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SMALL-TOWN DEPOPULATION IN THE WIELKOPOLSKIE VOIVODESHIP, POLAND

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Abstract: Driven by labour resources, entrepreneurship and labour market aspects, demographic conditions form an important factor of socio-economic development. The evolving potential of the population results in changes affecting not only the demographic structure itself but also the whole economic system of a territory. The demographic processes in small towns differ in regard to both the demographic condition components and dynamic processes (changes over time), just like in the case of other territorial units. This paper shows the demographic changes taking place in the small towns of Wielkopolskie voivodeship, Poland (2003-2005 and 2016-2018), with a focus on analysing the actual population growth using the Webb method. This leads to identifying eight types of small towns, differing in their pattern of relationships between the natural increase and the net migration rate. The analysis finds that most small towns in the Wielkopolskie voivodeship are affected by depopulation, and a negative net migration rate had an impact on this process. Due to the emigration of the working-age people, the permanent depopulation processes distorted the population pyramids of small towns. The predominance of small, depopulating cities in Wielkopolskie is a characteristic phenomenon and similar processes occur in other Polish voivodeships.

Keywords:

small towns;

depopulation;

Webb typology;

Wielkopolskie voivodeship

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Introduction

Driven by labour resources, entrepreneurship and labour market aspects, demographic conditions form an important factor of socio-economic development (Małopolskie Obserwatorium Polityki Rozwoju 2010). The evolving potential of the population results in changes affecting not only the demographic structure itself but also the whole economic system of a territory (Kamińska and Mularczyk 2014, Gløersen et al. 2016, Sardak et al. 2018, United Nations 2019). Hence, the condition and formation of demographic processes directly affect the situation of territorial units. They are also a criterion necessary for further research concerning various socio-economic levels (Kazimierczak and Szafrańska 2019).

Depopulation, which means people leaving a territory, is driven by intertwined components: natural increase (births – deaths) (Gwiaździńska-Goraj et al. 2020) and the net migration rate (immigration – emigration). Depending on their strength, these factors may be responsible for the actual population growth. Negative growth is related to people moving away and it has adverse social, economic and demographic consequences (Majdzińska 2018).

Since depopulation started to be surveyed in Poland, it has been driven by different nationwide processes. The early 1990s were marked by economic difficulties. The shrinking labour market and the resulting reduction in employment and high unemployment rates, in a situation where baby-boomers had just entered the employment market, made it incredibly difficult to find a job. The consequences of the above were reflected by the declining fertility rates, which in the case of cities reached concerning levels. On the one hand, the economic situation contributed to a decline in the birth rates, and consequently, a decrease in the overall population numbers, and a shift in economic proportions between the age groups. On the other, this is also when the EU opened its labour markets to Polish employees. The 2004 European Union accession allowed many Poles to find a job on much more financially attractive terms. Additionally, the Schengen agreement enabled people to move freely, resulting in a strong economic migration of Polish people. By 2017, over 2.5 million Poles lived abroad, 75% of which were city residents (Statistics Poland 2017, 2018). Such a high share of the urban population among the emigrants can be explained by the rapid development of the emigration mechanism among the urban community.

Although small towns dominate Poland's urban centre structure, they are home to a small share of its population (every fifth urban resident lives in a small urban centre), which also declines year after year. This is not the case for small urban centres – referred to as satellite centres – located near big cities. They benefit from the sub-urbanisation of large urban centres, becoming bedroom communities for people who are economically connected to big cities through their employment (Krzysztofik 2019).

Yet, an interesting question arises: how is the demographic shift perceived in small towns located further away from large urban centres? From the perspective of the research methodology used in this study, which of the elements of the depopulation process affected the population movements in small towns?

This paper aimed to present the demographic change from the perspective of actual population growth in the Wielkopolskie voivodeship's small towns. Identifying small city types based on the relationships between actual growth components made it possible to indicate the components which had a decisive impact on population growth (or decline) in the given territory. Using a dynamic approach to examine this phenomenon highlighted the demographic change vectors in the territorial units covered by this analysis.

The empirical material used in this paper were the natural increase and the net migration rate figures expressed in relative terms (per 1,000 population [‰]). Two periods (2003-2005 and 2016-2018) were analysed to ensure a dynamic approach to this study and average figures were used for each of them. The use of a three-year average made it possible to avoid the impact of variation in the included variables. On the one hand, these time intervals were chosen in an attempt to provide the most recent picture of this phenomenon. On the other, the relevant data was readily available at the Local Data Bank of Statistics Poland (2019). The study covered 89 small towns in the Wielkopolskie voivodeship[1].

Literature

According to Van Dalen and Henkens (2011), population decline is not a new phenomenon but rather something common (Coleman and Rowthorn 2011) and universal (especially since the first half of the 20th century) (Dumont 2017). In the interwar period, the prospects of population decline in Western European countries, which were visible in population forecasts, prompted the introduction of pro-natalist policies (Coleman and Rowthorn 2011, Van Dalen and Henkens 2011). While the second population decline began by the end of the 20th century, it was commonly believed until the 1980s – based on the theory of demographic change – that the previous pattern would repeat itself (without any reasonable evidence for that) (Coleman and Rowthorn 2011). In reality, no one foresaw that the decline in fertility, improvements in the quality of life and increased life expectancy would cause people to opt for smaller families (Raleigh 1999, Leeson 2002). In light of the already mentioned pro-natalist policies, it is now believed that migration will enable population maintenance for many countries (particularly Western countries), and thus

[1]The cities of Jaraczewo, Chocz, Dobrzyca and Opatówek were not covered by this study. They gained their city status after 2005, making it impossible to carry out an analysis for the 2003-2005 period.

serve as a catalyst for societal development (Coleman and Rowthorn 2011, Sardak et al. 2018). This belief is somewhat favourable for regions suffering from the negative consequences of population decline (Bouvier 2001), especially when overpopulation occurs in many parts of the world (Gløersen et al. 2016, Janicki 2017).

