

SPATIAL - TEMPORAL DIFFERENTIATION OF MINSK DEMOGRAPHIC DEVELOPMENT

Antipova E.A., Fakeyeva L.V.
Belarusian State University (Minsk)

Introduction

Under globalization conditions sharp increase of big cities role in socio economic and cultural life of the society is one of typical and distinctive features of modern urbanization. Growth and development of big cities are caused by placing of new and extension of already working industrial enterprises and service industry firms, presence of administrative establishments, higher education institutions and colleges and other enterprises along with transport development.

The development of many big cities has its peculiarities. Scientific and technological advance, modernization and restructuring of enterprises influence rapid development of service and industry as main city forming factors. That is why such type of cities develops rather more quickly. However, the faster a city grows the more problems and socio economic development disproportion it has. At the industrial stage of development industry grows the most rapidly but at the transitional stage to the post-industrial development the service sector, housing and communal services get accelerated development. A big city becomes rather expensive form of settlement as it has high expenses for industrial equipment and urban land improvement. There is a wide range of specific demographic changes in large cities as well [1]. Positive demographic dynamics of the large cities of Belarus is a result as migratory inflow, as natural increase in recent years.

The place of Minsk in the demographic space of Belarus is unique and different compared to other cities due to: 1) positive dynamics of the population during the twentieth century, except years of the Second World War; 2) high annual growth rate of the population size by contrast to all other urban settlements; 3) predominance of migration factor in the formation of the population for a long time; 4) active commuting and links to satellite towns; 5) the highest level of concentration of the urban population; 6) the spatial differentiation of demographic processes within administrative districts and other.

Spatial and structural dynamics of demographic and migration development of Minsk over the period of industrialization and the Belarusian urban boom in 1960-1970 attract scientific interest of Belarusian geographers [1]. There was a gap in the research over the period of social and economic transformations caused by the collapse of the socialist economic system and the Soviet Union. New economic and social trends of the beginning of XXI century during the stage of transition to the postindustrial development give rise to changes in the growth rates, structure, spatial distribution and function of the city, which required a detailed study to identify factors, patterns of development and the new image of the capital city.

Historical dynamics and factors of demographic development

Political, historical, administrative, demographical, migratory and socio-economic factors bring to bear influence on the formation of the population of Minsk.

The pioneer settlements on the territory of the town are known since IX century. The river Svisloch valley was inhabited by two Eastern Slavic tribes – Krivichy and Dregovichy. About 980, the territory is included in the principality of Polotsk. The principality of Polotsk breaks into small fiefdoms at the beginning of XII century, and principality of Minsk in 1129 subsume into principality of Kiev. Polotsk dynasty regained power over the principality in 1146. The princes of Polotsk and Kiev have repeatedly fought for dominance in the former principality in 1150. Mongol – Tatar invasion in 1237 – 1239 has not affected Minsk, but later attacks of the Golden Horde, and the end of Kievan Rus weakened greatly the principality. Minsk in order to be defended turned to Lithuania, highly developed in this time, and in 1242, the city became part of the Grand Duchy of Lithuania voluntarily.

In 1499, the city received Magdeburg rights. In the period of 1565 – 1566 years Minsk became the center of Minsk voivodeship and Minsk powiat as part of the voivodeship. Minsk is became an important economic, cultural and religious center of the Polish – Lithuanian Commonwealth by the middle of XVII century, especially for orthodox christians. But at the same time large communities of Catholics and Jews appear in Minsk due to the migration of Poles and Jews, and in connection with the transition of the gentry to Catholicism. Orthodoxy was replaced by Uniate church after the Union of Brest. The national image of the city was gradually changing and many of the Belarusian nobility and intellectuals were subjected to Polonization [4].

In the XVIII century, Minsk was the periphery of the Polish-Lithuanian Commonwealth, not playing any significant role. The population of Minsk by 1790, was 6 500 – 7 000 inhabitants, thus returning to the same population size as in 1654.

In January 1793, Minsk was annexed by the Russian Empire as a result of the second partition of the Polish-Lithuanian Commonwealth. On the 3rd of April 1793 Minsk became the new center of Minsk vicegerency. Minsk Magdeburg right was abolished in 1795 by decree of the Senate of Russia.

The city's development begins again at the Russian era. The first public park was opened in 1805. The population size of the city rise to 11 thousand people by 1811.

The War of 1812 damaged the city greatly.

Only 3500 residents left in the city when in 1812 Russian troops liberated it, most housing and infrastructure were in ruins. Recent unrest in the XIX century occurred during the Polish uprising in 1830.

The revolt was put down and led to a change in the national character of the city – the gradual reduction of the Polish population. In 1835, Minsk was included in the Pale of Settlement.

During the XIX century Minsk continued to grow further. In the 1830s, all the main streets and squares were covered with cobblestones. In 1836 the first public library was opened. In 1838 the first newspaper "Minskije Gubernskie Vedomosty" was published, and in 1844 the first theater was opened. By 1860 the population size increased to 27,000

people. The great boom in building of two- and three-story dwellings in the Upper City set in.

Figure 1 shows that Minsk population increased during the period between the Russian – Polish War and Patriotic War in 1812. After 1812, the city suffered significant population losses.

From 1835, after the suppression of the Polish uprising, when the city was included into the Pale of Settlement, a period of Minsk rapid development and, therefore, a swell in population was started.

