
SOCIAL GEOGRAPHY AND REGIONAL SOCIOLOGY

SOCIO-SPATIAL DIFFERENTIATION IN TRANSITION: A PRELIMINARY COMPARATIVE ANALYSIS OF POST-SOVIET SAINT PETERSBURG AND RIGA

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Research into the socio-spatial dynamics in Central-Eastern European cities is an important area of contemporary transition studies. Open issues in this domain range from defining a theoretical framework to data availability and methodological approaches. As to the former aspect, recent literature focuses on the hybrid nature of the post-socialist urban space, which underwent transformation in the conditions of globalization and economic liberalization; the earlier model of spatial development changed dramatically as a result. The multi-scalar and comparative approaches may shed new light on the complex patterns of urban socio-spatial differentiation and its post-Soviet dynamics. Growing regional socio-economic imbalances observed in the former socialist states are lending new urgency to this area of research.

This study employs a comparative approach to investigate post-1991 socio-spatial transformations in St Petersburg and Riga — the two largest post-Soviet urban centres in the Baltic Sea region. An important result of the research is a methodology for multi-level analysis of changes in the urban environment of post-socialist cities. Data from post-1991 national censuses and population registers are used to calculate measures of social well-being in urban districts as well as to identify territorial imbalances. Comparative analysis makes it possible to trace the spatial patterns of post-Soviet differentiation and set out guidelines for further research in the area.

Keywords:

population, city, dormitory districts, suburbanization, social well-being, territorial imbalances, spatial transformation

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Introduction

It is widely accepted that growing socio-economic inequality is a major trend in most post-socialist countries of Central and Eastern Europe. It is observed at all levels — from interregional to intra-city ones [1; 2]. Spatial differences emphasise the depth of this inequality. On the one hand, there is a growing contrast between the socioeconomic and demographic performance of capital regions and provinces, especially, the periphery, which was most strongly affected by the economic transformation of the 1990s [3]. On the other hand, the socio-spatial dynamics of large cities give rise to various forms of spatial segmentation at the district level.

Exploring the spatial dynamics of social transformation is an important area of urban studies. Such research contributed enormously to the understanding of what causes variations in the forms of the increasing spatial segmentation of cities. These forms include segregation, gentrification, and sub- and de-urbanisation. Most studies in the field are empirical. They focus on various aspects of spatial development in post-socialist cities. What is often overlooked is the multi-scalar dimension of changes. A multi-scalar perspective is decisive for the formation of a theoretical-conceptual framework for the analysis of urban environment transformations [4; 5]. Recent works have considered post-Soviet cities as *hybrid spaces*, the transformation of which is determined by the logic of neoliberalism and market rather than by changes occurring within the inherited spatial development paradigm [5].

Most historiographical works of the past three decades, despite all the dissimilarities, view the Soviet model as an alternative project of modernity, different from the Western capitalistic one (see, for instance, [6]). That project predetermined particular architectural and urban planning of infrastructure [7]. Although Soviet urban planning had much in common with the international modernist tendencies in the West, socialist urban planning differed dramatically from capitalist planning in terms of functions, property structure, and the organisation of everyday life [8]. It seems relevant to study the non-linear results of interactions between the post-socialist market economy and the organisation of urban spaces inherited from the Soviet era [9]. According to many economic geographers and specialists in regional economics, such research requires multi-level analysis that treats space as a more complex dimension than urban territory [10–12]. For example, Golubchikov [9] emphasises the fact that most analyses of social transformation in post-socialist cities are restricted to empirical accounts of socio-territorial change. However, many of these analyses fail to give a full picture of the actual dynamics in the economic and societal sphere.

This study attempts to use available statistical data to examine, in a comparative perspective, spatial aspects social differentiation in the two largest post-Soviet cities of the Baltic region as a starting point for a multi-scalar analysis of post-socialist urban transformations.

Data sources and methodology

We compare interconnected indicators calculated using official statistical data to understand the patterns of socio-spatial differentiation at a city level in St Petersburg and Riga. Our exploration of residential conditions differentiation in both cities, which became more pronounced as social differentiation started to grow, aims to give a new perspective on the post-socialist transition period. The study area is limited by the administrative borders of St Petersburg and Riga. Their internal divisions into statistical areas/municipalities are taken into account.

Riga is divided into fifty-eight statistical units (micro-districts). This division developed in three stages, within which distinctive city zones and their constituent micro-districts emerged. The historical parts of the 'inner' and 'outer' city formed before World War II. Today, they are home to approximately 25% of the capital's residents. City zones developed based on the principles of the market economy. Having escaped the interest of Soviet urban planners, both areas became fields of physical desolation and social degradation. Rapid residential development began in Riga after World War II and continued until the end of the Soviet period in 1991. Flats in large blocks were centrally distributed among skilled workers (the middle class of the Soviet era) and the nomenklatura (the upper class in the Soviet social structure). Today, 75% of the residents of Riga still live in buildings constructed in the Soviet time. Although new houses have been built in the city centre after the Soviets, most of them are located in fringe areas. The districts of the Soviet-built tower blocks have been little affected by new residential development. As a rule, new housing built after 2000 is the most expensive and thus available only to the most well-off residents of Riga.