Given the general trends, it is worth referring to those related to urban and rural areas that are particularly important for this article's topic. This concerns primarily urbanisation and suburbanisation, both of which are part of the so-called city life cycle. They are shaped by globalisation (perceived multidimensionally), which is considered a contemporary process determining city development (e.g. in Europe, including Poland) (Zborowski et al. 2012).

As in the case of changes in the world population, it is necessary to emphasize the political, social and economic factors influencing the costs of urbanisation in the context of urban development (Kantor-Pietraga 2014). The process of industrialisation after World War II, which was related to the urbanisation process (migration of people from the countryside to cities) in the second half of the 20th century, not only strengthened cities but it also created new ones (Dumont 2017, Spórna 2018, Mickovic et al. 2020). In global terms, this process is also related to the introduction of new means of transport, i.e. the general increase in mobility (Antrop 2004), which stimulated the development of urban networks. In turn, suburbanisation is a phenomenon that is visible in many countries but its intensity and spatial structures vary. In the case of Poland, this process coincides with depopulation, i.e. the period from the late 1980s (Węcławowicz 2002). The quality of life improvements that drive the movement of people to rural and suburban areas (Hlaváček et al. 2019) also affect the basic socio-economic functions of the influx areas (Hardi et al. 2020).

Urban sprawl is also associated with suburbanisation (Hwang and Woo 2020), and according to Egidi et al. (2020), it is a much more controversial phenomenon affecting territorial reorganisation. Being an unplanned form of urban development, it leads to the expansion of large and medium-sized cities into the surrounding rural areas, including small towns. Yet, another trend accompanying the demographic changes in cities, which is determined by such things as suburbanisation (Szafrańska et al. 2019), is the shrinking cities phenomenon. This problem was noticed in the United States and Western Europe as early as the mid-twentieth century (Lima and Eischeid 2017, Šerý et al. 2018, Runge et al. 2020) while in Poland it became visible in the 1990s (Zborowski et al. 2012). The city shrinkage process mainly affects cities focused on traditional industry; hence it primarily impacts medium and large cities, and it is considered to be an economic effect of globalisation (Gløersen et al. 2016). The literature includes claims that city shrinkage can occur even in the case of towns with a population exceeding 10,000 inhabitants (Bartosiewicz et al. 2019). Its consequences lead to a negative

feedback loop created by such factors as declining birth rates and decreasing public revenues (Lima and Eischeid 2017).

To summarise this part, it is also worth emphasising that all demographic changes – in this case, depopulation and the accompanying urbanisation, suburbanisation, and city shrinkage processes – are distributed differently both in the scope of territory and occurrence periods. Thus, while urbanisation was not a new phenomenon in such countries as Belgium, United Kingdom and the United States, other ones – like Poland and Portugal – experienced it much later (Leeson 2002).

Local Context

Emigration was a dramatic process which had such a distorting effect on Poland's demographic structure that the demographic peak expected in the 2004-2011 period was virtually unnoticeable (Krzysztofik 2019). The reason behind this was that most emigrants were young people, i.e. ones who could potentially establish new families. This should be regarded as a major contributing factor to the Polish demographic crisis and the other aspect of urban depopulation. Today, economic and migration issues are not the exclusive reasons behind the demographic changes, including depopulation. The factor that involves the rural population's status should also be mentioned here, i.e. their socio-economic situation which makes people move from cities to suburban areas. However, that aspect is more often discussed in the context of big and mid-sized cities than small towns (Krzysztofik 2019).

Urban depopulation can ultimately result in a reduction in the number of urban centres classified as small, medium, and big. This is the consequence of the suburbanisation phase which has been progressing in Poland since the early 1990s. These changes can primarily affect mid-sized cities (with a population of 20,000-100,000 people) approaching the lower threshold of size classification. Indeed, depopulation may result in them being re-classified as small towns. Krzysztofik (2019) has been working on forecasting the demographic changes in Polish cities in a 20–25-year period and he claims that depopulation will also affect big cities (with a population over 100,000 people), which can lose as much as 30% of their residents by 2030.

The demographic processes in small towns differ in regard to both the demographic condition components and dynamic processes (changes over time), just like in the case of other territorial units. Defining a small town is a complicated task due to the need to classify them by their size. Various approaches suggested that a classification can include towns with a population of up to 5,000 people, as well as towns and cities with a population of up to 20,000, 50,000, 80,000 or even 200,000 people (Szymańska and Grzelak-Kostulska 2005, Caplan and Harvey 2010, Runge 2012, Steinführer et al. 2016, Hopkins and Copus 2018, Agergaard et al. 2019).

