having a significant catchment area due to their location. Examples include Esztergom, Gyöngyös, and Pápa. This cluster also includes the only Hungarian city that is the center of a NUTS3 region (Szekszárd). The geographical location of the cities is not specific in terms of which region they are located in.

The cities are characterized by a relatively high rate of population decline, with a value of nearly 9% for the cluster as a whole, except for the three cities closer to Budapest (Esztergom, Hatvan, and Tata). The same can be said about the age structure. Except for the three cities mentioned above, the old-age dependency ratio significantly exceeds the national average and the average for small towns. An examination of demographic indicators also highlights the decline and marginalization of medium-sized traditional cities located directly below the county seats in Hungary’s urban hierarchy.

In terms of urbanization indicators, the cities in the cluster are notable for their above-average proportion of green spaces and below-average proportion of impervious surfaces. This is primarily due to the fact that these cities have a traditional small-town structure and built-up area, with few exceptions, they did not undergo significant urban transformation during the period of state socialism, and they were not significantly affected by the densification processes associated with suburbanization. The population density of these cities is average, with only the county seat Szekszárd having a relatively high population density.

Infrastructure indicators are favorable in line with the size and role of the cities. This applies to network and transport infrastructure; all cities in the cluster have rail connections and sewage treatment plants, and the degree of connection to the sewerage network is also the highest in this group. The situation is also favorable in terms of institutional systems, as all cities in the cluster can be considered regional educational centers. In terms of secondary education, they are characterized by a comprehensive network of secondary schools on the one hand and a large number of students commuting to secondary schools from the catchment area on the other. All settlements in the group have some form of higher education, although in most cases this is provided externally. Among the towns, Keszthely and Szarvas are considered traditional centers of higher education. The number of accommodation places is above average, but the internal distribution is uneven. Two tourist centers, Gyula, with its spa, and Keszthely, located on the shore of Lake Balaton, stand out in this respect, with more than 200 accommodation places per 1,000 inhabitants in both cities.

In terms of socio-economic development indicators, the cluster's overall performance can be considered average in terms of the proportion of people with higher education and unemployment. The internal dispersion of these indicators is not significant, with relatively lower levels of education observed in cities with industrial traditions (Ajka and Hatvan) and those located in peripheral areas (Sátoraljaújhely and Szarvas). The internal dispersion of the unemployment rate is not significant, except for Sátoraljaújhely, situated in the north-eastern part of the country, in the border region, where the indicator is exceptionally high. The processes of decline and marginalization mentioned in the analysis of demographic indicators are also reflected in the dynamics of housing stock expansion. The proportion of dwellings built in the last half-decade is the lowest across all clusters; only two cities (Jászberény and Keszthely) exceed the average, while in Ajka, Esztergom, Pápa, Sátoraljaújhely, Szarvas, and Szekszárd it remains below 1%.

Cluster 5. Dynamic suburban growth poles

Cluster 5 includes only one Bulgarian town - Nessebar, which makes it unique. Nessebar is distinguished by high standardized values (Z-scores) in key indicators that separate it from the average for Bulgarian towns. This town observes the highest values in the indicators such as Change of population between two last censuses, and Population density of urban area, people/sq. km (11826 people/sq. km). This is the only Bulgarian town in the group exhibiting a clear positive trend in population growth (+10.8%). The positive demographic balance is a result of highly developed tourism and the significant seasonal and permanent migration flow. The age dependency ratio is moderate (56.1), which distinguishes it as the only cluster with real demographic stability and significant potential for expansion. This town is also distinguished by a high values of

indicators such as Share of new dwellings built in 2020-2023, and Number of beds in accommodation facilities, ranking second after the town of Bansko. The geographical location of Nessebar, the proximity to the largest Bulgarian Black Sea resort - Sunny Beach, as well as the international airport of Burgas, define Nessebar as a major tourist center. The presence of a port also sets it apart from most small towns in the country. The extreme values of several indicators place Nessebar into a separate cluster due to its tourist orientation and urbanization, far from any classic small towns.

The fifth cluster consists exclusively of small towns in the Budapest agglomeration, whose position is determined not only by good accessibility but also by outstanding socio-economic development and demographic dynamics. All of them are characterized by rapid population growth, and with three exceptions, they have exceeded a population of 10,000 in the past decade and a half.

