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Spatial differentiation of urban population change in Russia

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Abstract. The demographic transformations in Russia have led to changes in the country's urban population (population of cities and urban-type settlements), which declined by 3.3% in the years 1989–2010. However, the population of cities as such increased over the same period by 1.5%, mainly as a result of the huge growth in the population of Moscow. Population changes in Russian cities vary depending on the size of the city. The greatest change was observed, above all, in small peripheral cities, which lost as much as half of their population. However, even more alarming are the trends observed in the smaller cities of the historical heart of Russia, which fall within the catchment area of Moscow (and its aglomeration) and cities of supraregional importance. Such cities have been depopulating as fast as Siberian cities.

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Contents:

1. Introduction . . . 144
2. Research approach . . . 144
3. Historical and administrative determinants of population changes . . . 148
   3.1. Historical background of urbanisation in Russia . . . 148
   3.2. Population vs. administrative changes . . . 149
4. Results . . . 149
   4.1. Population change by city size . . . 149
   4.2. Spatial differentiation of urban population change . . . 155
      4.2.1. North-south changes . . . 155
      4.2.2. East-west changes . . . 157
      4.2.3. Changes by region . . . 158
5. Conclusion . . . 158
   Notes . . . 159
   References . . . 159

1. Introduction

The collapse of the Soviet Union was a catalyst of not only political and economic changes, but also demographic ones. Since the early 1990s, we have been observing a rapid acceleration of depopulation processes, even though they were known earlier, too (Bogdanova et al., 2001; Terenina, 2004). In the years 1989–2010, the population of the Russian Federation decreased by 2.8%, i.e. by 4165 thousand people, despite sizeable inflows of migrants. The changes were not uniform across the huge territory of Russia. While some areas experienced high depopulation (e.g. the Magadan Oblast, Chukotka Autonomous Okrug), others recorded high population increases (e.g. Daghestan, Chechnya, Ingushetia).

Overall differences in population changes in Russia as a whole translate into differences between its urban and rural areas. Although in the years 1989–2010, a higher fall in population numbers was seen by rural areas (3.9%) than by urban ones (2.5%), in absolute terms cities recorded a higher population decline (2645 thousand people) than rural areas (1520 thousand people). By the early 1990s, the size of urban population was growing as a result of three main factors: (a) natural increase (to the lowest extent), (b) migration gains, and (c) administrative and territorial changes, i.e. change of cities' administrative borders (incorporation of adjacent rural areas) and founding of new cities (e.g. by granting city status to urban-type settlements) (Shcherbakova, 2010). However, since the mid-1990s there has been a decline in urban population, despite an increase in the number of cities and expansion of existing cities. The decline is attributable, among other things, to the decreasing number of what is referred to as 'urban-type settlements', whose residents are ranked among urban population. In the years 1989–2002, 432 urban-type settlements lost their status (329 were transformed into rural settlements, 42 were granted city status, 46 were incorporated into existing cities, and 15 were liquidated altogether). The population of urban-type settlements decreased by 2996.0 thousand people (Uskorilos', 2005). In the next inter-census period (2002–2010), the number of urban-type settlements decreased by another 556. Their population totalled 2725.6 thousand. By way of administrative decisions, the residents of such settlements were deprived of their urban population status overnight. The most pronounced changes took place in the Rostov, Orenburg, Tyumen Oblasts, and in the following republics: Karelia, Kalmykia and Altai.

The main objective of this article is to analyse population changes in Russian cities in quantitative terms. This study attempts to answer two main questions:

Are there any differences in the dynamics of population change in cities depending on their rank in the hierarchy of the settlement system?

Are there spatial differences in the rate of population changes in cities?

2. Research approach

The paper analyses population change in selected Russian cities in the years 1989–2010 by size categories based on population numbers. The analysis focuses on cities as such, excluding urban-type settlements (Russian: *posiolok gorodskogo tipa*). The statistical data is taken from censuses in 1989 and 2010, which were carried out by the State Committee for Statistics (Goskomstat), and its successor, the Russian Federal State Statistics Service (Rosstat). The data demonstrates the population size in urban units at the beginning (1989) and at the end (2010) of the period under study.

In 2010, Russia had 1100 cities in total. The analysis disregards the so-called "closed cities" (Russian: *ZATO – zakrytyye administrativno-territorial'nyye obrazovaniya*), mainly due to the unavailability of data on their population at the beginning of the study period. Furthermore, the character of such cities clearly restrains free migratory movement, which influences overall population changes. The study also excludes certain individual cities for which population size in 1989 could not be determined due to changes of their administrative borders (division of municipal units) or which were established after 1989. Ultimately, the analysis includes 1072 Russian cities assigned to 8 size categories (Table 1). The categories correspond to the division of Russian cities by population size as adopted by

the Ministry of Regional Development of the Russian Federation (Ministerstvo Regional'nogo Razvitiya, 2011: 2). Despite the fact that the population of some Caucasus republics tends to be overestimated (in particular, Ingushetia, Chechnya, but also Daghestan and Kabardino-Balkar) (Maksudov, 2005; Bogoyavlensky, 2008; Karachurina, Mkrtchyan, 2010; Andreev, 2012), and notwithstanding the demographic consequences of the two Chechen wars, which had an effect on population size and population flows, cities in the above-mentioned republics are included in the statistical analysis to obtain a full picture of changes in Russia. Notwithstanding the overestimation, that part of Russia saw an indisputable demographic growth. Population growth in many cities resulted from their territorial expansion. Yet, such cities were included in the present analysis to illustrate the impact of administrative changes on population change, especially from one city category to another.

Table 1. Number of cities under study by population size

Category	Size (thousands)	Characteristics	Number of cities in 2010*
I	> 1000	Cities of global importance (Moscow), international importance (Saint Petersburg) or international importance within former USSR countries	12
II	500-1000	Cities of regional-international importance (e.g. Vladivostok) or of national importance	25
III	250-500	Cities of supraregional importance	36
IV	100-250	Cities of regional and supralocal importance	90
V	50-100	Cities of supralocal and local importance	147
VI	20-50	Cities of local importance only	354
VII	10-20		255
VIII	< 10		153
		Total	1072

Source: The author based on Rosstat data and Ministerstvo Regional'nogo Razvitiya, 2011

* In Russia, urban population includes both the population of cities and urban-type settlements, the latter being settlement units whose characteristics rank them between urban and rural areas. In 2010, Russia had 1100 cities (97526.8 thousand population) and 1286 urban-type settlements (population of 7787.0 thousand)

The spatial analysis of the urban population change was carried out in two supra-regional zones (north-south and east-west), as well as in individual regions. The "north-south" analysis was based on Russia's division into three climatological zones for the purpose of certain welfare allowances and privileges for their residents. The division dates back to the USSR and was adopted by its Council of Ministers in 1967 (Postanovleniye, 1967). Zone I comprises the Extreme North, where residents of all districts are entitled to welfare allowances and financial benefits for working in adverse climate conditions. Zone II covers areas directly adjacent to zone I (with certain exceptions); in that zone, the residents of some cities and towns are entitled to the same allowances and bonuses as in zone I. The allowances and financial privileges still apply, but they are not as significant as during the Soviet period. Zone III comprises the rest of the Russian territory; its population does not enjoy the entitlements conferred in zones I and II. For the purposes of this paper, the borders of zones I and II were used in their unchanged form (hereinafter NS.1 and NS.2) (Fig. 1), whereas zone III was subdivided, with zone IV delimited (NS.4) in the south of the European part of Russia, including the Caucasus republics, which stand out for their high demographic gains.

For the needs of longitudinal analysis of population change, six zones were delimited. Their borders correspond to those of historical lands and physical geography units, i.e. the Russian Far East, Siberia (with subdivision into eastern, central and western parts), the Ural and Povolzhye, the East European Plain, the North Caucasus and the Cau-

casus (Fig. 2). The longitudinal analysis reflects the prevailing migration trend in Russia known as the "western migration drift" (Mkrtchyan, 2005, 2015), i.e. outflow of population to the European part of Russia. Table 2 shows the number of cities in the individual zones, both for the "north-south" and "east-west" zoning.