In Poland, small towns are defined as urban centres with a population of up to 20,000 people (Podogrodzka 2013), and the study presented in this paper is focused on this size group. According to Statistics Poland (2018), in 2018, small towns accounted for over 75% of all cities in Poland (712 cities) and 13% of Poland's total population lived there. The greatest number of small towns among Poland's 16 voivodeships[2] was recorded in the Wielkopolskie voivodeship (Figure 1) – 93 small towns.

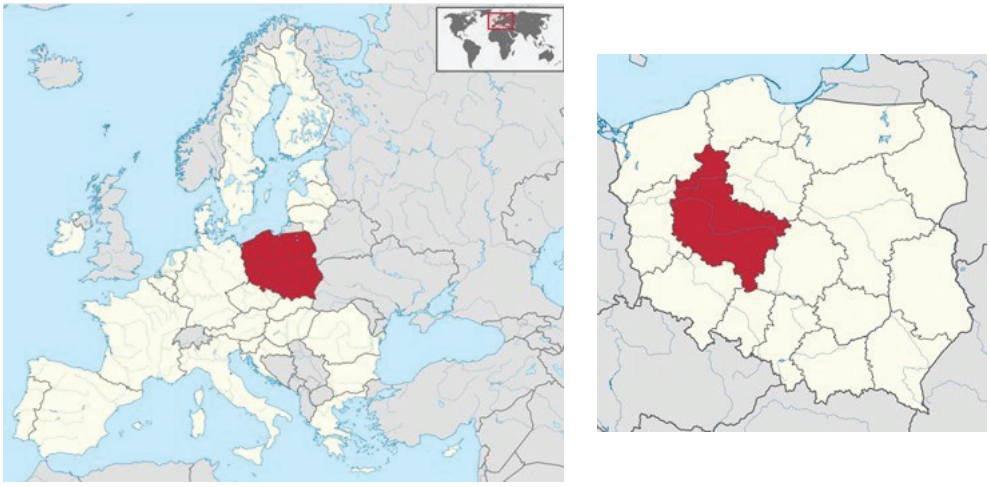

Figure 1. Location of Wielkopolskie voivodeship in Poland. Source: Wikimedia Commons (2020)

Methodology

As part of examining the demographic situation in terms of actual population growth, small towns in the Wielkopolskie voivodeship were grouped based on the J. W. Webb's typology. This approach was used by several researchers, including Kupiszewski et al. (1997), Serafin (2010), and Kurek et al. (2015) – to identify the population types at municipality level; Musiał-Malago (2018), Gwosdz et al. (2019) – to study selected medium and large cities; Długosz (2001) – to analyse cities and municipalities of a selected voivodeship; Kosiński (1964) – to determine the population types at district level; Biały and Długosz (2015) – to create a typology of EU countries; as well as Wiśniewski (2014) – to carry out a study concerning the European territory of Russia. The population change trends in the NUTS 2 regions and the selected EU cities were also included in a report by the European Commission (European Commission 2011).

[2]A voivodeship is a government administration unit and the largest unit in the basic territorial division of Poland. 16 voivodeships were established under the Act of July 1998 on the introduction of the basic three-tier territorial division of the state. Wielkopolskie voivodeship may also be considered part of the NUTS 2 region (code: PL41) (according to the EU NUTS classification – Nomenclature of Territorial Units for Statistics).

The authors who used the Webb typology in the context of small Polish cities include: Kwiatek-Sołtys (2015), Kamińska and Mularczyk (2016), and Bartosiewicz et al. (2019). The Webb typology enables the identification of relationships between the natural increase and the net migration rate. The resulting combinations formed 8 demographic unit types (Małopolskie Obserwatorium Polityki Rozwoju 2010) (Figure 2).

A, B, C and D correspond to demographically active units (which exhibit population growth), whereas E, F, G and H are demographically inactive units (with a noticeable population decline).

