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POLISH TOWNS AND THE CHANGES IN THEIR AREAS AND POPULATION DENSITIES

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ABSTRACT. This article presents the spatial and population density changes in Polish towns in the years 1960–2003. The assumed time frame allowed identifying area changes for a complete set of towns in different socio-economic conditions: the period of intense industrialisation, the economic crisis of the 1980s, the period of economic transition and finally in the years of a market economy. The investigation revealed that the trend shown by changes and the size of a town as measured by the number of its population are distinctly interrelated. It also demonstrated a much stronger dynamics of changes in the first subperiod, i.e. years 1960–1985, followed by a phase of relative stabilization (compared with the previous period) after the year 1980 (mainly of the spatial changes). Moreover, change intensity and change trends observed for the urban areas and population densities vary considerably in terms of space.

KEY WORDS: urbanisation, town, population density, area.

INTRODUCTION

Town growth and characterisation of the urbanisation process in our country have been the frequent subject of investigations undertaken within geographical sciences. A significant output in this field is studies exploring the growth of urban populations, as well as town-creating factors and their variability in time. The Polish literature dealing with the geography of settlement has demonstrated in many cases that a strong link exists between the expansion of a network of towns and country's economic development. It has been pointed out that the quantitative and structural changes in the national economy are responsible for the creation of conditions encouraging urbanisation.

This study attempts to capture the general trends and dynamics of the spatial and population density changes in Polish towns, taking into account their variability in time (years 1960–2003) and spatial differences. To understand better the nature of these changes, some general determinants of town functioning specific to the analysed period need to be presented.

In the period of the central-command economy, towns' growth was mainly driven by industry. The results of investigations conducted by many researchers have demonstrated that industrialisation and urbanization are closely interrelated in Poland not only because of the prominent position of industry in the national economy, but also due to the relatively slow expansion of the service sector.

Although industrialisation had an effect on many towns, its influence on the large and medium-sized towns was stronger, as proved by Jerczyński in 1977 and other researchers. According to Jerczyński's research, in 97% of towns with more than 20,000 inhabitants industry played a major role. This widespread impact of the industrial sector mainly resulted from the goals of the location policy that tended to distribute industry uniformly over Poland's territory and from the general course of the development strategy for Poland accepted in the post-war period. The industry distribution policy, clashing with that trying to locate new factories mainly in larger and medium-sized towns, able to function as growth centres for the surrounding areas, made the medium-sized towns with populations ranging from 20,000 to 50,000 inhabitants grow the most dynamically.

The economic crisis that started to take shape from the late 1970s affected the course of urbanisation processes, and the most urbanised areas were the most affected by the recession. The industrial regress escalating in the 1980s considerably decelerated the dynamics of population growth in towns, so it can be presumed that their areas and densities population were relatively stable then.

The transformation of the political system in 1989 and the initiated reformation of the economic system completely reshaped the functioning conditions of towns. As it seems, the land rent was the main factor behind the rationalisation of urban economy in the new circumstances. Another important factor was the new character of the urbanisation process, which switched from emphasising quantity in favour of quality. The modern direction of urbanisation processes in Poland is certainly influenced by the fact that the service sector is now an essential, growth-stimulating sector of the national economy rather than an auxiliary sector it used to be.

To fulfil the purpose of this study while allowing for the major factors determining town functioning and growth in Poland in the period 1960–2003, several basic issues have to be resolved, namely: a) did the dynamic growth of towns driven by the intense industrialisation entail enlargement of their areas?; b) did the economic transformation in Poland after 1989 contribute to the spatial

expansion of towns and changes in their densities of populations?; c) do the spatial and population density changes in Polish towns show geographical variations?; d) what is the link between the spatial and population density changes, on one hand, and the size category of a town as measured by the number of its population, on the other?

Assuming that the decisions to increase towns' areas were rational, their enlargement should follow from a considerable growth in their populations and/or development of the industrial functions, or other types of activities that require substantial space. It is, therefore, reasonable to assume that towns expanded steadily and extensively until the end of the 1970s, being a period of heavy industrialisation; it is worth noting here that the increases were larger in areas with strong concentrations of industry. This certainly contributed to the appearance of regional differences in the spatial expansion of towns and in the dynamics of population density changes.