Fig. 1. "North-south" zoning of Russia

Source: The author

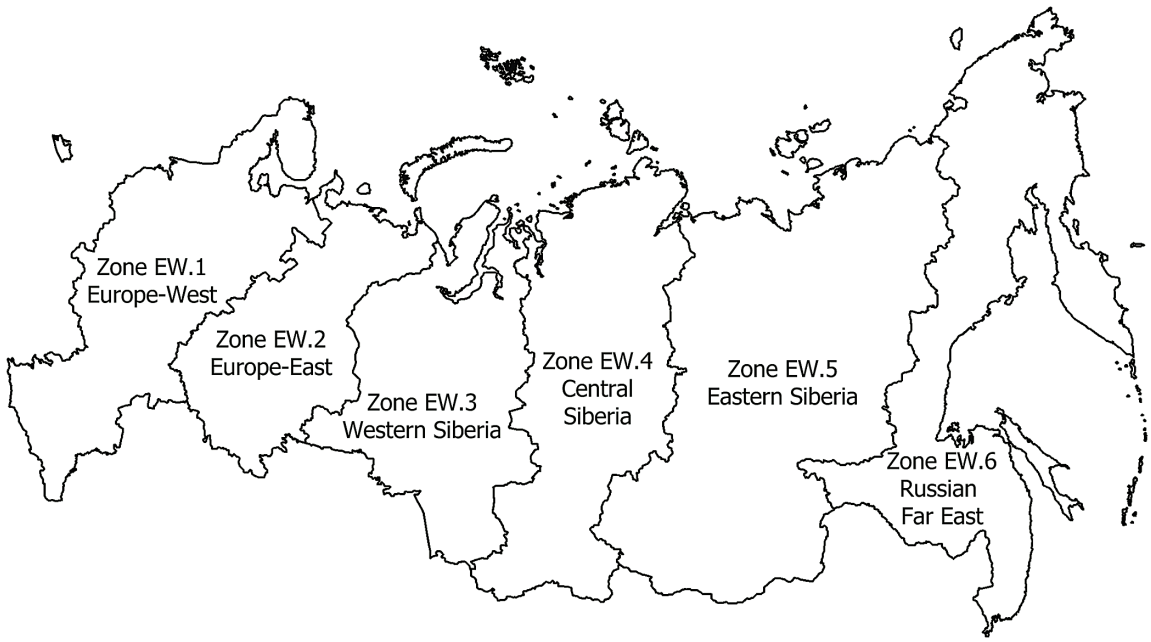

Fig. 2. "East-west" zoning of Russia

Source: The author

Table 2. Number of cities in individual zones

Zone	Number of cities (thousands)								Total
	<10	10-20	20-50	50-100	100-250	250-500	500-1000	>1000	
NS.1	12	9	20	5	4	2	0	0	52
NS.2	13	21	32	6	6	5	0	0	83
NS.3	125	204	247	111	61	23	22	10	803
NS.4	3	21	55	25	19	6	3	2	134
				Total					1072
EW.1	108	148	196	83	51	24	10	5	625
EW.2	18	53	76	35	19	5	6	5	217
EW.3	2	18	34	8	5	3	3	2	75
EW.4	5	11	15	11	7	0	3	0	52
EW.5	9	15	16	5	2	3	1	0	51
EW.6	11	10	17	5	6	1	2	0	52
				Total					1072

Source: The author based on Goskomstat and Rosstat data

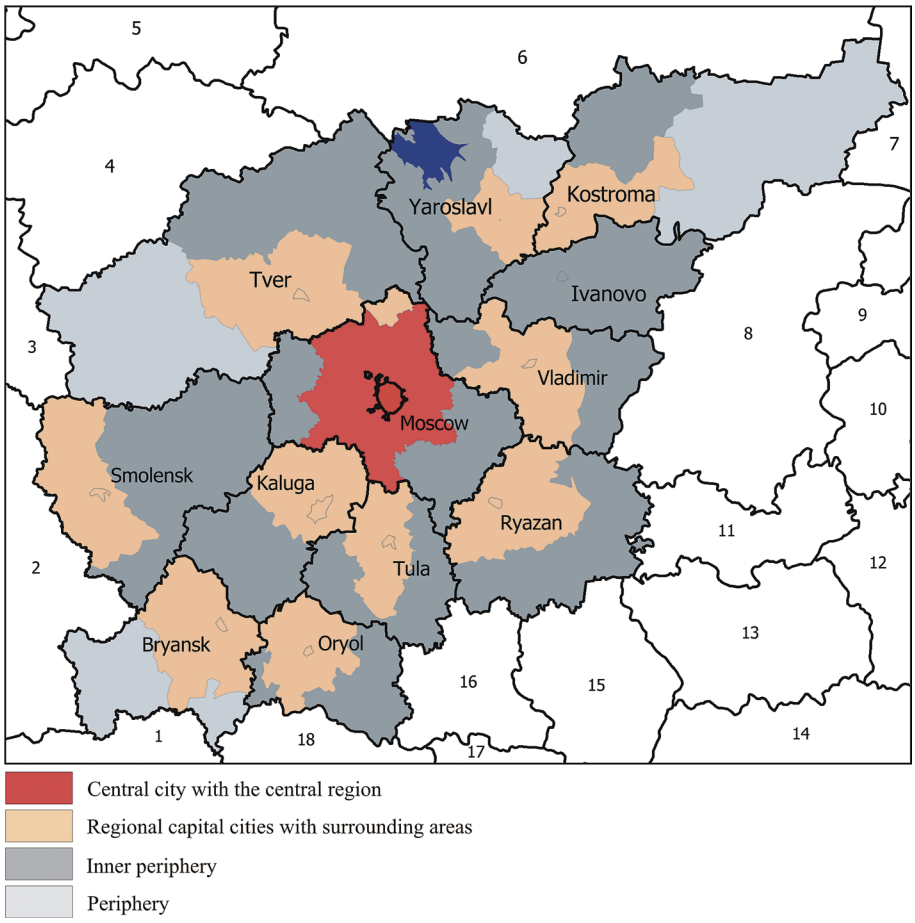

Fig. 3. Regionalisation of the Central Economic Region

Explanation: 1 – Ukraine, 2 – Belarus, 3 – Pskov Oblast, 4 – Novgorod Oblast, 5 – Leningrad Oblast, 6 – Vologda Oblast, 7 – Kirov Oblast, 8 – Nizhny Novgorod Oblast, 9 – Mari El Republic, 10 – Chuvash Republic, 11 – Republic of Mordova, 12 – Ulyanovsk Oblast, 13 – Penza Oblast, 14 – Saratov Oblast, 15 – Tambov Oblast, 16 – Lipetsk Oblast, 14 – Voronezh Oblast, 18 – Kursk Oblast

Source: The author on the basis of Kaganskii (2013: 23)

Regional differences were demonstrated by using the example of Moscow and its influence zone. The underlying assumption in the study was that each region and its processes are a miniature version of Russia as a whole. As a consequence, each region was considered to have peripheral areas, i.e. "inner periphery" (Kaganskii, 2013), resulting from differences in regional development. Therefore, the analysis focused on whether nationwide population changes are reflected on a regional scale, especially with respect to peripheral areas. The area chosen for the analysis covered the Central Economic Region, which consists of 11 oblasts and Moscow, as subdivided into the following zones: the central city with the central region, regional capital cities and surrounding areas, inner peripheries, and peripheries (Fig. 3) (Kaganskii, 2013). In each of the zones, urban population changes were analysed overall and by the individual city size categories (population below 10 thousand, 10–20 thousand, 20–50 thousand, 50–100 thousand, and over 100 thousand). In the former case, the population of Moscow was included in the central zone, and in the latter, Moscow was excluded from analysis not to distort the situation in the other cities of the same category.

3. Historical and administrative determinants of population changes

3.1. Historical background of urbanisation in Russia

Discussing demographic change in Russian cities requires describing the historical and political background. At the turn of the 19th and 20th centuries, Russia was an agricultural country, with urban population representing merely 15% of all population of the country within its present-day borders. In the late 1930s, the percentage doubled (Shcherbakova, 2010). The network of cities started to expand quickly after WWII (1926 – 520 cities, 1959 – 877 cities, 1989 – 1034 cities). The increase in the number of cities resulted from the economic development and dynamic urbanization of the country, linked mainly with industry and the mining of minerals, as well as expansion into the peripheral areas of the Extreme North. However, in many cases the growth in the number of cities did not translate into the development of urban infrastructure in the new settlement units.