The emergence of the railroad was the most important fact for the further development of Minsk.

Railroad through Minsk was built in 1871 from Warsaw to Moscow. In 1873 Minsk became a railway junction with the commissioning of Libava – Romny railway.

The water supply in the city came into being in 1872, in 1890 - the phone, and in 1894 - the first power plant. In 1900, there were 58 factories in Minsk. According to the Census of 1897, the city had 91,494 inhabitants. Over half the population (47 561 people) – were the Jews. In 1909, 43.3% lived in Minsk were Jews, 34.8% – Russian, 11.4% – Poles.

By the beginning of XX century Minsk became the second major center (after Vilna) of the Belarusian political system. In 1939, the population of Minsk was 237.5 thousand people. During the war, about 70 thousand citizens of Minsk were perished. In 1941 and 1944, the city was subjected to aerial bombardment of German and Soviet aircraft, respectively. There were only about 70 not destroyed buildings in the central part of the city at the moment of its liberation by the Soviet Army at July 3, 1944. By 1950, the population size of Minsk was 273.6 thousand people with a glance the losses of war.

Modern demographic situation of Minsk is the result of its development in the previous years. Minsk population increased more than 5 times during the active period of industrialization of the capital from 1950 to 1985. Minsk contribute 30% of the total growth of the Belarus urban population, concentrated $\frac{1}{4}$ of all urban population and the seventh part of total Belarus population. Minsk region increased its share in the country's population up to 30% thanks to the capital city in the mid-1980s, and Minsk city has surpassed by the population size such regions as Vitebsk, Brest, Grodno and Mogilev. Demographic epicenter is clearly defined with the head of the capital city – millionaire and agglomerated densely populated environment [1, 2].

As a result, one of the main features of the urbanization process in Belarus is megacefaly – dominant role of Minsk and the Minsk metropolitan area, that concentrated 27% of urban population, in the urban settlement system, and weak agglomeration processes in other regions. Slowing the growth of large cities as a result of socio-economic crisis of the second half of the 1990s led to a decrease share of cities from this group in the population relative to the extra large cities (Minsk) from 1.77 in 1999 to 1.65 in 2010. Share of the metropolitan area in the total population increased from 16.7% in 1999 up to 19.9% in 2010.

Minsk is among the number of European capitals which at the second part of XX c. had the highest population growth rate. At the period from 1950 to 2010 the population size has increased almost sevenfold and almost got the level of 2 million – 1 883 thousand people.

Minsk increased its demographic potential in the postwar period, primarily due to migration and natural increase with relatively small increase of population due to the integration of rural settlements to the city territory.

In the transition to a post-industrial stage of development in migration inflow to Minsk remains the main source of growth of the city due to the action of factors, such as:

- employment requirement in tertiary sector of economy;
- higher wages compared to other regions of Belarus;
- psychological conditions, among which there are two groups: the pull of a big city and the lack of a perspective for further improvement of life in small towns or rural areas.

We should also highlight the historical factor, the value of which is difficult to overestimate. The Second World War had a great influence on the character of the migration movements of the population in the middle of XX century.

After the Second World War people, that had leaved their place of permanent residence because of the occupation of territory of the Byelorussian SSR, began returning to the country. According to incomplete data more than 1 million people only from the Byelorussian SSR had been evacuated to the eastern regions of the country (102 thousand people from Western and 912 thousand from Eastern BSSR)in the summer of 1941.

The urban population of the BSSR was distributed mainly in rural areas and small cities and towns during the Nazi occupation.

Population of small towns began to move to the big cities of the BSSR after the liberation of the Byelorussian SSR from invaders due to manpower squeeze for a rapidly developing industry and construction, with the development of the service sector.

A massive return to Minsk its former residents began with the first days of the liberation of the city. Share of the rural population, who arrived to Minsk in 1945, was 61.5% of the total number of migration arrivals.

Among the first groups of migrants were many rural residents. It was mostly unskilled labor force engaged in cleaning ruins, as well as rehabilitation and construction of new industrial enterprises. Construction of a number of large industrial enterprises began just after the War: Motor Plant, Bicycle Plant, Fine-cloths factory, etc., which led to a new migratory inflow of population to the capital of Belarus.

During the period of 1955-1964 years a slight decline of migratory flows in Minsk was observed (period of 1955 – 1959 years – 208, 6 thousand of migrants, period of 1960 – 1964 years – 174, 9 thousand of migrants).

The stage of industrialization in the USSR begins at the 1960's. Minsk was designated as a major industrial center. Such giant enterprises as Minsk Automobile Plant, Minsk Tractor Works were built during this period. Development of the chemical industry had a rapid pace. Such enterprises as “Minsk paint factory”, “Minsk factory Thermoplastic”, “Minsk Plant of Medical Substances” had been intensively developed and expanded. It amounts to that huge demand for labor. The second wave of migration inflow to Minsk set in on this account.

The significant increase of the population coming into the city during the second half of the 1960s allows us to formulate the thesis about a "migration explosion", as a result of intensive industrial growth of Minsk, which caused the relocation of people from rural areas, urban-type settlements and towns to large cities. A significant volume of

migratory inflow to Minsk in these years is one of the most significant demographic events in the Byelorussian SSR [1].