The average rate of population growth is 16%, which is almost exclusively due to migration. Immigration to the agglomeration's cities comes from two sources. In addition to the classic suburbanization processes associated with moving out of Budapest, there is also significant immigration from more distant regions of the country. In terms of migration patterns, the settlements of the agglomeration can be characterized by different motives. In the towns in the western and northern sectors (Budakalász, Budakeszi, Diósd, Pomáz, and Szentendre), moving away from Budapest dominates, whereas the towns in the eastern and southern directions receive more immigrants from other regions of the country. The characteristics of migration are also reflected in the age structure, with a below-average dependency ratio, as it is primarily the young working-age population that is affected by suburbanization.

The cluster is characterized by high population density, with a value exceeding 2,000 people per square kilometer in all cities (the combined average for the other clusters is 1,740). The green space and impervious surface ratios are characteristic of settlements intensively affected by suburbanization. The green space ratio exceeds 1% in only two cities (Szentendre and Tököl), while in the other cities it is typically less than 0.5%. The impervious surface ratio is above 70% in most towns, and is only lower, at around 50%, in four settlements located in the western sector of the agglomeration, in hilly areas (Budakalász, Budakeszi, Diósd, and Pomáz).

In terms of infrastructure, most of the cluster's indicators are below average. Although accessibility is favorable due to its proximity to Budapest, there are disadvantages in other respects. Only one settlement has a rail connection, but it should be noted that most of them are connected to Budapest's fixed-track suburban transport system. The level of sewerage coverage is below average, mainly due to the agglomeration problem that the pace of infrastructure development is unable to keep up with the expansion of residential areas. In terms of institutions, public services (healthcare, education) are lacking and are concentrated in Budapest. There are hospitals in two towns, and higher education

is also available in two towns. Accommodation capacity is insufficient, with only one town (Kerepes) having more than 1,000 beds.

The level of socio-economic development is outstanding compared to other clusters. The proportion of people with higher education exceeds the average for Hungarian cities by 10 percentage points, and in four cities (Budakeszi, Budakalász, Diósd, and Szentendre) it is over 35%. The rate of housing construction is two and a half times the city average. The unemployment rate exceeds 2% in only one city (Szigethalom).

Cluster 6. Traditional agricultural market towns

The sixth cluster consists exclusively of Hungarian cities. Their geographical location is clearly defined, with the vast majority located in the Great Plain, primarily in its southern part. These are primarily traditional agricultural centers with a sparse network of settlements in their vicinity, often with no villages.

These cities have experienced a slight decline in population and emigration, with higher rates in the cities of the Southern Great Plain (Békés, Csongrád, Gyomaendrőd, and Szentes), exceeding 10% over the past decade. The dependency ratio cannot be considered high, but it is above average in some settlements in the northeastern region (Mátészalka, Mezőkövesd, and Tiszafüred) as well as in the aforementioned cities in the Southern Great Plain.

Urbanization indicators show traditional market-town patterns, with low inner-city population density and average green-space ratios. The vast majority of towns have a railway station, and sewerage coverage is slightly above average. The institutional system is dysfunctional, with only one settlement (Komárom) having a hospital and two towns (Kiskunfélegyháza and Szentes) designated as educational centers. The proportion of towns with industrial parks is highest in this cluster, with only one town lacking one.

Socio-economic development shows homogeneous patterns, with the proportion of people with higher education below average, low housing construction dynamics, and unemployment rates around average in the vast majority of cities.

CONCLUSIONS

This study provides an in-depth comparative look at the socio-economic characteristics of small towns in Bulgaria and Hungary. Through the conducted PAM cluster analysis, six clusters have been outlined, which reveal both similarities and significant differences between the two national contexts. The results show that small towns cannot be considered as a homogeneous category, but represent diverse socio-economic systems, the development of which is determined by demographic trends, infrastructural resources, and institutional

factors. Bulgarian towns are distributed in five clusters, with cluster 5 being unique in its nature and including only one Bulgarian town – Nessebar, with extremely high values in tourist infrastructure, urbanization, and demographic dynamics. Hungarian towns are distributed more evenly in six clusters, with most of them falling into cluster 2 and 6.

The differences between clusters show that regional development cannot be considered as a uniform process and a differentiated approach is needed. While some groups require investments in basic infrastructure and social integration, others need specialized strategies for sustainable development or urbanization management. In both countries analyzed, small towns play a key role in regional development, but their functions and needs are different. This confirms the importance of the cluster approach as a tool for formulating differentiated policies tailored to the specific profile of each group of towns.

The study proves that cluster analysis is an effective tool for identifying socio-economic disparities, but the results must be interpreted critically, taking into account the context and functional differences between towns. The present paper can be a basis for further research focusing on the factors that influence the socio-economic and demographic development of the small towns in the selected countries.

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