The dynamic industrialisation which Russia owed, among other things, to its heavy industry, led to an urbanisation pattern that later proved disastrous for the populations of such newly-established cities. Many cities acquired a mono-functional or highly specialised character (e.g. Zlatoust, Kirovsk, Anzhero-Sudzhensk). The geopolitical developments in the late 1980s and the early 1990s, and the resultant economic transformations, led to a slump in production but also closure of companies that proved unprofitable in the market economy. This resulted not only in economic, but also demographic problems.

Urbanisation had a specific nature in the so-called Russian North, where a high number of incentives was introduced, such as much higher salaries (even twice as high as elsewhere in Russia), longer holidays, free transport to holiday destinations for all family members, earlier retirement, etc. (Savchenko, Kokin, 2000). Many people took the opportunity to improve their livelihood and left their homes to contribute to the "Great Construction Projects of Communism". After the collapse of the Soviet Union and faced with the economic decline that followed, many residents were caught in a trap, unable to leave their now prospectless place of residence due to lack of funds. The system of forced labour camps (GULAG), which supplied slave labour for the developing country and was a dark chapter in Russia's history, played a role, too. Initially, many present-day cities played a role of transit points or GULAG labour camps (e.g. Inta, Pechora).

Russian cities are characterised by a relatively young age. Approximately 2/3 of them were established in the 20th century. Four hundred of them have had city status for less than 5 decades, not having been able to become "true" cities yet, either in terms of their economy or life style. Such cities still have rural characteristics (e.g. the cities in southern Russia in the Krasnoyarsk Krai and the Stavropol Krai are former military outposts known as *stanitzas*) (Lappo, Polyan, 1999). The population of such cities and rural populations migrating into other cities, to whom urban lifestyle is still alien and who feel no bond with their new habitat, represent

what is referred to as *marginal population* or *hidden rural population* (Lappo, Polyan, 1999: 37). During soviet times, urbanisation developed on the rising tide of industrialisation, leading to the creation of many cities, a large proportion of which were mono-functional or narrowly specialised ones.

3.2. Population vs. administrative changes

Administrative changes in cities are an important factor of population change, significantly distorting the picture of demographic developments. In the period under investigation, category IV cities (100–250 thousand) saw a growth of 1.5%. However, a closer look at the changes will reveal that for some of them the growth is mainly attributable to changes of their administrative borders. After excluding the 13 cities whose population grew after their borders were moved, it turns out that the resultant set of category IV cities recorded a 2.4% drop in population.

Some administrative changes are quite peculiar. In 2005, two cities were incorporated into Norilsk (Krasnoyarsk Krai): Talnakh (47.3 thousand residents in 2005), and Kayerkan (27.1 thousand residents in 2002) (Postanovleniye Soveta, 2004); they lie 25 km and 20 km from Norilsk, respectively. What is more, in 2010 Norilsk absorbed an urban-type settlement, Snezhnogorsk (1.3 thousand residents in 2002) (O vnesenii izmeneniya, 2010), which lies as far as 160 km away from Norilsk. In the years 1989–2010, the population of Norilsk remained basically unchanged (growth of 0.4%). However, had it not been for the above-mentioned administrative changes, Norilsk – as analysed within its old administrative borders – would have "shrunk" by nearly a half (-49.2%). The city of Noyabrsk (Yamalo-Nenets Autonomous Okrug) is another administrative curiosity. In 2004, it absorbed the Vyngapurovskiy settlement (6.5 thousand residents in 2002), which lies 81 km away from Noyabrsk (Zakon YANAO, 2004).

Moscow also expanded in territorial and population terms. In 2012, two new administrative *okrugs* (districts) were established: Novomoskovsky and Troitsky. As a result, Moscow's area increased more than 2.5 times and its population grew by 2.5%, i.e. approx. 300 thousand people. The most spectacular change was the incorporation of the city of Zheleznodorozhny (131.3 thousand residents in 2010) into the city of Balashikha (Moscow Oblast) (Zakon Moskovskoy oblasti, 2014). Although both these changes took place after 2010 (in 2012 and 2015 respectively), and as such are irrelevant for the present analysis, they reveal the scale of administrative changes and show how such changes affect statistics and statistical analyses.

4. Results

4.1. Population change by city size

In the period of 1989–2010, Russian cities saw a slight increase in population (Table 3). The changes varied in intensity depending on the size of the city. The population of most cities, especially the smallest ones (categories VI–VIII), decreased. An upward trend was seen by 227 cities, mainly in categories VI and V. The "no change" category includes demographically stagnant cities, i.e. those whose population change fluctuated between -5 and +5% in the 1989–2010 period (mainly cities in categories V–VII).

Table 3. Urban population change by city size

Category	City size (thousands)	1989	2010	Changes 1989–2010	Number of cities		
					increase (>+5%)	no change (±5%)	decline (<–5%)
I	> 1000	25,208,095	28,222,475	12.0	3	7	2
II	500-1000	15,421,183	15,754,662	2.2	6	12	7
III	250-500	12,458,693	12,165,648	-2.4	11	12	13
IV	100-250	13,791,382	13,996,606	1.5	34	29	27

Category	City size (thousands)	1989	2010	Changes 1989–2010	Number of cities		
					increase (>+5%)	no change (±5%)	decline (<–5%)
V	50-100	10,452,603	10,239,277	-2.0	48	32	67
VI	20-50	12,080,723	11,363,255	-5.9	88	74	192
VII	10-20	4,353,897	3,690,203	-15.2	27	32	196
VIII	< 10	1,292,472	1,036,335	-19.8	10	20	123
Total		95,059,048	96,468,461	1.5	227	218	627

Source: The author based on Rosstat and Goskomstat data

The greatest population losses were recorded for the smallest cities (category VIII), by 19,8% on average. These are mainly cities with marginal importance in the settlement network. Formally, they should not even be cities, as they fail to meet the size criterion of minimum 21 thousand residents (1). The population declined in nearly all the cities lying in the Russian Far East and Siberia (Fig. 4). The changes were the most pronounced in four cities located in areas with extreme weather conditions, that is in the Extreme North: Pevek -67.8% (Chukotka Autonomous Okrug), Igarka -67.1% (Krasnoyarsk Krai), Susuman -65.2% (Magadan Oblast) and Bilibino -64.6% (Chukotka Autonomous Okrug). They tend to be considered mono-functional or narrowly specialised cities whose functioning depends on a single employer. Limiting the operations, or in the worst-case scenario, liquidation of such an employer caused significant outflows of population, mainly that of working age, and an actual fall of the city (Maslova, 2011). Population outflows are caused mainly by economic decline (large unemployment following liquidation of non-viable enterprises, relatively high maintenance costs and deteriorating infrastructure), intensified by peripheral location and the resultant economic (Wites, 2007) and social impacts (Wein, 1999; Thompson, 2004; Spies, 2009). The greatest population growth in the category was seen by cities having an advantageous location relative to the state border and growth poles (Vysotsk in the Leningrad Oblast – 33.9%, a major sea port, Ladushkin in the Leningrad Oblast – 21.8%; Kamenogorsk in the Leningrad Oblast, foreign investments, railway line modernisation for goods transport to Finland) or lying in oil and natural gas producing areas (Kedrovy in the Tomsk Oblast – 22.7%).