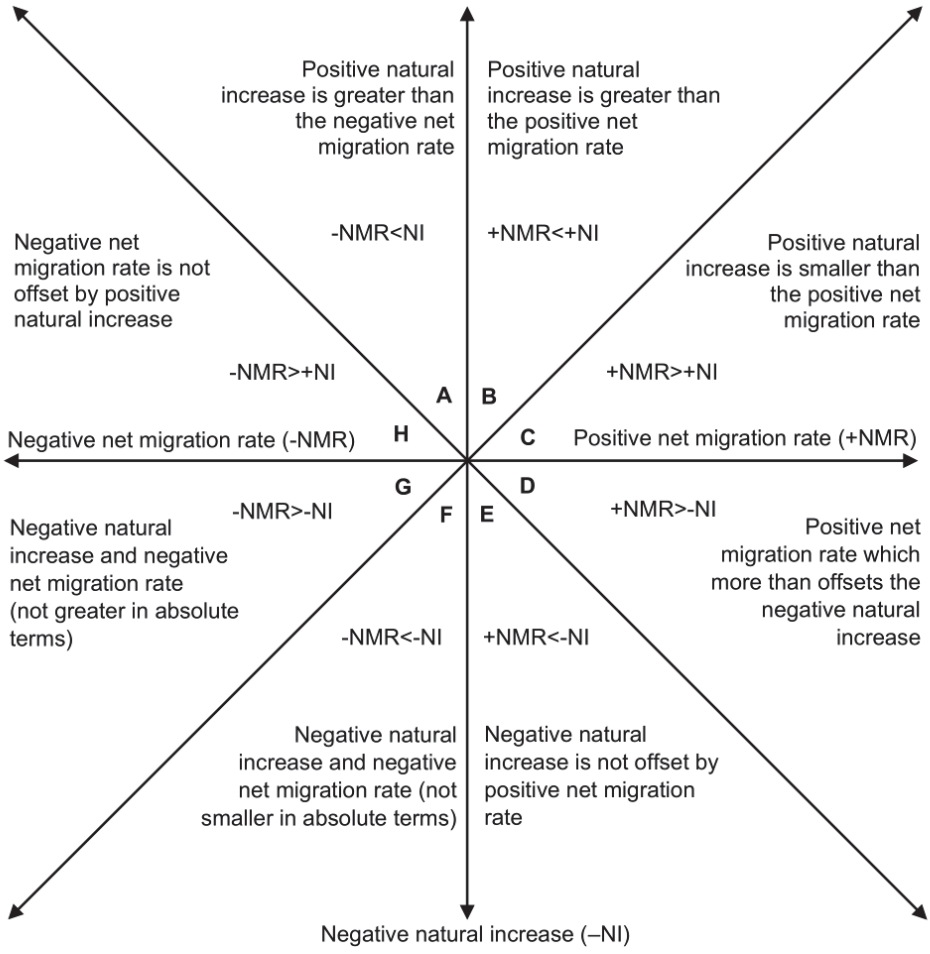

Figure 2. Population movement types according to Webb.
Source: own compilation based on Małopolskie Obserwatorium Polityki Rozwoju (2010)

The typological transition matrix (Table 1) was used to provide a more complete picture of the changes taking place in small towns in surveyed the periods. This makes it possible to identify the movements between the category types defined by Webb (Kurek et al. 2015). Four sections exist in the matrix (Kurek et al. 2015):

- I: steady growth; population growth occurred in both periods (A-, B-, C- and D-type small towns either kept the same type of relationships or moved within the identified combinations);
- II: growth; a population decline in the first period (the units are E-, F-, G- or H-type cities) is followed by population growth in the second period (small towns become A-, B-, C- or D-type cities);
- III: depopulation; population growth in the first period (small towns are A-, B-, C- or D-type units) is followed by a decline in the actual number of residents (the units become E-, F-, G- or H-type cities);
- IV: steady depopulation; either both periods were marked by depopulation, or the units retained the same type of relationships (small towns remain E-, F-, G- or H-type units).

This typology can be further analysed in more detail using subtypes which reflect the changes in the relationships between the components (Table 2).

Table 1. Four relationships between the Webb types in a dynamic approach

Types	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
A	I	I	I	I	III	III	III	III
B	I	I	I	I	III	III	III	III
C	I	I	I	I	III	III	III	III
D	I	I	I	I	III	III	III	III
E	II	II	II	II	IV	IV	IV	IV
F	II	II	II	II	IV	IV	IV	IV
G	II	II	II	II	IV	IV	IV	IV
H	*II*	*II*	*II*	*II*	*IV*	*IV*	*IV*	*IV*

Source: compilation based on Kurek et al. (2015)

Table 2. Relationships between 6 subtypes

Types	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
A	o	b	b	b	x	c	c	d
B	a	o	b	b	c	x	d	d
C	a	a	o	b	c	c	x	d
D	a	a	a	o	c	d	d	x
E	x	a	a	b	o	d	d	d
F	a	x	b	b	c	o	d	d
G	a	a	x	b	c	c	o	d
H	a	b	b	x	c	c	c	o

Source: Długosz (2001)

The subtypes identified six subsets combined with eight types of results in a 64-combination matrix of theoretical relationships. The subsets can be described as follows (Długosz 2001):

- o: stabilised; this is the case if the units do not change their Webb type during the periods analysed;
- x: reversed; this is the case if the units fundamentally changed their relationship pattern;
- a: growing natural increase; this is the case if the units shift to another Webb type because natural increase becomes more and more important;
- b: net migration rate growth; this is the case if a unit shifts to another Webb type because its net migration rate becomes increasingly important in its relationship with the natural increase;
- c: natural increase decline; this is the case if the units shift to another Webb type because natural increase becomes less and less important;
- d: net migration rate decline; this is the case if the unit's population type is affected by the net migration, losing its importance in relation to natural increase.

Results

The typology suggests that in the 2003-2005 period, the population growth in small towns in the Wielkopolskie voivodeship was slightly greater (54% of small towns) than depopulation; this is true for A-, B-, C- and D-type small towns (Figure 3). They formed a group of demographically active cities – a consequence of immigration, which involved compensating for the negligible depopulation (D-type) or exceeded the positive natural increase (C-type: 20 small towns). This group also included cities where the natural increase was greater than immigration (B-type: 12 cities) and greater than the positive increase that compensated for emigration, if any (in 2003-2005, it did not exceed 2‰) (A-type: 9 units), in the study period.

Demographically active cities were typically located in the central belt running from the north to the south of the voivodeship. The A-type was the most characteristic of cities located in the northern part of the voivodeship (Margonin, Złotów, Wysoka, Wyrzysk). In turn, C-type cities were spread between the central and southern parts of the voivodeship, and notably included Rydzyna, Kórnik and Pobiedziska, where a positive net migration rate considerably differed from what was recorded in other cities (10–18‰ compared to 5.2‰ as the average rate for that type of cities).