This study treats a density of population as a measure of efficiency of land use. In the socialist economy period, the state ownership of land, the assisted growth of the heavy industry and the efforts to ensure its relatively high geographical concentrations could be the reason for the excessive expansion of towns in the industrial regions, resulting even in lower population densities.

With higher importance attached to economic management of urban land and the rationalisation of spatial forms and structures, a town can grow without increasing its area. This study assumes, therefore, that the predominance of the qualitative adjustments in town growth over the quantitative ones that can be observed in a market economy improves the efficiency of use of urban land, thus ensuring a relative stability of towns' administrative boundaries.

Following the results of numerous investigations exploring the impacts of industrialisation on the growth of Polish towns, for instance these conducted by Jerczyński, Matczak, Szymańska, an assumption was made that the areas of the medium-sized towns (with 20,000–50,000 inhabitants) changed the most (in plus), as the industrialisation processes were the strongest there. If their areas increase only slightly, or if their administrative boundaries do not change at all, a considerable increase in population density can be expected. On the other hand, a definite majority of the smallest towns, with populations to 5,000 inhabitants, did not have rational reasons for expansion, being a group of settlements that found themselves in crisis already in the 1950s. In the largest towns, the area and population density changes took a different course. In addition to the slightly weaker influence of industrialisation on their growth than in other towns, the growth of the largest towns was (and still is) shaped by population's inclination to seek home in the suburbs. Interestingly, the process of suburbanisation started in the largest towns with more than 200,000 inhabitants, gradually reaching towns

in the size category 100,000–200,000 inhabitants, and in time even the medium-sized towns (50,000–100,000). The above suggests that the possible increases in the densities of populations in large Polish towns continued until the end of the 1980s, while after 1990 the indicator should be showing a distinct downward trend.

It should be also borne in mind that the growth dynamics of the largest towns was additionally determined by a special policy aimed at curbing their growth, for instance, by imposing administrative restrictions on the registration of new residents. However, based on the results of research on the growth of populations in Polish towns, we assume that the largest towns increased their populations and areas despite such impediments.

The above issues do not exhaust the analysed subject matter, representing only some selected aspects of it. The authors of the study do not explain in detail the causes of the identified phenomena, providing instead an outline of some general characteristics. Besides, due to the complexity of the problem arising from the spatial scope of the analysis that deals with all Polish towns, etc., additional investigations seem to be necessary to identify and interpret correctly the sources of the changes. This will be the subject of further research work of the authors.

THE SPATIAL CHANGES IN POLISH TOWNS BETWEEN 1960 AND 2003

As shown by the analysis of spatial changes occurring in all Polish towns between 1960 and 2003, almost 42% of the towns decreased, slightly more than 38% expanded, and 20% remained within the same administrative boundaries (Tab. 1).

The investigation found a strong relationship between the trend (up or down) shown by area changes and a town size in terms of its population. The areas of most small towns (to 20,000 inhabitants) shrank considerably. This situation could be observed in almost 59% of towns with population to 5,000 and in over 46% of towns in the next size category, i.e. 5,000–10,000 (Tab. 1). As indicated by the collected data, when the numbers of urban populations grow the percentage of expanding towns goes up, while the percentage of settlements with decreasing areas declines (Tab. 1). On the other hand, almost 84% of the medium-sized towns (with populations ranging from 50,000 to 100,000 inhabitants) expanded spatially, and as much as 95% of the largest towns (with more than 100,000 inhabitants).