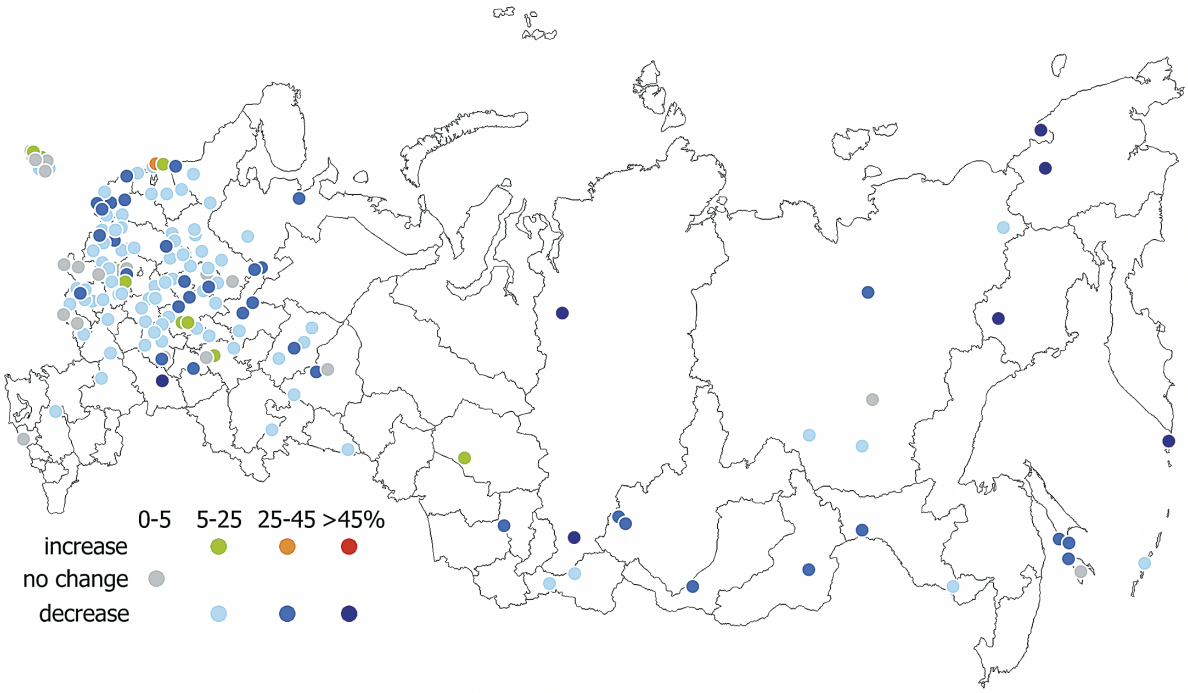

Fig. 4. Population change in cities with population below 10 thousand (1989–2010)

Source: The author based on Goskomstat and Rosstat data

The situation in category VII (small cities) was not better than in category VIII. A vast majority of them recorded a demographic decline (Fig. 5). In that category of cities, both the highest population declines and the highest growths were linked to changes of administrative borders and exclusion (e.g. Krasnozavodsk –55.0%; Moscow Oblast) or inclusion (Zhukov +318.3%; Kaluga Oblast) of other cities. In addition, a large growth was recorded by Boguchar (39.0%; Voronezh Oblast), which resulted from an army division being stationed there (The official website of Boguchar town administration). In addition to the above cases, the highest population decline resulting from migratory outflows and natural decrease was seen by the following cities: Nevelsk (51.8%) in the Far East (Sakhalin Oblast), Gremyachinsk (48.7%; Perm Krai), Baley (47.6%; Zabaykalsky Krai), Zavitinsk (47.4%; Amur Oblast). The highest population growth was seen by cities located near growth centres (Guryevsk – 56.7%, a satellite city of Kaliningrad) and those being located in oil and gas producing areas (Pokachi – 48.8%; Khanty-Mansi Autonomous Okrug).

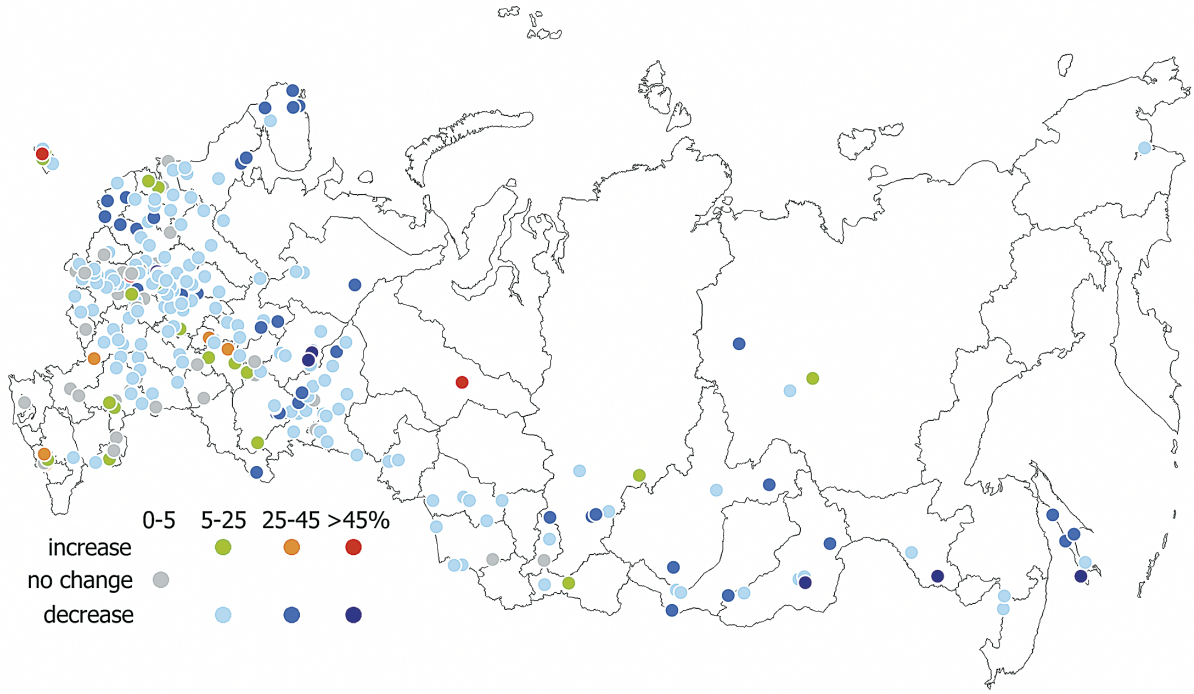

Fig. 5. Population change in cities with population between 10 and 20 thousand (1989–2010)

Source: The author based on Goskomstat and Rosstat data

A much better demographic condition (at least compared to the two above-mentioned categories of cities) was shown by cities between 20 and 50 thousand (category VI), which lost 5.8% of their population in the years 1989–2010. The highest population loss was recorded in the Extreme North (Inta – 46.7%, Tynda – 41.5%, Kholmsk – 39.8%, Nikolayevsk-on-Amur – 37.3%, Okha – 36.3% and Olenogorsk – 35.2%). The highest population growth was witnessed by cities in the Caucasus, in the Moscow and Saint Petersburg agglomerations, and in titular republics (Khanty-Mansi Autonomous Okrug, Yamalo-Nenets Autonomous Okrug, Bashkortostan, Tatarstan) (Fig. 6). The upward demographic tendencies of the cities with the highest growth (Karabulak in Ingushetia, Kubinka in the Moscow Oblast, Sertolovo in the Leningrad Oblast) resulted from non-demographic conditions (in the former case, inflow of refugees from Chechnya, and in the two latter cases – administrative changes). The other cities that saw a high demographic increase (Pyt-Yakh in the Khanty-Mansi Autonomous Okrug, Gubkinsky in the Yamalo-Nenets Autonomous Okrug) owe it to economic factors, i.e. benefits related to oil and gas production.