The industrialization development during the Soviet epoch, swift growth of new and latest industrial branches (such as auto and tractor construction, machine-tool construction, radio-electronic industry, and electronic mechanical engineering) turned Belarusian capital to the «assembly shop» of the Soviet Union. A distinctive feature of Minsk is that it retains the role of a major industrial center at the present time – transitional stage to post-industrial development.

In the capital almost a quarter of the country's industrial output is produced at the present time.

Capital industry is characterized by a high level of production concentration, inherited mainly from the late 1940s - 1980s. Over a third of the total industrial production is concentrated in the metropolitan gigantes with more than 10 thousand employees.

Minsk is the largest exporter, which provides about 40% of all the Republic of Belarus foreign trade turnover. Minsk enterprises produce more than one fifth of industrial output in Belarus, more than 60% of which is exported. Main export positions are tractors, trucks, trailers, machine tools, flagstones. Goods from Minsk exported to more than 100 countries. The main consumers of Minsk products are Russia, Great Britain, the Baltic countries, Germany, Ukraine and Italy. The volume of external merchandise trade in 2010 amounted to 25.6 billion U.S. dollars, including export - 10.9 billion U.S. dollars. The largest city enterprises, whose products are known in many countries around the World, are "Minsk Car Plant", "Minsk Wheel Tractor Plant", "Integral", "Minsk Aircraft Plant", "Minsk Tractor Works", "Minsk Motor Plant", "Amkodor", "Keramin" and several others.

The main import positions are raw materials, components (up to 49%) and up to 30% – products for technical re-equipment of enterprises. Minsk is leading city on the number of established organizations with foreign investments. More than 2.5 thousand joint ventures and foreign enterprises are registered in the city (60 % of the total number in Belarus). Leading positions among the countries that have developed in Minsk their business has the United States, Germany, Russia and Poland.

These conditions affect directly the attractive ability of a big city. An examination into the factors of migration in Minsk, in our opinion should not be limited only to the industrial and economic conditions. Thus, the main motives for migration to Minsk are attractiveness of large city and metropolitan lifestyle, with large tertiary sector, which is characterized by rapid growth, as well as more stable economic situation and the high level of earnings.

The territory of modern Minsk is divided into 9 administrative units-districts. They are Central (4,1000 ha), Sovietskiy (1,3000 ha), Pervomaiskiy (2,6000 ha), Partizanskiy (2,2000 ha), Zavodskoy (2,9000 ha), Leninskiy (1,9000 ha), Oktyabrskiy (2,1000 ha), Moskovskiy (1,8000 ha) and Frunzenskiy (4,3000 ha) [3].

The population of the city has an uneven distribution.

The largest shares in general population size have Moskovskiy, Zavodskoy and Pervomaiskiy districts. The smallest shares of the population have Parthizansky, Central and Oktyabrsky districts (Table 1).

Table 1 – Minsk population dynamics by administrative districts, 1989 – 2009
[author's calculation, 3]

Administrative districts	Population, th.			Share of administrative district, %			Population size dynamics index		
	1989	1999	2009	1989	1999	2009	1999/1989	2009/1999	2009/1989
Zavodskoy	251,6	248,5	236,8	15,6	14,8	13,0	0,99	0,95	0,94
Leninskiy	189,2	180,8	210,3	11,7	10,7	11,5	0,96	1,16	1,11
Moskovskiy	169,2	224,8	261,9	10,5	13,5	14,4	1,33	1,17	1,55
Oktyabrskiy	159,6	150,4	155,5	9,9	8,9	8,6	0,94	1,03	0,97
Partizanskiy	108,8	94,6	99,3	6,7	5,6	5,5	0,87	1,05	0,91
Pervomayskiy	183,3	208,6	216,7	11,4	12,4	11,9	1,14	1,04	1,18
Sovetskiy	181,2	160,5	168,4	11,2	9,6	9,3	0,89	1,05	0,93
Frunzenskiy	297,2	346,8	353,8	18,4	20,6	19,5	1,17	1,02	1,19
Central	74,6	64,8	112,1	4,6	3,9	6,3	0,87	1,73	1,50
Minsk total	1614,7	1679,8	1814,8	100	100	100	1,04	1,08	1,12

Minsk, as a large geographical unit, is a complex system consisting of 9 administrative districts with different socio-economic functions and structure. The formation of the demographic spatial structure of the city connected with historical formation of administrative districts and their socio-economic role, as in BSSR epoch, as the present stage.

One of the oldest in Minsk is Zavodskoy district. The district was formed in 1938 and named after Stalin. After World War II it was decided to create an industrial center of the capital. In Minsk was taken a course not only to the restoration of the pre-war enterprises but the creation of new industries, important not only for Belarus, but the whole of the Soviet Union. The first automobile giant in the USSR – Minsk Automobile Plant – was built in the late 1940s and became the center of the Stalin district. At the present time, the district has such industry giants as Minsk Automobile Plant, Minsk Wheel Tractor Plant, Plant trailers and bodies "MAZ-Kupava", JSC "Minskzhelezobeton", JSC "Minskdrv" and others. Free economic zone "Minsk" includes about 140 companies. Zavodskoy district has a specific feature of geographic location. It is the only administrative district of the capital not adjacent to the so-called "business center" of the city.