Most of the demographically inactive small towns were the ones with a negative net migration rate and a small positive natural increase, i.e. type H (23 cities). The city of Dobra, a complete outlier, was the only one to have recorded a negative net migration rate lower than 10‰ (-12.57‰) in the 2003-2005 period. Of all the identified types, the smallest sector was formed by units where natural decrease exceeded immigration (E-type: Przedecz and Czempiń). Small towns affected by depopulation were usually located at the voivodeship's borders, especially its eastern and western extremes. The

western part of the voivodeship included mostly H-type units (-NMR>+NI) while the eastern part was more diverse (E, F, G). However, in these cases, the effect of emigration was exacerbated by the natural decrease.

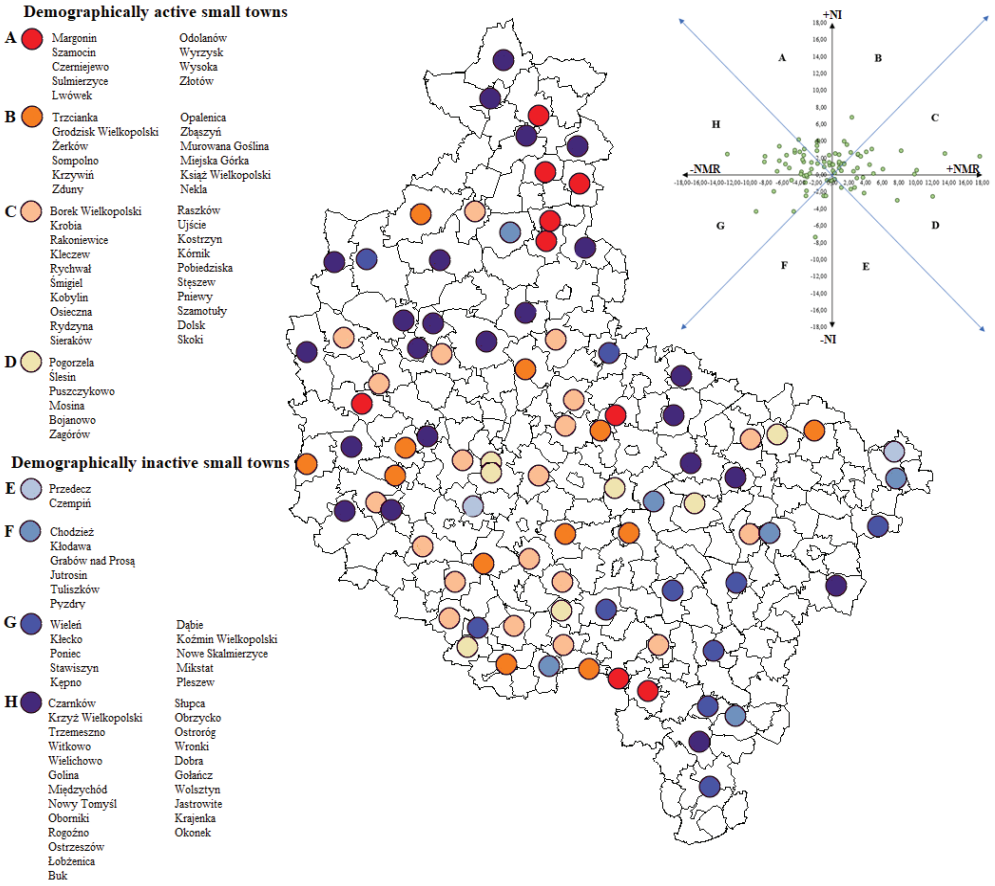

Figure 3. Typology of small towns population movements in the Wielkopolskie voivodeship (2003-2005), as identified using the Webb method.
Source: own study based on the Local Data Bank of Statistics Poland (2019)

The Webb typology revealed that both demographically active and inactive small towns had a relatively similar share in the first period. That period was marked by the dominant role of B-, C-, G- and H-type cities, i.e. the ones where the net migration rate played a decisive role; that very component was the key determinant of the actual number of residents in the 2003-2005 period.

The situation of small towns had been deteriorating until 2018. The number of small urban centres affected by depopulation increased to 70% (Figure 4). The dominant type

in the Wielkopolskie voivodeship was a small city with emigration exceeding the natural increase (26 G-type small towns and 27 H-type small towns). Hence, the cities struggled with a negative net migration rate and a negative (or slightly positive) natural increase.