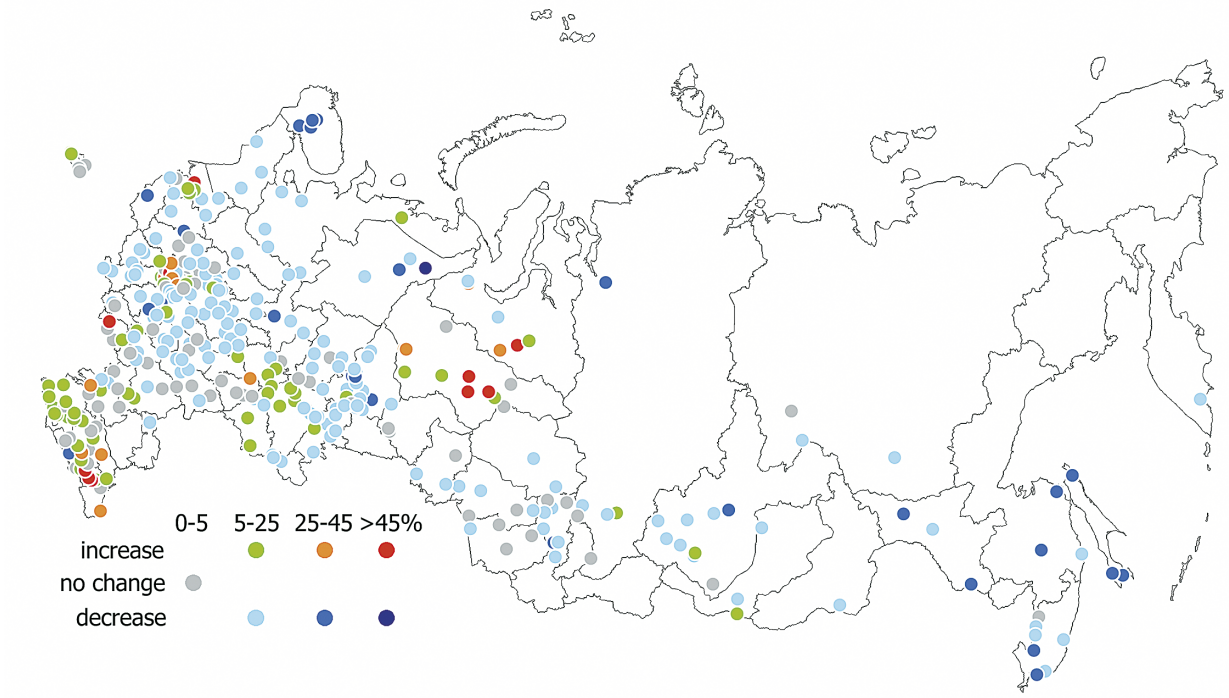

Fig. 6. Population change in cities with population between 20 and 50 thousand (1989–2010)

Source: The author based on Goskomstat and Rosstat data

Category V includes medium-sized cities, which recorded a slight population decline as a group. There were no spectacular population drops among the category (Fig. 7), except for two cities associated with the tragic history of the Soviet Union: Vorkuta and Magadan. The former lost 39.0% of its population, and the latter 36.7%. The scale of their demographic slump is reflected by the absolute figures of population loss. In the years 1989–2010, the population of Vorkuta decreased by 45.1 thousand, and that of Magadan by 55.7 thousand. The underlying causes were similar for both cities: closure of non-viable enterprises (including mines), which led to unemployment and deteriorating living standard, spatial isolation, difficult weather conditions (Wites, 2007). Substantial depopulation was also seen by mono-functional cities: Apatity (32.2%) in the Murmansk Oblast, and Anzhero-Sudzhensk (29.0%) in the Kemerovo Oblast. At the opposite pole of demographic change were the satellite cities of Petersburg (Vsevolozhsk – 86.9%) and Moscow (Domodedovo – 73.9%), the latter of which owes its increase – in addition to the benefits of its neighbouring on the capital – to administrative changes (Postanovleniye, 2004c, 2007), as well as cities in oil producing areas (e.g. Izberbash – 97.9% in Dagestan; in addition to a high rate of natural increase among the native population), and cities which grew in population terms as a result of administrative changes (e.g. Donskoy in the Tula Oblast – 78.5% (Zakon Tulskoy Oblasti, 2005)).

In the years 1989–2010, cities assigned to category IV demonstrated a slight population increase (Table 2). The greatest negative changes occurred in peripheral cities (Petropavlovsk-Kamchatsky – 33.1%, Severodvinsk – 22.6%) and in some cities experiencing an economic decline (e.g. Leninsk-Kuznetsky – 38.6% (2), Prokopyevsk – 23,3%, both cities in the Kuznetsk Basin). Most of the cities showing a positive tendency were those in the south of Russia (Fig. 8), with the highest dynamics in Khasavyurt (86.0%; Dagestan) and Kaspiysk (66.7%; Dagestan), resulting, among other things, from a high natural increase among Caucasian nations. The positive trend was shown also by few cities in the Russian Far East. The cities lying in the direct vicinity of Moscow (Balashikha, Korolyov, Mytishchi, Khimki, Krasnogorsk, Odintsovo, Zheleznodorozhny) also recorded population growth, most as a result of administrative changes

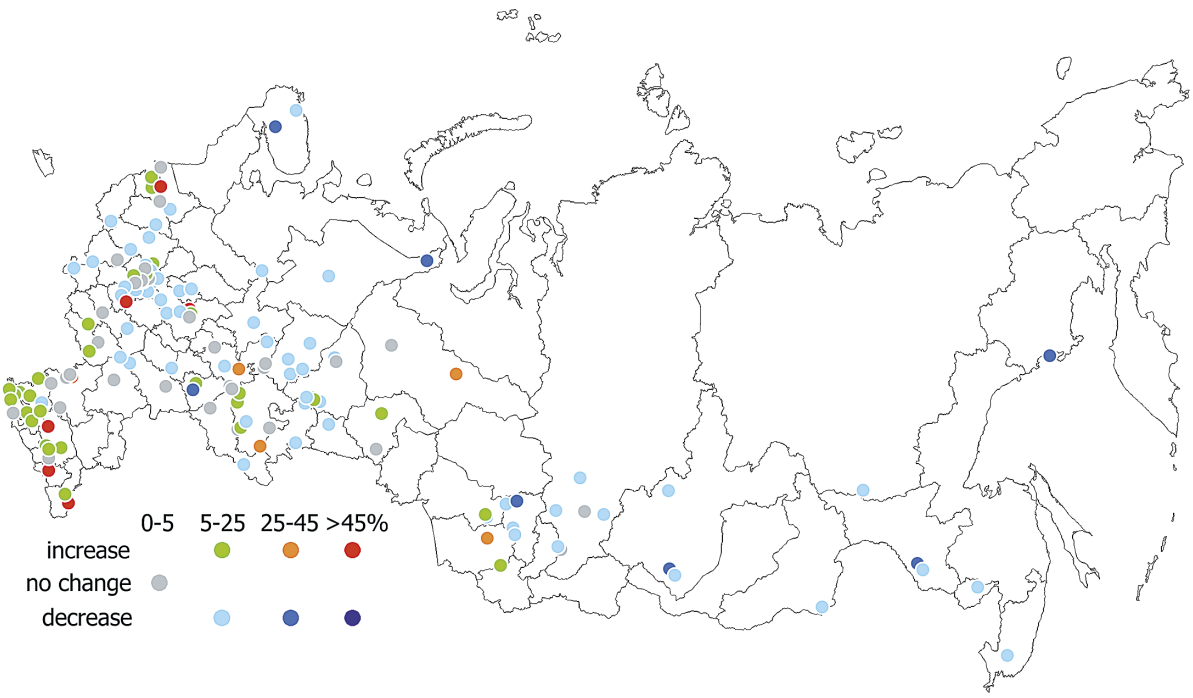

Fig. 7. Population change in cities with population between 50 and 100 thousand (1989–2010)

Source: The author based on Goskomstat and Rosstat data

(Postanovleniye, 2003, 2004a, 2004b, 2004d, 2004e). This was also the case with cities benefiting from the oil industry (e.g. Nefteyugansk, Noyabrsk, Novy Urengoy, Yuzhno-Sakhalinsk).

The group of cities with population between 250 and 500 thousand (category III) saw a slight decline (Table 2; Fig. 9). The largest-scale depopulation was recorded by Murmansk, which lost 160.8 thousand residents in the period under study, i.e. 34.4% of its population. The depopulation was even greater than in Grozny (32.1%), which was in the war zone at the time. Substantial drops were also witnessed by mono-functional cities (e.g. Nizhny Tagil – 17.7%) and those located peripherally (e.g. Komsomolsk-on-Amur – 16.3%, Arkhangelsk – 16.1%). Except for Grozny, the depopulation of the above-mentioned cities was caused by similar factors, i.e. declining industrial production, liquidation of companies, deteriorating living standard, which led to significant population outflows, especially of youths. For Arkhangelsk, administrative factors played a part, too. Before the collapse of the Soviet Union, the population of the closed cities lying in the Arkhangielsk Oblast would be included in the city's statistics (Karachurina, Mkrtchyan, 2010). After the collapse of the USSR, this was no longer the case. The highest growth among this group of cities was recorded by Yakutsk, whose population increased by 83.0 thousand people, mainly as a result of migratory influx of rural residents of Yakutia. The population of Stavropol also grew significantly (25.2%), partly because of the influx of refugees from the unstable areas of the Caucasus and Surgut. Stavropol owes its demographic growth – characterised by a positive migration balance and natural increase – to its stable economy, which is based on oil and gas production.