The same patterns can be found for changes in the average areas of towns in the distinguished size categories. In the period 1960–2003, the average area of towns to 50,000 inhabitants decreased (Fig. 1). Interestingly, the smaller a town,

Table 1. The spatial and population density changes in Polish towns by their size (as % of all towns in a given category)

| | Area | | | Population density | | |
|-----------|----------------|-----------|-----------|--------------------|-----------|-----------|
| | 1960–1985 | 1985–2003 | 1960–2003 | 1960–1985 | 1985–2003 | 1960–2003 |
| | to 5,000 | | | | | |
| Decrease | 62.1 | 3.0 | 58.8 | 10.3 | 29.4 | 17.1 |
| Increase | 14.2 | 11.5 | 18.9 | 88.8 | 70.2 | 82.9 |
| Unchanged | 23.7 | 85.5 | 22.5 | 0.9 | 0.4 | 0.0 |
| | 5,000–10,000 | | | | | |
| Decrease | 47.9 | 5.8 | 46.2 | 10.2 | 28.7 | 11.6 |
| Increase | 24.6 | 14.7 | 28.3 | 89.8 | 71.3 | 88.4 |
| Unchanged | 27.5 | 79.5 | 25.5 | 0.0 | 0.0 | 0.0 |
| | 10,000–20,000 | | | | | |
| Decrease | 42.7 | 7.5 | 41.2 | 5.3 | 24.3 | 9.9 |
| Increase | 35.7 | 23.1 | 40.1 | 94.7 | 75.7 | 90.1 |
| Unchanged | 21.6 | 69.4 | 18.7 | 0.0 | 0.0 | 0.0 |
| | 20,000–50,000 | | | | | |
| Decrease | 30.9 | 8.1 | 29.2 | 9.8 | 31.5 | 13.8 |
| Increase | 48.0 | 23.4 | 50.0 | 90.2 | 68.5 | 86.2 |
| Unchanged | 21.1 | 68.5 | 20.8 | 0.0 | 0.0 | 0.0 |
| | 50,000–100,000 | | | | | |
| Decrease | 14.9 | 14.6 | 10.2 | 29.8 | 39.6 | 32.7 |
| Increase | 74.5 | 33.3 | 83.7 | 70.2 | 60.4 | 67.3 |
| Unchanged | 10.6 | 52.1 | 6.1 | 0.0 | 0.0 | 0.0 |
| | 100,000+ | | | | | |
| Decrease | 2.5 | 12.5 | 2.5 | 45.0 | 67.5 | 45.0 |
| Increase | 87.5 | 50.0 | 95.0 | 55.0 | 32.5 | 55.0 |
| Unchanged | 10.0 | 37.5 | 2.5 | 0.0 | 0.0 | 0.0 |
| | Total | | | | | |
| Decrease | 44.0 | 6.6 | 41.8 | 12.1 | 31.0 | 16.1 |
| Increase | 33.8 | 19.8 | 38.2 | 87.7 | 68.9 | 83.9 |
| Unchanged | 22.2 | 73.6 | 20.0 | 0.2 | 0.1 | 0.0 |

the larger decrease in relation to 1960; in the case of towns to 5,000 inhabitants the average balance of changes constituted only 62.7% of the initial year's value (1960=100%). On the other hand, in towns with populations exceeding 50,000 inhabitants the average area increased. It is worth noting that towns with populations ranging from 50,000 to 100,000 inhabitants had the highest dynamics of spatial growth, as their typical area increased on average by 28.3%, whereas towns with populations of 100,000+ noted a relatively small increase – only 5% (Fig. 1).

The spatial changes in towns belonging to different size categories were accompanied by significant differences in the course of the investigated