Moskovskiy district of Minsk was formed in 1977 by the Decree of the Presidium of the Supreme Soviet of the Byelorussian SSR in order to subdivide October and Frunze districts of Minsk. Moskovskiy district is located in the south-western part of the city. The district's territory includes old building zone, 4 building estates "South-West", 9 building estates "Malinovka", building areas "Brilevichi" and "Michalowo". The population of Moskovskiy district is 281.67 thousand people, among which about 62 thousand young people aged up to 31 years (11.5%). This is one of the youngest districts in Minsk. There are a number of large educational institutions. It should also be noted that there were built student village. This fact explains significant number of young people who arrived at the district. The major industries in the district are: RUE "Belmedpreparaty", OJSC "Horizont", UE "Minsk tire-repair plant", JSC "Galanteya", JSC "Minsk group of silicate products", JSC "Vitex", JSC "Sivelga."

Pervomayskiy district is one of the most environmentally pristine areas in Minsk. This district is a leader in the city by green areas (840.7 ha). The district was formed in

1969. This administrative unit is a place of clerisy concentration in Minsk. Here are four of the seven National Academies: the National Academy of Sciences of the Republic of Belarus, the Belarusian State Academy of Arts, the Military Academy of the Republic of Belarus, Belarusian Medical Academy of Postgraduate Education. There are a number of large companies such as JSC "BelOMA – Minsk Mechanical Plant named after S.I. Vavilov ", RUE Minsk factory "Thermoplastic ", RUE "Minsk Electromechanical Plant ", OJSC "Minsk Margarine Plant ", JSC Minsk factory of soft drinks", JSC "Minsk Watch Plant".

Leninskiy district, as an administrative - territorial unit in the city, was established by the Decree of the Presidium of the Supreme Soviet of the BSSR in 1951 in order to subdivide three districts of the capital. Currently, the district is a major administrative unit of Minsk. There are the Residence of the President, nine ministries and other government bodies, among them - the Constitutional Court and the Supreme Economic Courts, the Executive Committee of the Commonwealth of Independent States. The district has 26 enterprises, including RUE Minskenergo", JSC "Motovelo", JSC "Elema" , JSC "Kommunarka", RUE "Minsk Kristall", JSC "Kamvol" that manufactured 19.4% of citywide industrial production.

Oktyabrskiy district – a large industrial, transport, scientific and cultural center of Minsk. District is located in the southern area of the city between the railways Minsk – Brest and Minsk – Gomel. It includes the industrial zone "Kolyadichi" and township "Sokol". The district has 26 industrial enterprises, 21 research and design organizations, 3 universities, medical college and college of arts. Specialization of district is transport and transport services. There are enterprises of the Minsk office of the Belarusian Railways, the Minsk railway station, the Department of Aviation of the Ministry of Transport and Communications of the Republic of Belarus, its affiliated companies and enterprises (including Airport "Minsk-1 "), automobile concern "Belmagistralavtotrans". Among industrial enterprises - Scientific and Production Association "Integral", plant "Kryon" Minsk meat-processing plant, JSC "Keramin" Minsk factory of color printing.

Partizanskiy district was established in 1977. It is the largest industrial area of the capital that is produce more than a quarter of all industrial products in Minsk. Among the industrial enterprises the largest are RUE "Minsk Tractor Plant", OJSC "Minsk Motor Plant" UE "Minsk Gear Works", JSC "Krynica", JSC "Minsk Sparkling Wines" PMC "City Dairy Plant number 1 ", OJSC "Confectionery "Slodych" and several others.

Sovietskiy district is the smallest of the nine districts in Minsk and occupies an area of 1, 37 ha. District was formed in 1938, in its present borders – in 1977.

The district has 13 industrial enterprises and 19 construction companies. Sphere of education is well-developed in the district. Sovietskiy district is the student area of the capital. There are five higher educational establishments, including the largest university of the republic - the Belarusian National Technical University. Distinguished feature of the district is abundance of private buildings, many of which are monuments of wooden architecture of the early and mid XX century. There are less of modern residential buildings and "bedroom communities" in general. Infrastructure is less developed compared to other parts of the capital, especially in the outskirts of the district.

Frunzenskiy district was formed in 1951 due to the rapid post-war development of the city. Frunzenskiy district is currently the housing scheme area of the capital. About

40% of urban housing put into operation in the city is in the district. The area can be called young – the average age of the population here is only 34.5 years. The largest industrial company of district is the "Minsk Heating Equipment" – the only manufacturer of heating equipment in the country.

Central district of Minsk was established in 1969. The population of district is about 109.9 thousand of people, including 28.3 thousand of pensioners. There are 21 industrial enterprises, among which 12 companies are subject to republican government authorities, 1 – Minsk City Executive Committee, 8 – legal persons without departmental affiliation. The largest industrial companies are: "Atlant", JSC "Milavitsa", OJSC "Belarusian Wallpapers", JSC "Olivaria Brewery". This district has the highest degree of development of infrastructure, transport and road conditions, the number of "bedroom communities" in the capital of the Republic of Belarus.

Moskovskiy and Central are the fastest growing districts, which increased its size by 50% or more from 1989.

A positive trend within 10 – 20% is typical for Leninskiy, Pervomayskiy and Frunzenskiy district. In Sovetskiy, Partizanskiy and Zavodskoy districts the population has declined by 6 – 9% during the period of 1989 – 2009 years. The situation is relatively stable in Oktyabrskiy district – its population size has not changed significantly in 20 years.