Category II cities saw no significant population changes (Fig. 10). The cities that observed a decline included both those located peripherally (e.g. Vladivostok, Khabarovsk, Novokuznetsk, Irkutsk) relative to the country's growth poles, and those being under their direct influence (e.g. Yaroslavl, Tula, Penza). The decline recorded by those cities was caused, in the first place, by migratory outflows to the Moscow agglomeration. The highest population increase was seen by Makhachkala (80.2%), Tyumen (22.0%), and Krasnodar (20.1%). The factors underlying the growth in those cities varied. Makhachkala is characterised by a high rate of natural increase

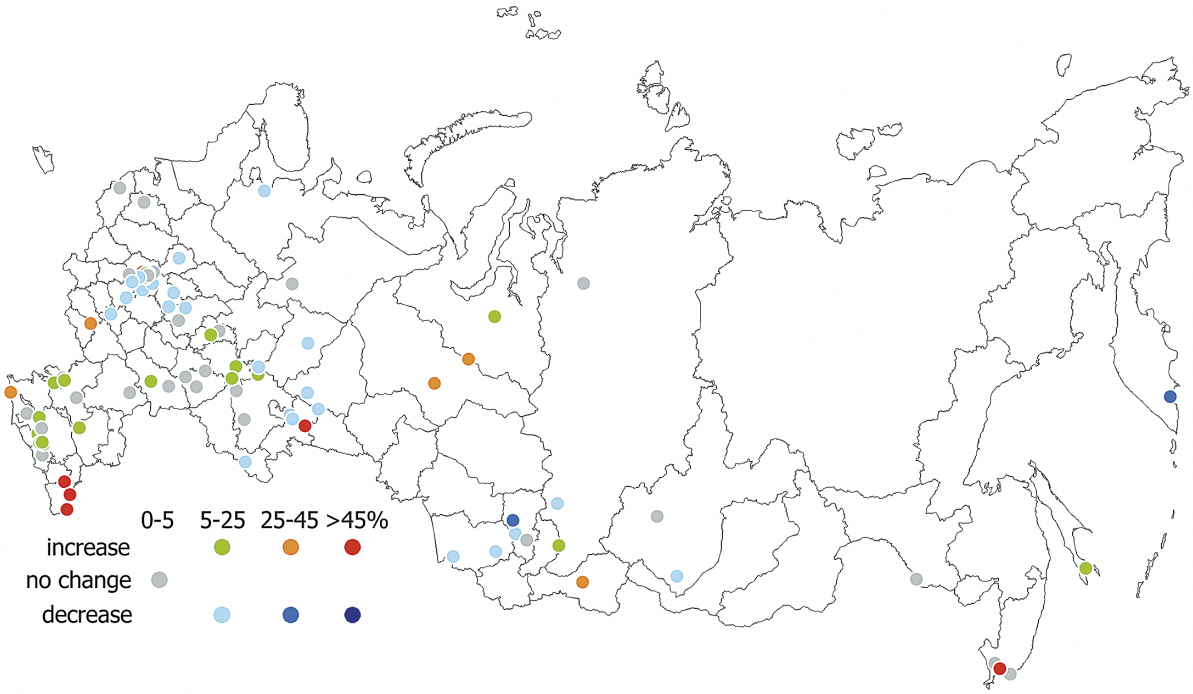

Fig. 8. Population change in cities with population between 100 and 250 thousand (1989–2010)

Source: The author based on Goskomstat and Rosstat data

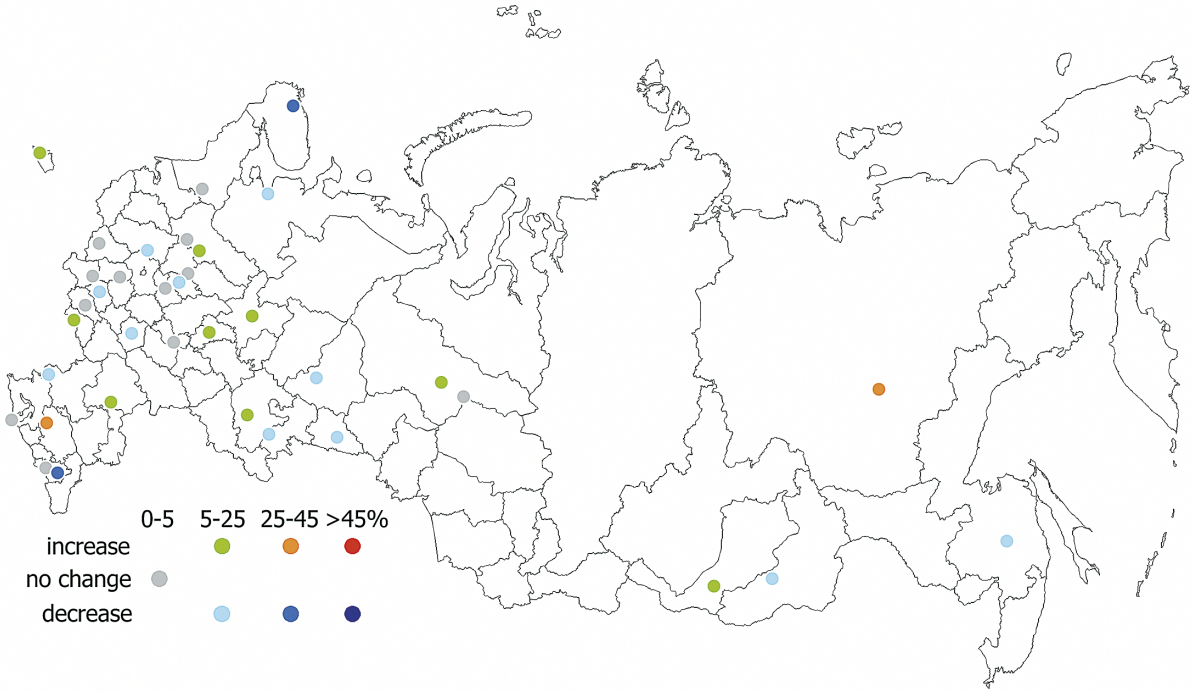

Fig. 9. Population change in cities with population between 250 and 500 thousand (1989–2010)

Source: The author based on Goskomstat and Rosstat data

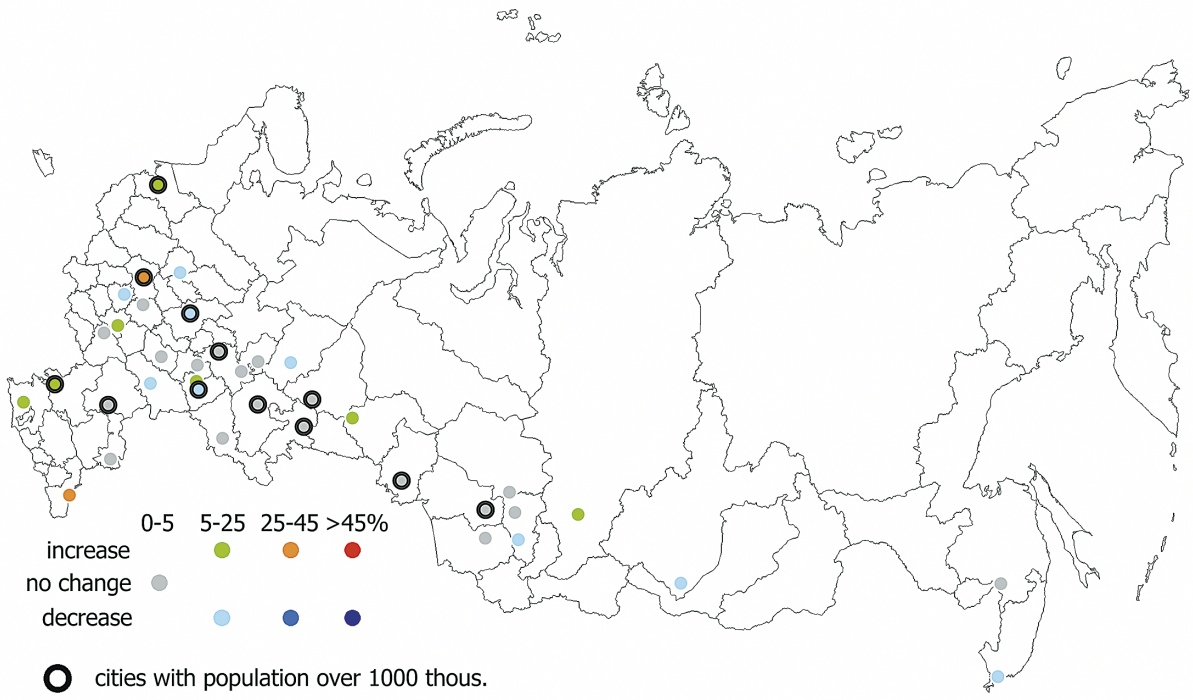

Fig. 10. Population change in cities with population between 500 and 1000 thousand and over 1000 thousand (1989–2010)
Source: The author based on Goskomstat and Rosstat data