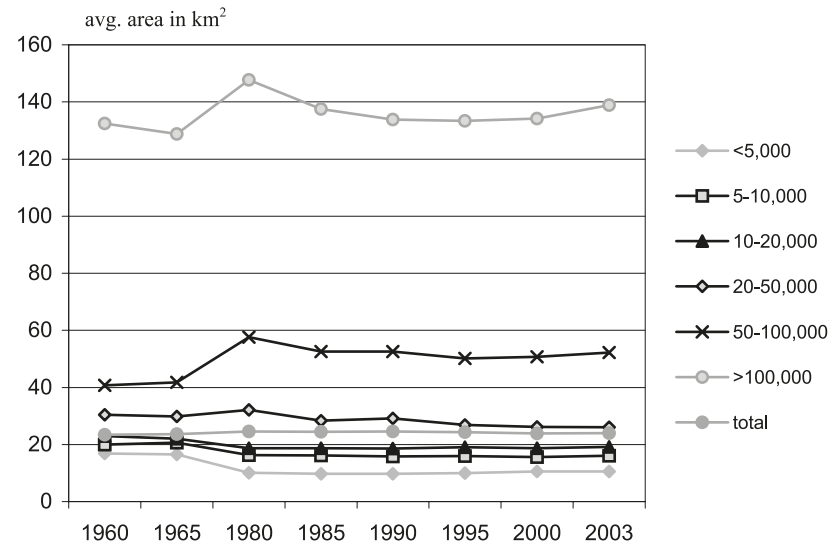


Fig. 1. Changes in the average areas of Polish towns by size category, years 1960–2003

phenomenon in time. Between 1960 and 1985, all Polish towns typically grew smaller in area: this trend was shown by 44% of towns, while less than 34% grew in area.

After 1985, the spatial expansion of towns entered a period of distinct stabilisation, as confirmed by almost 74% of towns whose administrative boundaries did not change at that time.

Investigating the spatial changes in towns, it is worth noting that the changes in towns populated by fewer than 20,000 inhabitants and these with populations exceeding 50,000 were different. As shown by the analysis, the average area of the first type of towns decreased steadily, while the larger ones had a positive balance of spatial changes between 1960 and 2003, with generally high area increases until the end of the 1970s, a considerable decrease in the years 1980–1985 followed by relative stabilisation that continued until the end of the 1990s and a slight increase after the year 2000 (Fig. 1).

The trend and dynamics of spatial changes in towns varied clearly not only in time, thus necessitating a division of the analysis into two subperiods (i.e. 1960–1985 and 1985–2003), but also showed considerable spatial variations. In the first subperiod, in the northern and western parts of Poland, in Wielkopolska and Kuyavia, the areas of towns with populations to 50,000 inhabitants usually decreased, while the largest towns (with more than 100,000 inhabitants) either slightly expanded in relative terms or did not change. In northeastern Poland (Warmia and Masuria) the numerous instances of shrinking towns' areas were

accompanied by a considerable number of expanding towns (mainly the medium-sized towns, populated by 20,000–50,000 inhabitants). In Masovia, in the regions of southeastern Poland and in Lower Silesia, clearly prevailed towns that did not adjust their boundaries between 1960 and 1985 (usually small towns, to 20,000 inhabitants). A definite majority of the large towns with populations exceeding 100,000 inhabitants showed slight area increases. Upper Silesia was a region where the dynamics of urban area changes was the highest until mid-1980s; many of its towns (mainly the large and medium ones, with populations of 50,000–100,000 and 100,000+) increased their areas even several times, while most of the small settlements did not change.

As for the second subperiod, 1985–2003, the spatial differences in the urban area changes in Poland are much more difficult to capture, because the expansion processes clearly came to a halt in most towns. Only South Poland stands out, where a high percentage of the large towns located mainly in Upper Silesia decreased their areas, even though a definite majority of towns (regardless of size category) remained the same.

However, the relationship between a change trend and a town size becomes more distinct in this subperiod. The investigation revealed that a definite majority (77%) of the small and medium towns (to 50,000) neither increased nor decreased, while almost 50% of the large towns (100,000+) expanded spatially.

The overall balance of the spatial changes in towns in the years 1960–2003 allows us to delineate two specific parts of Poland (Fig. 2). One is northwestern Poland with Wielkopolska and Kuyavia – characterised by shrinking areas of the small towns (to 20,000) (and a high national share of large area decreases) and expansion of the large ones. The other part is Upper Silesia, where the group of the large towns (populated by more than 100,000 inhabitants) showed the largest differentiation of the spatial changes (from decreases to substantial increases). As regards the other regions of the country, the set of the small and medium-sized towns was highly heterogeneous. Beside a large percentage of towns having a zero balance of spatial changes, there were equal proportions of towns with area increases and decreases.

The above analysis can be extended and recapitulated by presenting a balance of spatial changes in Polish towns between 1960 and 2003 by voivodeship (Fig. 3).