In different periods of time migration and natural movements of population played various roles in forming population size of Minsk. Before 1994 the population growth was because of natural increase as well as migration, then from 1995 it was only because of migration growth and administrative territory changes. Since 2006 the tendency of population growth was also outlined due to the natural growth.

The demographic factor in the population dynamics and spatial structure formation in Minsk

The nature of vital development of Minsk reflects European demographic tendencies, but has its local features and peculiarities.

In 1989, the total fertility rate was 16 ‰, higher than in many European capitals. During the subsequent period up to 2002 was characterized by the progressive trend of fertility decline to the level of 9 ‰, which is consistent with trends in most European cities.

The birth rate in the capital is increasing from 2002 onwards and amount to 11,3 ‰, which corresponds to the pre-crisis and pre-transformational period – 1992 year. Main factors of birth rates increasing in the capital are the institutional (an active state policy to support young families) and the demographical (numerous generations of women born in the late 1980's are coming into childbearing age).

There are differences in the character of natural movement between administrative districts of Minsk. The highest birth rate is in Frunzenskiy and Oktyabrskiy districts – 12,8 and 12,3 ‰, respectively. It increased in 1.5 times in Frunzenskiy district, located in the west part of the capital, to compare with 1999. There is a high proportion – 18.9% – of the female population in the active (20 – 29 years) reproductive age in this district. District can be considered as relatively young, medium age of population is 34.5 years.

It is the largest and most active residential development area of the capital. About 40% of urban housing in the capital put into operation in this district. Here are sleeping areas of active construction "Zapad", "Suharevo", "Kuntsevshchina", "Krasny Bor", "Masyukovschina".

There is a high proportion of the female population in the active reproductive age in Oktyabrskiy district also – 20.4%. This district is one of the oldest in the city, and a major industrial, transport, scientific and cultural center, located in the southern part of the city (Table 2).

The third highest level of fertility is in Partizanskiy district. Over the last decade, this figure increases 1.4 times. Today Partizanskiy district is one of the most important areas of the construction industry and housing development.

Higher than average birth rate is typical for the population of the Moskovskiy district – 11,8 ‰.

There is a high proportion of the female population in the active reproductive age 20-29 years (21.3%). The district is area of active residential development also.

Lower than the average birth rate recorded in the Central, Leninskiy, Zavodskoy, Sovietskiy and Pervomaiskiy districts. The population in these districts is characterized by process of demographic ageing. In Central district there is more than 25% of the population of retirement age at 18.9% of the population in reproductive age. In Sovietskiy district there is up to 25% of people of retirement age. Despite the fact that at the moment in Leninsky district is the lowest share of people in childbearing age (17.7%), there is a tendency of changing this indicator. A new residential area "Loshitsa" is actively building on the territory of the district that can lead to an increase of the birth rate in the long term. The birth rate in Zavodskoy district is lower than the city average level, but this figure increases.

Thus, south-western zone of high fertility is marked out in Minsk, which is formed by Moskovskiy, Oktyabrskiy and the Frunzenskiy districts, north-eastern zone of low fertility - Partizanskiy, Pervomayskiy districts, and the south-eastern zone of the medium birth rate, which is formed by Zavodskoy and Leninsky district.

The zone of high fertility is formed by a residential area with active building. Zone of low fertility is formed by areas with rapidly developing industrial sector.

The main trend of mortality Minsk is slow growth with slight pace. In 1989, the overall mortality rate was 6,4 ‰. By 1999, it increased to 10 ‰, and currently stands at 9,8 ‰. Main factor of mortality dynamics in the capital is the demographic ageing, which is typical for all economically developed countries.

Table 2 – Components of natural movement dynamics in Minsk, 1989 – 2011 [author’s compilation, 3]

Administrative districts	1989			1999			2009			2011		
	A	B	C	A	B	C	A	B	C	A	B	C
persons												
Minsk city	25639	10360	15279	14288	16787	-2499	21190	17719	3471	21123	18325	2798
Including districts:												
Zavodskoy	4128	1489	2639	1980	2591	-611	2653	2755	-102	2507	2811	-304
Leninskiy	2900	1095	1805	1743	1688	55	2401	2034	367	2364	2073	291
Moskovskiy	2610	912	1698	1908	1841	67	3205	2147	1058	3224	2135	1089
Oktyabrskiy	2599	836	1763	1365	1345	20	1991	1448	543	1912	1503	409
Partizanskiy	2212	710	1502	831	1092	-261	1226	1206	20	1181	1227	-46
Pervomayskiy	2771	1152	1619	1534	1965	-431	2115	2030	85	2151	2073	78
Sovetskiy	2741	1255	1486	1293	1720	-427	1588	1777	-189	1449	1770	-321
Frunzenskiy	4469	2274	2195	2980	3675	-695	4737	3159	1578	5047	3435	1612
Central	1209	637	572	654	870	-216	1274	1163	111	1288	1178	110
‰												
Minsk city	15,9	6,4	9,5	8,5	10,0	-1,5	11,7	9,8	1,9	11,3	9,8	1,5
Including districts:												
Zavodskoy	16,4	5,9	10,5	8,0	10,5	-2,5	11,1	11,5	-0,4	10,5	11,8	-1,3
Leninskiy	15,3	5,8	9,5	9,6	9,3	0,3	11,3	9,5	1,7	10,9	9,6	1,3
Moskovskiy	15,4	5,4	10,0	8,4	8,1	0,3	12,3	8,3	4,0	11,8	7,8	4,0
Oktyabrskiy	16,3	5,2	11,0	9,1	8,9	0,2	12,9	9,4	3,5	12,3	9,7	2,6
Partizanskiy	20,3	6,5	13,8	8,8	11,6	-2,8	12,7	12,5	0,2	12,0	12,5	-0,5
Pervomayskiy	15,1	6,3	8,8	7,3	9,4	-2,1	9,9	9,5	0,4	10,0	9,7	0,4
Sovetskiy	15,1	6,9	8,2	8,06	10,72	-2,66	9,8	11,0	-1,2	9,0	11,0	-2,0
Frunzenskiy	15,0	7,7	7,4	8,5	10,5	-2,0	13,0	8,7	4,3	12,8	8,7	4,1
Central	16,2	8,5	7,7	10,1	13,4	-3,3	11,4	10,4	1,0	11,7	10,7	1,0
A- births, B –deaths, C – natural increase/decrease												