and has no match as a destination of regional migration; Tyumen attributes its demographic growth to its oil industry, while Krasnodar is a dynamic industrial centre attracting foreign investments. However, the population growth in Krasnodar does not only result from its economic potential, but also from changes of its administrative borders and incorporation of two large urban-type settlements in 2004: Pashkovskiy (43.0 thousand in 2002) and Kalinino (34.2 thousand in 2002).

In category I, which comprises the largest Russian cities, two recorded a significant drop in population, i.e. Nizhny Novgorod (187.5 thousand people or 13.0%) (Fig. 10), chiefly due to labour migration related to the proximity of the Moscow labour market and natural decrease, and Samara (7.2%), mostly as a result of migratory outflows, which highly exceeded the inflows. In the same period, Moscow's population increased by as much as 2.7 million (31.2%), which resulted, in the first place, from high migratory influx from all the former soviet republics. Saint Petersburg also saw a growth by 419.1 thousand, but it was driven, among other things, by the territorial expansion of the city.

4.2. Spatial differentiation of urban population change

4.2.1. North-south changes

The spatial distribution of demographic changes in cities shows that peripheral location has a clear influence on urban population changes. A much higher depopulation rate is recorded by cities lying in the Far North (-18.6%) (Fig. 11, Table 4), mainly due to negative net migration rate (in some cases combined with natural decline, e.g. Murmansk Oblast, Arkhangelsk Oblast), than by those located in zone NS.2 (-6,0%) or zone NS.3 where a slight growth in urban population was observed (1.3%) but mainly as a result of a huge growth in Moscow and Saint Petersburg. With these two cities excluded, the other cities of the zone recorded a drop of 3.4%. A high increase was seen in zone NS.4 (10.5%), mainly due to the demographic growth in Caucasian republics. The cities in the group follow a general depopulation model – the smaller the city, the higher the depopulation rate. Furthermore, there are clear spatial differences along the "north-south" axis: the farther

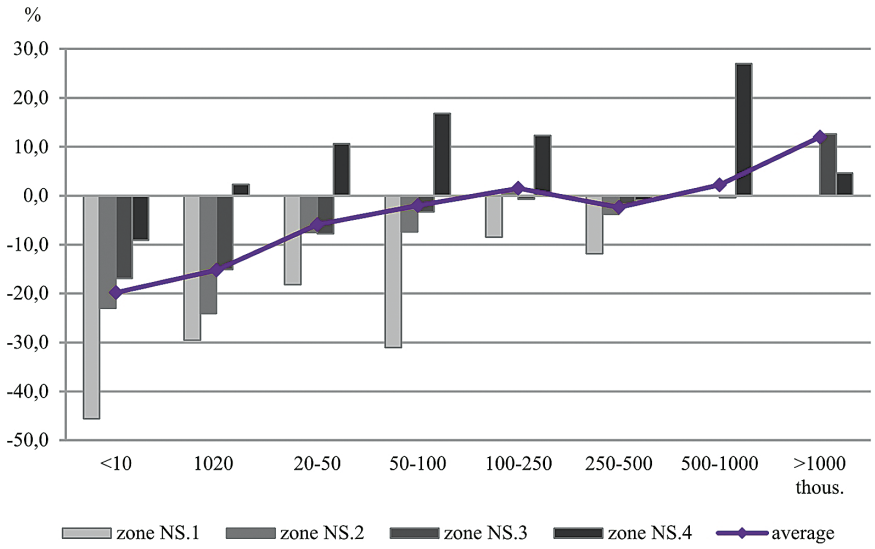

Fig. 11. Population change by city categories across the "north-south" zones

Source: The author based on Goskomstat and Rosstat data

south, the smaller the population decline in the individual categories of cities, going as far as growth of urban population in zone NS.4.

Among the cities in zones NS.1 and NS.2, most of which demonstrate population decreases, there are notable exceptions showing positive demographic trends. For the most part, they are cities in the oil and gas producing areas of the Yamalo-Nenets Autonomous Okrug and the Khanty-Mansi Autonomous Okrug. With these cities excluded, the fall in the number of urban populations of both zones, i.e. NS.1 and NS.2, is even higher and amounts to -22.9% and -14.2% respectively. This shows the huge significance of population growth in cities located in oil producing areas for the general demographic situation of cities in the Far North. The significance can also be clearly observed in other oil producing and processing areas, i.e. in Povolzhye (Tatarstan) and the Caucasus, where demographic growth is also attributable to a high rate of natural increase among the native population (Wiśniewski, 2014).

Table 4. Urban population change by zones and city categories

Zone	Urban population change (thousands)							
	<10	**10-20**	**20-50**	**50-100**	**100-250**	**250-500**	**500-1000**	**>1000**
NS.1	-45.6	-29.5	-18.2	-31.0	-8.5	-11.9	0.0	0.0
NS.2	-23.0	-24.1	-7.5	-7.4	1.3	-3.8	0.0	0.0
NS.3	-16.9	-15.1	-7.8	-3.3	-0.7	-1.7	-0.4	12.6
NS.4	-9.1	2.3	10.6	16.8	12.3	-0.9	27.0	4.6
EW.1	-15.5	-12.3	-2.2	3.9	5.2	-4.4	4.9	18.3
EW.2	-18.3	-17.2	-11.3	-5.5	-0.7	-0.8	-0.3	-1.5
EW.3	-13.9	-12.1	6.6	6.8	2.5	5.6	8.8	1.7
EW.4	-40.5	-16.9	-10.3	-12.9	-10.0	–	1.1	–
EW.5	-21.4	-24.1	-12.9	-20.7	-8.0	10.3	-6.1	–
EW.6	-43.6	-33.5	-27.5	-22.6	-2.4	-16.3	-5.3	–
R.1	–	-21.8	15.8	9.6	11.9	–	–	–
R.2	-15.4	-8.0	-4.0	-12.0	-3.8	–	–	–

Zone	Urban population change (thousands)							
	<10	**10-20**	**20-50**	**50-100**	**100-250**	**250-500**	**500-1000**	**>1000**
R.3	-20.0	-17.5	-10.3	-6.6	-13.3	–	–	–
Total	-19.8	-15.2	-5.9	-2.0	1.5	-2.4	2.2	12.0

Source: The author based on Goskomstat and Rosstat data

4.2.2. East-west changes

Even though it has decreased in recent years, the outbound migration from Siberia and the Russian Far North (known in literature as the "western drift") (Mkrtchyan, 2005, 2015) had a huge influence on the population potential of the areas lying behind the Ural Mountains in the first 10 to 20 years after the collapse of the Soviet Union. The trend is also strong for urban population, the largest loss of which was recorded in zone EW.6 (Fig. 12; see Table 4). The loss tends to decline westwards. The influx of migrants from former soviet republics compensated for a large proportion of the natural decrease in Russia; yet, it was not uniform and benefited the European regions of Russia. The influx wave did not reach Siberia and the Russian Far East, with cities depopulating throughout the post-Soviet period (Mkrtchyan, 2015).