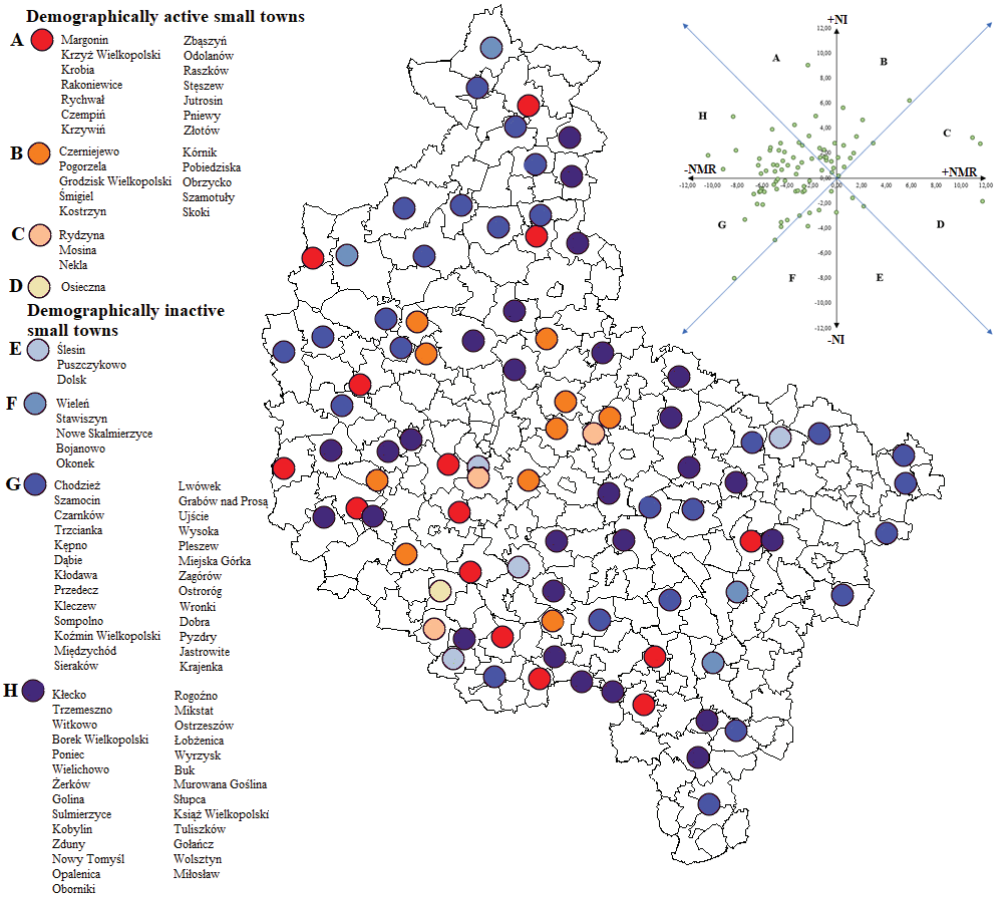

Figure 4. Typology of small towns population movements in the Wielkopolskie voivodeship (2016-2018), as identified using the Webb method.
Source: own study based on the Local Data Bank of Statistics Poland (2019)

C-type (Rydzyna, Mosina, Nekla) and D-type (Osieczna) small towns, i.e. the ones with a positive net migration rate, were a small group. Despite the considerable depopulation of small towns, the 2016-2018 period witnessed a rise in the number of A-type small towns whose natural increase exceeded their negative net migration rate (from 9 to 14) compared to the previous period. Therefore, in the 2016-2018 period, the central part of the Wielkopolskie voivodeship was represented by demographically active small towns while its eastern part could be referred to as a depopulation area.

The demographic trends were rather diverse in the 2003-2005 period while in the 2016-2018 period depopulation became truly severe. The number of small towns with both negative net migration rates and a negative natural increase (G-type) more than doubled. Therefore, both G- and F-type cities can be deemed to have been affected by severe depopulation.

When looking from another perspective, the delimitation of small towns proposed by Webb enabled the identification of the extent of urban shrinkage for the cities concerned. It was particularly noticeable in the case of small F- and G-type cities, where (in the context of demographic changes in the periods covered by this study) the trends were determined by the negative net migration rates and the negative natural increase. The above can be considered a long-term problem because it was already present in the first period examined. Rapid depopulation was also observed in small A- and B-type cities, which became F- and G-type cities during the periods considered. In this case, urban shrinkage was much faster in small towns.

The classification diagram was used to enable a more detailed approach to the type of relationships between the natural increase and the net migration rate (Figure 5). The conclusion is that 42% of small towns (type IV) follow a steady depopulation trend; the population of such cities either decreased or remained at the same level in the type distribution diagram in both 2003-2005 and 2016-2018 periods. Twenty-four small towns experienced depopulation. Only four small urban centres (type II) experienced population growth, i.e. improved their situation compared to the first period. Other cities (24 small urban centres) formed a territory with a steady population growth (type I; immigration growth and positive natural increase).

The types of small towns across Wielkopolskie voivodeship varied. Urban centres located in its eastern part were affected by steady depopulation (based on the Webb typology). That group also included small towns located in its north-western parts. Conversely, steady population growth was characteristic of small towns located in the voivodeship's central belt. Small towns on a steady growth path are the most viable towns from the perspective of what can be referred to as demographic stability. Also, they attract people which means that they benefit from the suburbanisation of big and mid-sized cities (including Poznań), which is noticeable in small towns in the central part of Wielkopolskie.

The study also identified a small group of cities exhibiting a growth trend, i.e. small cities which seem to withstand the pressure of depopulation quite well. However, when analysing their surroundings (locations near cities affected by depopulation or steady depopulation), it can be noted that they face the risk of being exposed to adverse scenarios in the future. Small towns affected by depopulation and steady depopulation are dominant. From a demographic perspective, they should be referred to as non-viable cities due to the negative net migration rates and negative natural increase.

Hence, they form a group of what can reasonably be expected to be 'ageing cities' due to a high share of elderly people in their population structures. As a consequence, they are being overtaken by other cities (which follow a steady growth trend) because of the latter's favourable socio-economic factors.