Among the causes of death the first place take cardiovascular diseases for a long period of time, which are dominated by ischemic heart disease. Deaths from cancer are on second place.

Implementation of measures aimed at reducing the mortality of occupational accidents, poisoning, injuries and other external causes has reduced the share of mortality of this group, from 9.8% in 2008 to 9.6% in 2009. However this figure is still high and takes the third place in structure of mortality.

There is differentiation in mortality among administrative districts of Minsk. The highest level of mortality is in Partizanskiy district - 12,5 ‰. Over the last decade, this figure increases almost 1 ‰. Partizanskiy district is settled by the most-more workers of Minsk and take the first place by prevalence of alcoholism in the capital city. Liver diseases are three times more frequently in this district than the city average. Liver and gastrointestinal tract diseases are divided with cancer 3-4 places in the structure of causes of death among people of working age during the last two years. The same situation is observed in Zavodskoy district. Mortality rate higher than city average level is observed in the Central and Sovietskiy districts. In both districts, there are about 25% of people of retirement age, and active process of demographic ageing.

The areas with the lowest mortality rates are Frunzenskiy and Moskovskiy - 7,8 and 8,7 ‰, respectively. This index declined over the last decade. This fact can be explained by the demographic factor - a young age structure.

Thus, in Minsk were observed south-western zone with low mortality, which is formed by Moskovskiy and Frunzenskiy districts with a young population structure, the south-eastern zone of high mortality – Zavodskoy and Partizanskiy districts with the highest share of industry in the economy, and the southern and north-east zone with average mortality rates, formed by Leninsky, Oktyabrskiy, Pervomayskiy districts.

There are differences in the way of natural movements between the city districts of Minsk. It helped us to identify three types of districts: 1 – districts with progressive dynamics, where we can observe consistent natural population growth since 1999 (Moskovskiy, Leninsky and Oktyabrskiy districts), 2 – districts with stabilizing natural growth where the natural population growth has been observed since 2009 (Frunzenskiy, Partizanskiy, Pervomayskiy and Central districts), 3 – districts with regressive dynamics and natural decrease of population is observed here (Zavodskoy, Sovietskiy districts).

Modern age structure of Minsk population is the result of its demographic development for the past 100 years. It was formed by wars and other political and social changes of the XXI c. The main tendency in evolution of population age structure is its ageing. If in 1999 the share of people of employable age was 15.9 %, in 2006 it was 17.6 %, and at the beginning of 2009 it was 19.6 %. As a result every fourth citizen of the city is in the pensionary age. The share of people from this category in 2009 was 5,3 % bigger than the number of children at the age younger than 16. And pay attention, in 1999 the share of children was 4% more than the share of the post employable. In spite of ageing of Minsk demographic structure the number of people of employable age has increased since few years, now its share is over 67 % (Table 3).

Analyzing the pyramid for Minsk, it can be noted that the number of female population exceeds the male population aged 70 years. This is the result of higher

mortality of the male population in working age, for the age group older than 80 - intense elimination of men during the WW II.

Table 3 – Distribution of Minsk population by age groups, %
[author's compilation, 3]

	1999	2000	2006	2007	2008	2009
Including the age:						
0-4	4,1	4,1	4,4	4,5	4,7	5,2
5-9	6,0	5,5	4,0	4,0	4,4	4,2
10-14	8,1	7,8	4,9	4,5	4,2	3,9
15-19	9,6	9,7	9,0	8,4	7,8	7,7
20-24	8,7	9,1	10,8	10,9	11,0	10,7
25-29	7,3	7,4	9,2	9,5	9,7	9,5
30-34	7,1	6,9	7,4	7,5	7,7	7,9
35-39	8,9	8,7	6,6	6,6	6,7	6,8
40-44	8,9	8,9	7,8	7,3	6,9	6,3
45-49	7,8	7,9	8,5	8,4	8,3	7,8
50-54	5,6	6,1	7,4	7,6	7,6	7,8
55-59	4,4	4,0	6,1	6,4	6,5	6,6
60-64	4,8	5,1	3,2	3,3	3,6	4,8
65-69	3,4	3,4	4,4	4,3	3,8	3,1
70 years and more	5,3	5,4	6,3	6,8	7,1	7,7
Age groups by working capacity:						
0-15	19,8	19,1	14,6	14,2	14,0	14,3
15-55(60)	64,2	64,8	71,9	67,8	67,4	66,1
55(60) and more	16	16,1	13,5	18	18,6	19,6