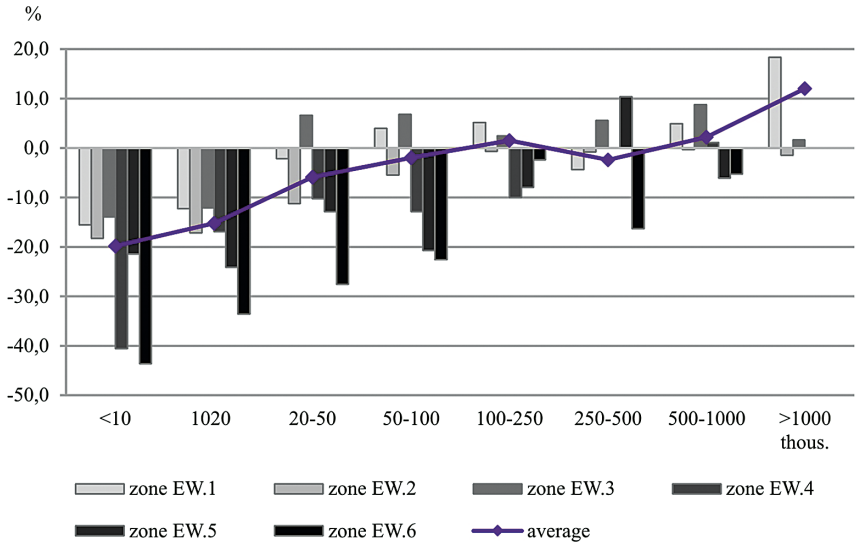

Fig. 12. Population change by city categories in the "east-south" zones

Source: The author based on Goskomstat and Rosstat data

The changes across the longitudinal zones have a more uniform nature than along the "north-south" axis. Yet, there are three specific cases which clearly stand out. The first one is zone EW.6 (Russian Far East), where population declined across the categories of cities (negative net migration rate). The cumulative percentage decrease in urban population was twice as high as in Siberia (zones EW.4 and EW.5). Even large cities – Vladivostok and Khabarovsk – were depopulating, although at a slower pace (-6.6% and -3.9% respectively). Another – this time positive – case is zone EW.3 (Western Siberia). The cities of the zone (seen as a whole) saw a population increase similar to EW.1, which resulted from population growth in oil cities (positive net migration rate; natural increase, mainly among the indigenous people). The third specific case is the historical heart of Russia, covered mainly by zone EW.1, which, even though recorded an increase as a whole, owes its growth to

Moscow and Saint Petersburg. Were it not for the two cities, the other cities of the zone would record a drop of 0.4%.

4.2.3. Changes by region

The results of an analysis by region is interesting, especially as regards population changes across the "north-south" and "east-west" zones. The entire central area is characterised by high population growth (Table 5), even though it ceases to be so spectacular when Moscow is excluded (10.3%), and is comparable to the population growth in zone NS.4 (the South) (10.5%). Furthermore, it must be remembered that many cities off Moscow saw an increase because of administrative changes. All city categories in the central zone saw an increase except for the smallest cities (up to 20 thousand). These observed a decrease by over 1/5 (mainly natural decline combined with negative net migration rate), which is as high as in Western Siberia cities (EW.3).

Cities located in other analysed zones were affected by different levels of depopulation. The process in the zones comprising the capital cities of oblasts with their surrounding areas is moderate (-4.9%). By contrast, inner peripheries, both those lying within the catchment area of the central area and of oblast capital cities, are subject to strong depopulation (-11.7%) (natural decrease higher than negative net migration rate), which is even greater than in Siberia. The depopulation in the individual categories of cities is also more characteristic of East Siberia (EW.5) or Central Siberia (EW.4) than of the European part as a whole (see Table 4). On the one hand, this may prove the huge significance of the Moscow agglomeration and some cities of supraregional or national importance, and on the other, it indicates that a peripheral location as a depopulation determinant does not necessarily mean poorly accessible, spatially isolated places.

Table 5. Population changes by region

City size (thousands)	Central city with surroundings*	Supraregional cities with surroundings*	Inner periphery
> 100	11.9**	-3.8	-13.3
50-100	9.6	-12.0	-6.6
20-50	15.8	-4.0	-10.3
10-20	-21.8***	-8.0	-17.5
< 10	–****	-15.4	-20.0
Total	10.3	-4.9	-11.7

Explanation: * Moscow is excluded; ** including cities whose population increased as a result of administrative changes; with such cities excluded, the change is 2.1%; *** including the city of Krasnovodsk, the population of which increased as a result of administrative changes; with the city excluded, the change is -13.3%; **** the only city in the category (Vereya, a drop by 4.2%) is excluded

Source: The author based on Goskomstat and Rosstat data

5. Conclusions

Population changes after the collapse of the Soviet Union had a large impact on the spatial concentration of urban population. The settlement of the peripheries of the Russian Soviet Federative Socialist Republic to exploit those areas economically ultimately led to a reverse process which started after the collapse of the USSR and the resultant political and economic transformations. An analysis of urban population changes has shown a key interdependence: the smaller the city, the higher the depopulation (what answers question 1) (cf. example of Polish cities: e.g. Korzeniak, 2014; Gołata, Kuropka, 2016). The worst demographic developments are seen by cities of local importance (category VII and VIII), irrespective of their spatial location. Small, territorially isolated cities, which are connected with the world by aerial transport only, are a special case. In those cities, political and economic transformations caused the greatest population decline which was linked to mass migratory outflows which were, in turn, a consequence of the transition from

a centrally controlled economy to a market economy and an end to existing functional and economic links. Overnight, the populations of those cities were caught in a trap – not only spatial, but above all economic. The lack of any development prospects caused mass migration to regional and national centres. The isolated cases of population growth in smaller cities result from their advantageous location relative to large dynamically developing cities (e.g. Moscow, Saint Petersburg, Kaliningrad) or oil and gas producing areas. At the other end of the spectrum of demographic changes are large cities of at least national importance, which see a population growth (8.2%) (categories I and II). The upward trend was dominated by the huge population growth of Moscow (with the latter excluded, the cities still see a growth, yet it barely reaches 2%).

Depopulation of small cities occurs not only in peripheral areas (e.g. Chukotka, Magadan Oblast, Kamchatka Krai, Khabarovsk Krai, northern part of the Krasnoyarsk Krai), but, more importantly, in the historic heart of Russia. In some cases, the scale of depopulation in the European part of Russia is bigger than in Siberia. In both cases, the declining cities are characterised by low importance in the settlement hierarchy and peripheral location. However, the nature of their peripheral status varies. While in the case of Far North cities it results from their physical (transport-related) isolation (e.g. Pevek, Bilibino, Kurilsk, Srednekolymsk), cities lying in the central part of European Russia are characterised by inner periphery which is linked to their location in the "shadow" of the relatively close (for Russian conditions) growth centres of various ranks. Small cities (up to 50 thousand inhabitants) located within such inner peripheries depopulate at a similar rate as EW.5 and EW.4 cities (see Table 4). Generally, in the peripheral zones, both in the "north-south" and "east-west" dimensions (e.g. EW.6, EW.5, EW.4, NS.1), depopulation of cities is more advanced than in the case of cities located in the centre of the country's economic life (central part of the European part of Russia) (answer to question 2).

Cities having a peripheral location suffer not only from spatial isolation, but also from what can be referred to as social isolation. Persons inhabiting peripheral areas have a sense of being separated from their country's mainstream life and want to leave their "isolated territory" and "isolated community". In addition, they are perceived by the authorities as a "problem" and even "human burden" (Wein, 1999; Thompson, 2004; Spies, 2009). Declining population figures were also seen by cities of the Southern Urals (irrespective of their size), what, as may be expected, is linked to their economic decline.

The population grew, above all, in cities of global (Moscow) and international importance (Saint Petersburg). The population growth in cities of the other categories results from two fundamental factors: their location near growth poles and the resultant benefits (mainly cities in the Moscow and Saint Petersburg agglomerations) (cf. Karachurina, Mkrtchyan, 2015) or the proximity of the oil industry (notably cities in the Yamalo-Nenets Autonomous Okrug and Khanty-Mansi Autonomous Okrug). A clear growth in urban population is recorded in the south of Russia, in particular in Caucasian republics, which results from a high rate of natural increase among their native populations.

Notes

(1) Russia has two types of cities: of regional (e.g. oblast-, republic-wide) importance and of district-wide importance. The criteria for granting city status to a district town are defined on a regional level and may differ from region to region.

(2) Depopulation resulting from migratory outflows and natural decrease coincided with administrative decisions to exclude the urban unit Polysayevo from the city (The official website of Polysayevo town).

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