According to the analysis, the largest percentages of expanding towns were in the śląskie (76% against 8% with area decreases), łódzkie (71% and 12%), świętokrzyskie (63% and 13%) and podkarpackie (60% and 9%) voivodeships.

On the other hand, the largest area decreases occurred in the northern and western parts of Poland, i.e. in the zachodniopomorskie (79% of towns decreased),

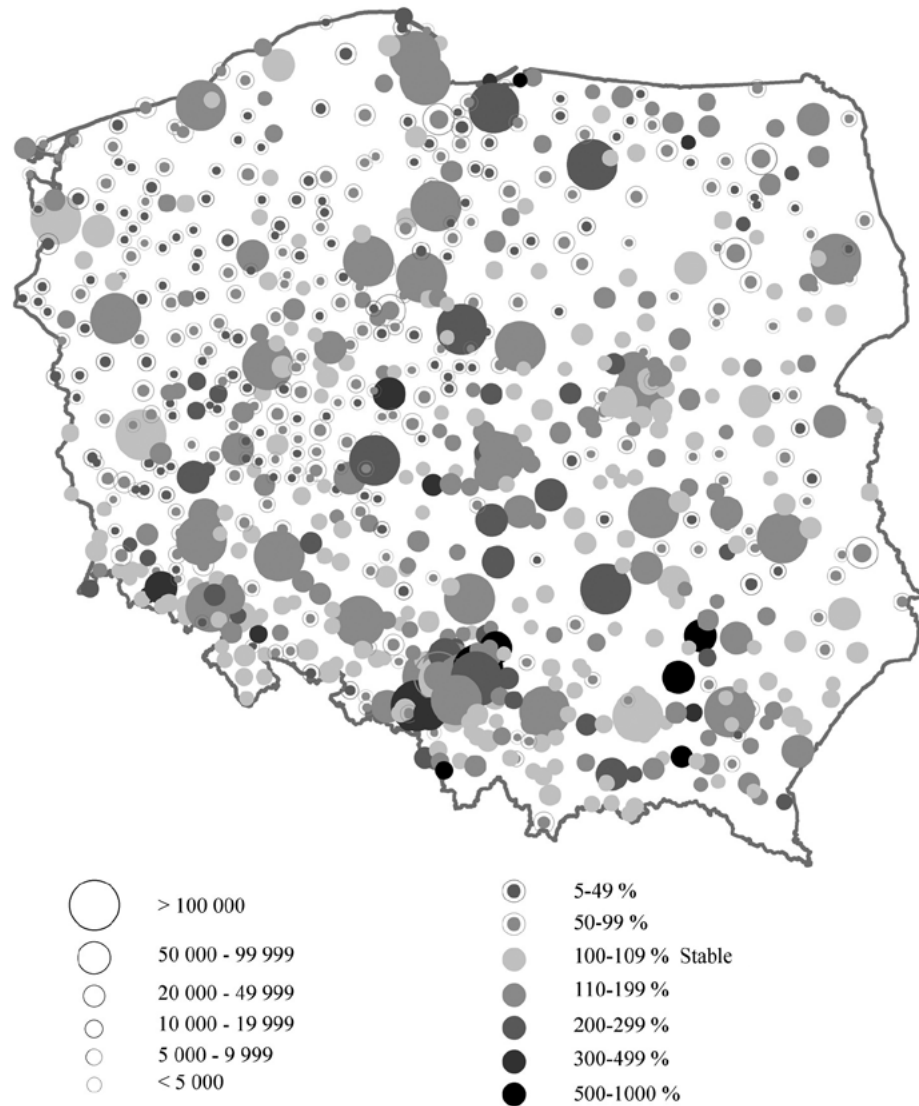


Fig. 2. The dynamics of spatial changes in Polish towns, years 1960–2003 (1960=100%)

lubuskie (71%), kujawsko-pomorskie (69%), wielkopolskie (63%), pomorskie (60%) and warmińsko-mazurskie (51%) voivodeships.