Failure of population aged 60-65 years both men and women can clearly be seen on the pyramid. This is the result of a sharp decline in the number of births during the WW II. Then there is a significant increase in population, which lasted until the age of 40 to 55 years. There are people born in the 1950s and early 1960s, due to the post-war "compensation wave". Another failure is observed at ages 25-40 years. This is mainly the result of a sharp decrease in the number of women in the active reproductive age.

Another increase in population is observed at ages 19-25 years – it is Soviet time baby boom at 1980s. Narrow base in the population pyramid for 2009 is a result of low birth rates in the 1990s and the beginning of the XXI century.

It should be noted increase in the number of children under the age of 1 year. The reasons for this increase a consequence of increasing the number of women in the active reproductive age. The very intensity of the birth rate has also improved, but slightly.

At the district level the youngest population structure is in Frunzenskiy, Moskovskiy and Leninskiy districts. That occurs because they are the youngest districts and new territories are built actively. The only district where the population number is younger than employable age is Moskovskiy district.

There are inconspicuous differences in shares of these population groups in Frunzenskiy district. The share of people at the age of 65 and older is twice as much than the share of children in Sovetskiy district as this area is originally the oldest in the capital. Similar tendency we can observe in Zavodskoy, Leninskiy, Oktyabrskiy, Partizanskiy and Pervomaiskiy districts (Table 4).

Table 4 – The age structure of the population of Minsk in 2009
[author's compilation, 3]

Administrative districts	Share of age groups in total population, %		
	0-14	15-55(60)	55/60+
Zavodskoy	13,7	65,8	20,5
Leninskiy	15,3	64,7	20,0
Moskovskiy	15,4	69,5	15,1
Oktyabrskiy	13,5	66,3	20,2
Partizanskiy	13,5	66,2	20,3
Pervomayskiy	12,5	67,3	20,2
Sovetskiy	12,7	62,7	24,6
Frunzenskiy	16,2	66,1	17,7
Central	13,0	63,6	23,4
Minsk city, total	14,3	66,1	19,6

Migration factor in the population dynamics and spatial structure of Minsk

Minsk intensive population growth is still determined by the migration factor. At the present stage this factor has the least significant part during the post-Soviet period.

Volume of migration in Minsk has had a positive trend in the last decade (from 121.8 thousand in 2001 to 146.1 in 2011). The volume of migration increased both by the number of arrivals and departures.

Most arrived migrants come to the capital in order to find high-paid jobs. There is a shortage of employees in services and construction in Minsk at the present time. The major part immigrants are people from small towns and villages of the Minsk region.

On the level of administrative district the number of immigrants has a substantial majority in Moskovskiy and Frunzenskiy districts - number of arrivals per year is more than 10 thousand people in each of these two districts.

This phenomenon is account for the construction of residential complex of individual sleeping areas (Malinovka, Kuntsevshchina, Kamennaya Gorka).

In Leninsky district the number of arrivals since 2002 every year was about 11 thousand people. It is also associated with the development of entire microdistricts (Loshitsa). In the rest of the administrative districts of Minsk annual numbers arriving does not exceed 6 thousand people (Table 6).

The highest value of immigration is typical for Sovetskiy district. More than 7 thousand people are leaving this administrative district annually. The main reason is the fact that Sovetskiy district is one of the oldest in Minsk with significant share of the private sector. The residents of the district, who in need of housing improvement, get it in other parts of Minsk since 2000.

Analyses of volume and net migration give us the following regularities.

Frunzenskiy, Leninskiy and Moskovskiy districts has annual level of net migration excess of 3,000 people. In turn, Zavodskoy district characterized by significant negative net migration (-300 to -1800 people annually), and only in 2008, 2009 and 2011 had the positive indicators.

This district is the oldest administrative unit in Minsk (year of foundation -1921) which is a push factor for migrants. Second, this district is characterized by considerable social tension. The increase in migration activity indicates an improvement of socio-economic welfare of the population in this district in recent years. Relative cheapness of the secondary housing market also plays the role in migratory increase.

On the level of administrative districts the role of Moskovskiy district in the volume of migratory flows considerably increased to compare with the beginning of the study period. Absolute values of migration in this district reached 21 thousand people, representing about 14% of the total Minsk migration. The increase in migration in Moskovskiy district is primarily due to socio - economic factors. The functional role of Moskovskiy district was changed in the late 1990's.

Today is a center of cultural and educational life of the capital, with many educational and research facilities, as well as cultural centers and places of recreation. Intensive construction in and infrastructure development at the early 2000's are key factors in the spatial change in migration. Due to this factor Frunzenskiy district is a leader in the number of arrivals and departures more than 10 years. In 2011, the volume of migration has reached 32 thousand people (including 23 thousand of arrivals) or 22% of the total Minsk migration, which is primarily associated with the commissioning of a new microdistrict Kamennaya Gorka.