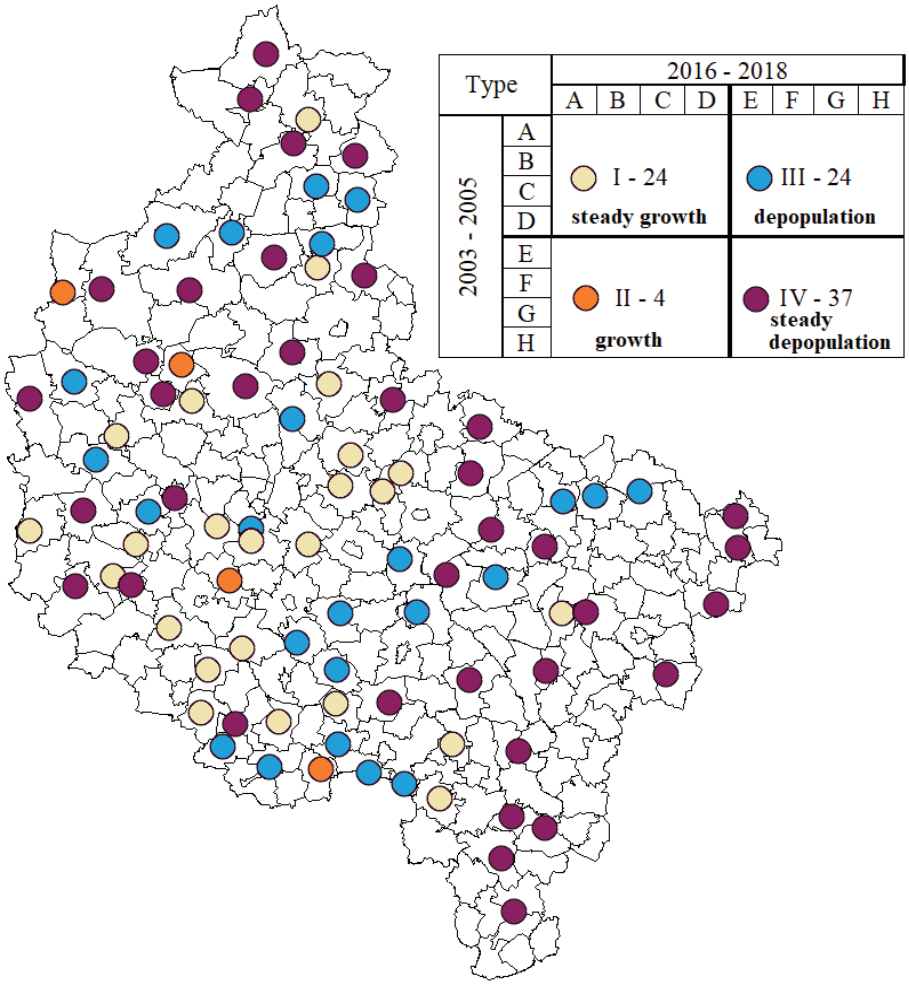

Figure 5. Types of relationships in the small towns of Wielkopolskie voivodeship.
Source: own study based on the Local Data Bank of Statistics Poland (2019)

Due to the dynamic nature of the discussed process, the author also divided small towns into subsets. Based on the analysis of changes in the relationships between the natural increase and the net migration rate in the 2003-2005 and 2016-2018 periods, it was possible to identify the transitions between the Webb migration types (Table 3).

Table 3. Relationship system in the context of small-town types and subtypes identified in the Wielkopolskie voivodeship

Types		2016-2018							
		A	B	C	D	E	F	G	H
2003 - 2005	A	3_o	1_b					3_c	2_d
	B	2_a	1_o	1_b				3_d	5_d
	C	6_a	6_a	1_o	1_b	1_c		3_x	2_d
	D		1_a	1_a		2_c	1_d	1_d	1_x
	E	1_x						1_d	
	F	1_a						4_d	1_d
	G						3_c	4_o	3_d
	H	1_a	1_b				1_c	7_c	13_o

Source: own study based on the Local Data Bank of Statistics (2019)

The division into subsets resulted in identifying 22 small towns whose relationships in the population movement type system did not change. However, that group included a considerable number of G- and H-type cities, i.e. territories affected by steady depopulation. While 5 small towns experienced a fundamental change in their situation, only one of them (Czerwiń) experienced a positive transformation (shifting from E to A). In the 2016-2018 period, 18 small towns saw a growing importance of natural increase; for 16 others, it was the opposite. In the second period, an increased role of the net migration rate (subset b) existed only in the case of 4 cities. In turn, the importance of the net migration rate decreased in the case of 23 cities (subset d).

The relationship system revealed a decline in both natural increase and net migration rate. This is reflected by the number of small towns which experienced a drop in the importance of both components. The above suggests that the out-migrating population were primarily young people. In small towns where the actual population growth is negative – as a consequence of the above process – that demographic trend takes the form of steady depopulation, which is extremely disadvantageous from the perspective of small-town development.

Between 2003 and 2005, no differences between small towns existed in the case of population movement components, and therefore the units covered by this study are located in a relatively compact cluster in the diagram. The conditions became much more diverse in the 2016-2018 period – natural increase and net migration rates for

small towns started to move away from the origin of the coordinate plane towards demographically-disadvantageous combinations.