Four voivodeships in South Poland represent still another type of spatial changes in towns. On one hand, they had relatively high percentages of towns that did not change their administrative boundaries between 1960 and 2003,

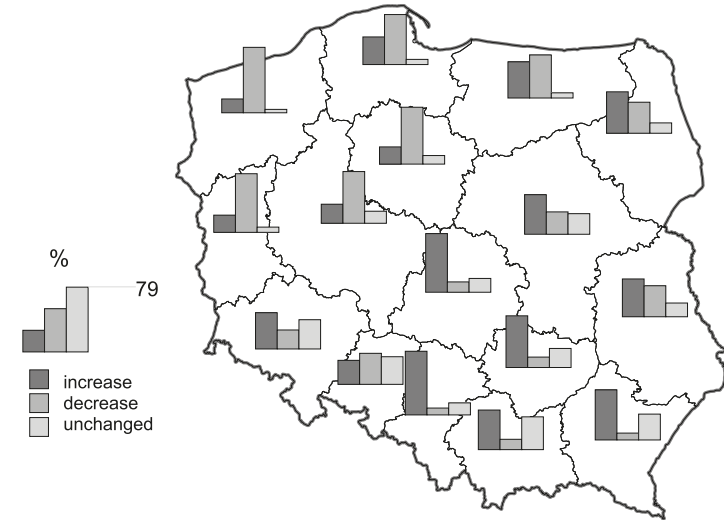


Fig. 3. The percentages of towns with changing areas by region, years 1960–2003

and, on the other, a considerable percentage of expanding towns. This situation occurred in małopolskie (40% of its towns did not show area changes, while 47% expanded), dolnośląskie (34% and 43%, respectively), opolskie (32% and 29%) and podkarpackie (31% and 60%) voivodeships (Fig. 3).

POPULATION DENSITY CHANGES IN POLISH TOWNS BETWEEN 1960 AND 2003

The dynamic growth of urban populations and the changing areas of towns made the density of population vary. As in the previous case, when the towns' areas were examined, a detailed analysis of the evolution of population density revealed distinct differences in the dynamics of the parameter, both temporal and spatial. Additionally, a relationship was found between a change trend and a town's size.

The high growth of country's population between 1960 and 2003 increased population densities in a definite majority of Polish towns. As shown by the analysis, this phenomenon occurred in as much as 84% of towns, while in the remaining 16% the density decreased (Tab. 1).

It is worth mentioning here that the population density changes show considerable differences within particular size categories of towns. According to our research, the density of population increased in a distinct majority of

settlements (83–90%) in the group of the small and medium-sized towns (with population to 50,000). In the other two size categories (50,000–100,000 and 100,000+ inhabitants) the shares of towns with declining population densities clearly grew; in the largest-town category the share exceeded 45% (Tab. 1). This pattern is clearly noticeable in two periods: in the 1970s and from the mid-1990s. In the first period, the main factor was the expanding areas of the large towns, and in the second the suburbanisation and disurbanisation processes.

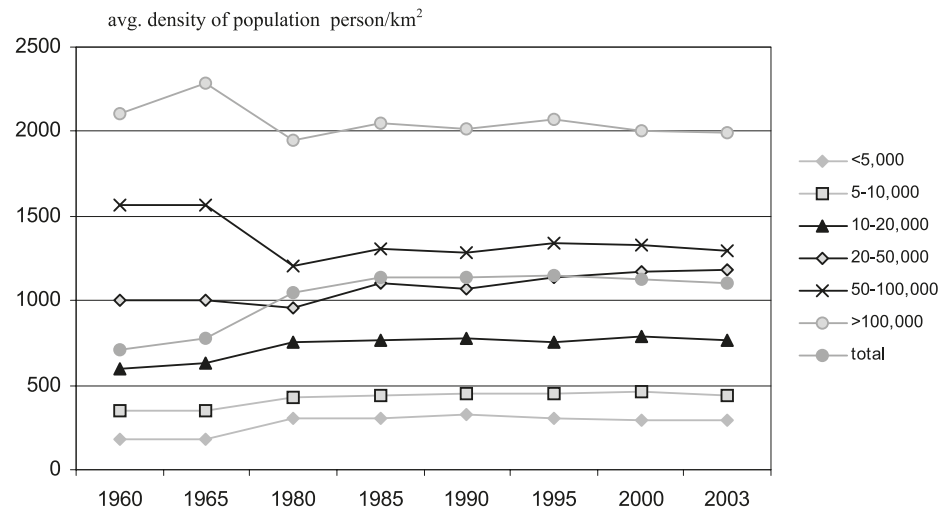


Fig. 4. Changes in the average density of population in Polish towns by their size, years 1960–2003