Table 6 – Dynamics of main indicators of migration in Minsk, 1989 – 2011 [author's compilation, 3]

I.

year	1989			1999			2009			2011			Dynamics index 2011/1989		
	arrivals, persons.	departure s, persons	net migration , persons	arrivals, persons.	departure s, persons	net migration , persons									
Zavodskoy	12859	11671	1188	4736	5299	-563	8335	8069	266	7597	7459	138	0,59	0,64	0,12
Leninskiy	10352	11798	-1446	5330	5650	-320	10923	7947	2976	7140	7720	-580	0,69	0,65	0,40
Moskovskiy	8767	9215	-448	8469	5904	2565	19520	9639	9881	11239	10157	1082	1,28	1,10	-2,42
Oktyabrskiy	12402	9498	2904	5177	4771	406	6800	6946	-146	7416	6422	994	0,60	0,68	0,34
Partizanskiy	8811	7774	1037	3380	3385	-5	6382	4861	1521	4988	4218	770	0,57	0,54	0,74
Pervomayskiy	19031	9610	9421	7252	6097	1155	8192	7845	347	8343	7130	1213	0,44	0,74	0,13
Sovetskiy	12759	14765	-2006	7128	6645	483	10044	8917	1127	8650	7415	1235	0,68	0,50	-0,62
Frunzenskiy	20131	10996	9135	13518	6755	6763	18462	8055	10407	23192	8636	14556	1,15	0,79	1,59
Central	4836	5846	-1010	3172	2834	338	4023	4555	-532	3577	4806	-1229	0,74	0,82	1,22
Minsk city	109948	91173	18775	58162	47340	10822	92681	66834	25847	82142	63963	18179	0,75	0,70	0,97

II.

year	1989			1999			2009			2011			Dynamics index 2011/1989		
	arrivals, ‰	departure s, ‰	net migration , ‰	arrivals, ‰	departure s, ‰	net migration , ‰									
Zavodskoy	51,1	46,4	4,7	19,1	21,4	-2,3	34,9	33,8	1,1	31,9	31,3	0,6	0,62	0,67	0,14
Leninskiy	54,7	62,4	-7,6	29,5	31,3	-1,8	51,3	37,3	14,0	32,9	35,6	-2,7	0,60	0,57	-0,08
Moskovskiy	51,8	54,5	-2,6	37,5	26,1	11,3	75,1	37,1	38,0	41,0	37,1	3,9	0,79	0,68	-0,26
Oktyabrskiy	77,7	59,5	18,2	34,4	31,7	2,7	44,0	44,9	-0,9	47,8	41,4	6,4	0,62	0,70	0,04
Partizanskiy	81,0	71,5	9,5	35,8	35,8	-0,1	66,3	50,5	15,8	50,8	43,0	7,8	0,63	0,60	0,06
Pervomayskiy	103,8	52,4	51,4	34,7	29,2	5,5	38,3	36,7	1,6	38,9	33,2	5,6	0,37	0,63	0,01
Sovetskiy	70,4	81,5	-11,1	44,4	41,4	3,0	62,2	55,2	7,0	53,6	46,0	7,7	0,76	0,56	-0,05
Frunzenskiy	67,7	37,0	30,7	38,6	19,3	19,3	50,7	22,1	28,6	58,7	21,8	36,8	0,87	0,59	0,02
Central	64,8	78,4	-13,5	49,0	43,7	5,2	35,9	40,7	-4,8	32,4	43,5	-11,1	0,50	0,55	-0,04
Minsk city	68,1	56,5	11,6	34,5	28,1	6,4	51,1	36,8	14,2	44,1	34,3	9,8	0,65	0,61	0,05

The highest intensity of migration during the post-Soviet period is observed in Sovetskiy and Oktyabrskiy districts. It can be explained by the fact that they are concentrated the population, a relatively long time living in the capital, in residential buildings of the old type. A phase of resettlement of the population of these two districts to other administrative units of Minsk started at the end of the 1990s. The lowest intensity of migration is typical for Zavodskoy and Pervomayskiy districts. These districts are characterized by a relatively low cost of housing (more than 10% below the average for the city of Minsk).

Thus, the factors determining the spatial differentiation of migratory movement in Minsk has significant differences by districts and were assessed in all the administrative units of the city.

Minsk, as the largest cultural and economic center of the Republic of Belarus, has an accumulating role of internal migratory movement of population. It is characterized by a positive balance of migration, with a trend of annual increase and a significant differentiation in the distribution of migration flows within the city.

Moskovskiy, Frunzenskiy and Leninskiy districts are marked out as areas with active migration processes. Zavodskoy and Pervomayskiy are marked out as areas with weak migratory activity.

Thus, the analysis of the demographic development of Minsk indicates time differentiation in the formation of the demographic balance factors of the capital and spatial differentiation in the parameters of the natural movement and the age structure of the population on the level of administrative districts. Temporal differentiation is characterized by the active role of migration and natural increase in population dynamics up to 1994, the dominance of migration inflow up to 2006, and a modern period of progressive influence of two factors with dominance of migration. Spatial differentiation is manifested in geodemographic types of districts, characterized by progressive demographic development in areas with intensive housing and regressive development in the industrial areas of the city. A distinctive feature of Minsk is that in conditions of transition to post-industrial stage of development, it preserves the role of major industrial center and the modern stage.