Discussion

The above typology emphasised the importance of mutual relations between the natural increase and the net migration rate. Large outmigration levels presented in the study exacerbate the effects of natural decrease; this is caused by the emigration of the working-age population. If permanent, such population movements can result in the distortion of the small towns' population pyramids. This is exactly what happened in G-type cities. Hence, it may be assumed that the Webb typology developed in this paper, which grouped small towns according to the combination of the actual population growth components, made it possible to identify those that struggle with the ageing population problem. Therefore, it can be concluded that apart from urban depopulation, this study identified population ageing as an additional issue faced by small towns in the Wielkopolskie voivodeship.

The analysis of demographic changes, which was supposed to identify the demographic types of small towns in the Wielkopolskie voivodeship, ultimately boiled down to identifying new areas or such adverse consequences as declining birth rates, the emigration of young people and the ageing populations. The above are the only factors with demographic implications. Moving beyond demography, one can see a series of functional and spatial transformations which could be addressed in a separate scientific paper.

Indeed, small-town depopulation results in perturbing the cities' socio-economic structures. Small towns are believed to be local development centres as they provide support not only for their residents but also for their rural surroundings. Small town depopulation should be regarded as equivalent to a gradual loss of urban functions, which is a worrying prospect for their future. If the depopulation of small towns in Wielkopolskie persists or it further aggravates, it will ultimately result in a situation where a considerable number of small urban centres fail to perform the functions originally attributed to cities.

A city population drives the socio-economic progress by generating demand for goods, services, labour, education, recreation, and leisure. As a result of depopulation, a city no longer attracts entrepreneurs, investors, customers, tourists, and residents. Hence, as cities shrink demographically, they have less and less to offer in the socio-economic dimension. Based on the findings, cities in the eastern part and the western belt of Wielkopolskie voivodeship (which exhibit either depopulation or steady depopulation trends) are particularly vulnerable to the risk of functional transformation or they are already experiencing a gradual loss of their functions. Additionally, this trend is

noticeably spreading westwards. Yet, in this case, city functions may be lost to a different extent because of the presence of adjacent small towns with a steady population growth. In summary, the demographic transformation process proves to be the most beneficial to small towns exhibiting a steady population growth trend, which continues to develop even in the era of demographic crisis and urban shrinkage – much to the detriment of other small urban centres. In the case of such cities, their development includes not only the demographic aspect but also economic progress.

Conclusions

The demographic processes occurring in the Wielkopolskie voivodeship's small towns resulted in a decline in the population potential. Between 2003 and 2005, the cities covered by this analysis were more diversified in terms of population movement types than in the 2016-2018 period (despite similar population movement component values). This was reflected in the diversification of the Webb typology structure. Until 2018, small towns had similar combinations of natural increase and net migration rates; this affected the typology results in the second period covered by this analysis.

Since 2003, small towns have been facing depopulation. In the 2003-2005 period, these processes were largely driven by emigration, which had an even stronger impact in the 2016-2018 period. This is evidenced by the increase in the number of cities classified as G- and H-type units based on the Webb typology. As for the intensity of that process, G-type small towns were in a particularly disadvantageous situation (-NMR>-NI). They faced emigration exceeding the negative natural increase, and consequently, nearly half of small towns (37) exhibited steady depopulation. The predominance of small, depopulating cities in the Wielkopolskie voivodeship is a characteristic phenomenon and similar processes occur in other voivodeships in Poland too (Bartosiewicz et al. 2019).

The typology developed in this paper provides a picture of small city demographic structures. Permanent depopulation processes due to the emigration of working-age people distorted their population pyramids. As a consequence, E-, F-, G- and H-type cities can be considered demographically old. The permanent outflow of people results in such negative consequences as workforce shortage and decreased public income in many small towns, which leads to the loss of their vital development segments. Although city shrinkage rarely occurs in the case of small towns, the consequences of the population outflow experienced by such towns are identical to those indicated by Lima and Eischeid (2017). This suggests that the appropriate terms referring to these phenomena that disturb the functional structure of small towns should be introduced.

In the context of this study, the emergence of further depopulation trends seems interesting. Towns located within the area of Poznań (a big city) are likely to be an

exception. This is the case where small towns can expect a continued population inflow. This is related to suburbanisation, which has been progressing since the 1990s in the largest Polish cities, including Poznań. Thus, the population of small towns near Poznań will continue to increase due to the influx of Poznań residents. On the other hand, the urbanisation of small towns will also become more noticeable thanks to the migrants from other cities and the rural areas who will move there due to their professional activities in Poznań. Nonetheless, it must be noted that any gains due to the migration of new people to small towns are but a partial compensation for the ageing local populations (McMillan 2015). The influx of people (mainly of working age) to small towns in the heart of Wielkopolskie voivodeship results in their simultaneous outflow from other areas, including small towns, and it hinders their sustainable development (Kamińska and Mularczyk 2014).

A yet another topic that should be briefly discussed in the summary is the impact of urban sprawl and suburbanisation processes on the areas experiencing a population influx, which Hlaváček et al. (2019) and Kovács et al. (2019) refer to in the context of environmental quality and they identify a disturbance in sustainable development in the case of both phenomena. This mainly applies to areas (cities, rural areas) located in the vicinity of large cities, where not only the landscape features (Hardi et al. 2020) but also the functional structures are disturbed (for a broader description of the unfavourable transformations in rural areas, see Hlaváček et al. 2019), effectively leading to uncontrolled development. Nonetheless, it is a socio-economic development opportunity for small towns – despite the development pressure that they may be subject to (Samat et al. 2020).

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