When the density of population is examined with respect to various size categories of towns we can see that the larger a town, the higher density of its population. A comparison of the parameter's changes in time for particular categories of towns' sizes demonstrated that the density of population increased the most in towns with populations to 5,000 inhabitants, which should be attributed to the considerable decreases in their areas (37% on average) rather than the growth dynamics of their populations. Towns populated by 5,000–10,000 and 10,000–20,000 inhabitants showed similar increases, 25% and 28%, respectively, while in towns with populations ranging from 20,000 to 50,000 the increase was somewhat lower – 17%. In the other two size categories (towns with 50,000–100,000 and 100,000+ inhabitants) an average population density fell by 18% and 5%, respectively, probably as a result of more efficient use of space and population outflows from urban areas. In the period in question, i.e. 1960–2003, there was not a single town where the examined indicator did not change.

Following the approach to analysing the spatial changes, the temporal changes in urban population densities were also examined in two subperiods. In the first period, spanning the years 1960–1985, the changes showed high dynamics and their trend was strongly differentiated in the country, ranging from large increases to deep declines. In the second subperiod, 1985–2003, the population density changes largely stabilised and the distinct variations in spatial distribution disappeared.

Because the trend and dynamics of population density changes vary strongly in time, the same two subperiods had to be applied to their spatial analysis. Between 1960 and 2003, the density of population grew strongly in most towns in Pomerania, the Lubusza region, Greater Poland, Kuyavia, Warmia and Masuria. The highest increases were found for the first three size categories of towns (with populations to 20,000) that considerably adjusted their areas (decreased) in the years 1960–1985. It is worth noting, though, that the density of population exhibited a general upward trend also in most large towns in those regions. The situation of the industrial regions in South Poland was different, because in the same period (1960–1985) the density of population declined in a considerable percentage of their towns, despite the dynamic population growth. A probable explanation of this phenomenon is large increases in the towns' areas driven by industrial development.

After 1985, the spatial differences in both the dominating trend and the intensity of population density changes became much less clear in the country. However, the population densities clearly dropped in the largest towns (with more than 100,000 inhabitants), probably because of the spreading suburbanisation and disurbanisation processes in the last period.

The evolution of population densities that could be observed in Polish towns throughout the analysed period 1960–2003 contributed to distinct spatial differentiation of the trend and intensity of changes in this parameter (Fig. 5). The density of population grew the most in the towns of Pomerania, Greater Poland, Kuyavia, and in the regions of East Poland. Central Poland, Lower Silesia, but primarily Upper Silesia, had high percentages of towns (compared with other regions) with falling population densities. These falls were caused by the strong spatial expansion of industrial towns in the period of industrialisation, and amplified by economic recession the towns suffered after 1990. The economic crisis affecting many towns in the industrial regions considerably reduced their populations, which contributed to lower densities of population in these settlements.

As shown by the analysis, the larger a town, the slower growth dynamics of population density. On one hand, this relationship results from the much higher population densities in the large towns (that can be understood as an efficient use

FINAL COMMENTS

The investigation showed that industrialisation had immensely contributed to the spatial expansion of towns. This relationship was the most distinct in the area occupied today by the łódzkie, śląskie, małopolskie, podkarpackie and świętokrzyskie voivodeships. In the regions omitted by intense industrialisation, the areas of most towns decreased. This is mainly the case of Pomerania, Kuyavia and Greater Poland.

The investigation also demonstrated that the economic transition initiated in Poland after 1989 influenced the spatial expansion of towns and the changes in their population densities. Some of the effects were decelerated dynamics of the spatial and population density changes, and lower spatial differentiation of the investigated indicators.

Finally, the investigation helped identify a relationship between the size category of towns, on one hand, and the trend (increase or decrease) and intensity of changes in the analysed indicators. Most small towns (to 20,000 inhabitants) decreased their areas, thus considerably increasing their population densities. Towns with populations exceeding 50,000 inhabitants usually expanded, which process reduced the density of population in almost 40% of such towns.

We wish to re-emphasise that this study is the first attempt at capturing the spatial and population density changes for a whole set of Polish towns and the coverage of the subject matter is not complete. This work has a purely research character and its authors treat it as an introduction to further research in this field.

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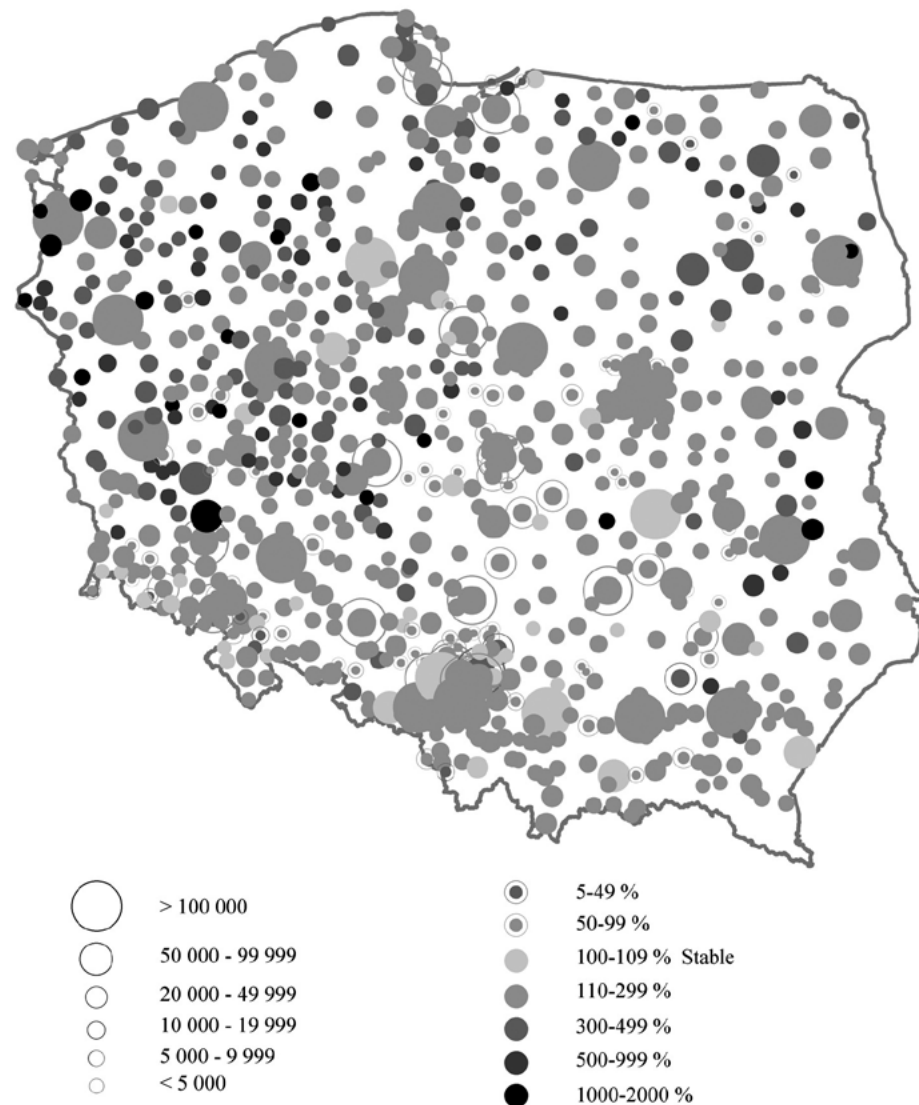


Fig. 5. The dynamics of population density changes in Polish towns, years 1960–2003

of the urban space) that could be observed throughout the analysed period, and, on the other, it is an immediate effect of large spatial increases in those towns (we have already mentioned that as much as 95% of towns with more than 100,000 inhabitants enlarged their areas).

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