St Petersburg has a similar territorial structure. The city is divided into eighteen large districts, which comprise 111 municipalities.¹ Similarly to Riga, the centre of St Petersburg consists of districts built primarily before the twentieth century (twenty municipalities). They are home to 11% of the residents of the city. St Petersburg is a monocentric city, a 'nut in a shell'. It did not deeply change until the 1950s when it grew northward and southward [13]. Soviet-era residential areas built in the 1950–80s account for most of St Petersburg's area. They are home to three fourths of all the city's residents. This new city, which emerged in the late 1980s, has a greater area and population than the historical centre. Moreover, the former is a conglomerate of residential zones that are isolated both from each other and from the historical centre [14]. Only a few transport corridors running between industrial premises connect the centre of St Petersburg with its dormitory districts. The suburbs of the city are large modern

¹ Most municipalities of Saint Petersburg (81) are called districts; twenty-one remote municipalities are classified as villages; nine have retained the 'town' status (Krasnoye Selo, Kronstadt, Kolpino, Pushkin, Pavlovsk, Petrodvorets, Lomonosov, Sestroretsk, Zelenogorsk).

dacha communities (Repino, Komarovo, Lisiy Nos, Pargolovo, Strelna, etc.) as well as the towns that grew around 18th-century palaces (Pavlovsk, Pushkin, Lomonosov, Petrodvorets, etc.) and 19th/early 20th-century factories (Sestroretsk, Kolpino, Pontonny, Metallostroy). These territories became administrative constituents of Leningrad (St Petersburg) in the Soviet period. These once small towns have become sites of large-scale residential development [15]. Suburbs account for 16% of the St Petersburg population.

Our approach to the study is based on comparing two groups of indicators of the social differentiation of urban space. The first group comprises the indicators of the average concentration of residents with a higher socioeconomic status. The second group assesses housing prices as an indicator of the attractiveness of a certain residential area. The data for Riga come from the 2011 census. For St Petersburg, we used various information sources: data on the social parameters of the population (in particular, the level of education) are from the 2010 census, whereas information on housing prices comes from 2016–2019 evaluations.

This is a two-stage study. At first, we considered spatial differences in the indicators of socioeconomic status. Most statistics come from the 2010/2011 national censuses and population registers. The price indicators of housing attractiveness in St. Petersburg are calculated based on 2016–2019 evaluations. At stage two, we produced a taxonomy of municipalities and micro-districts in St Petersburg and Riga respectively, according to their social affluence.

Table 1

Socio-economic indicators used in the study

Indicator, year	St Petersburg	Riga
Percentage of people with a university degree (in the 20+ population), 2010/2011,%	34.0	33.9
Percentage of people with a doctoral/postdoctoral degree (in the 25+ population), 2010/2011,%	1.8	0.8
Percentage of managers and skilled professionals (in the economically active population aged fifteen and over), 2011,%	—	29.7
Percentage of entrepreneurs employing any number of people (in the economically active population), 2010/2011,%	4.4 ¹	4.0
Housing prices (1,000 roubles per sq. m), 2019	102.2	—
Property tax per person (roubles per year), 2016	434	—
Percentage of population living in houses built after 2000, 2011,%	—	4.9

Russian and Latvian censuses do not contain any information on household and individual incomes. The average concentration of well-off residents was thus calculated based on employment/occupational status and education degree data. To obtain the employment data for Latvia, we used the International Standard Classification of Occupations (ISCO) as a major socioeconomic status indicator. At the same time, managers and skilled professionals comprise the category of the population with the highest social status. There is general consensus that the ISCO gives a comprehensive picture of social differentiation in rapidly transforming post-Socialist countries [16]. Since Russian censuses do not report occupations and areas of employment, we analysed the percentage of entrepreneurs with employees to assess the social status of the residents of St Petersburg. In the case of Riga, we considered all entrepreneurs. The level of education, which is believed to be an indicator of the socioeconomic status (see [17]) was also used in the spatial analysis of social differentiation. Particularly, we took into account the percentages of people with a) a university degree; and b) a doctoral degree.²

As to the housing price indicator, it became evident when gathering information that there were significant differences in the availability of these data for the two cities. In Riga, just as any other Latvian city, there are no systematised data on land and housing prices in municipalities. Latvian censuses, however, contain detailed and accurate information on the years when each residential building was constructed. In Russia, housing data are difficult to obtain. Therefore, we used different indicators to assess the comfort of the urban environments of St Petersburg and Riga. In the case of St Petersburg, these were price per one sq. m and the average property tax per person.

Alongside the indicators of the socio-economic differentiation of urban areas, we employed data on intra-census population change in municipalities. We deliberately did not consider ethnic differentiation in the city: unlike multi-ethnic Riga, St Petersburg is a predominately mono-ethnic city. Signs of ethnic segregation have appeared only recently in St Petersburg in response to a mass migration to the city from CIS countries [18].

To illustrate spatial differences, we use sketch maps showing the municipal divisions of cities. Percent deviation from the city average is given for the indicator in question.

Results. St Petersburg

At the end of the Soviet period, the population of St Petersburg (then, Leningrad) exceeded five million people. That happened at the end of 1989. In

² A doctoral or postdoctoral degree in Russia.

1991, just like any other large city in Russia, St Petersburg witnessed a rapid population decline caused by a natural decrease and negative net migration [19]. There are very different evaluations of the rate at depopulation in St Petersburg in the last decade of the 20th century/the first years of the 21st century. According to statistics, the population of St Petersburg had to be below 4,600 thousand people at the beginning of 2002. The census carried out in October 2002 reported a population of 100 thousand people above the estimate. The underestimation of migrations has undermined the reliability of population data in Russian regions.

In 2003, the population of the Northern Capital started to grow. At first, the growth was sustained by immigration; in 2012, natural increase became a significant factor (Fig. 1). Of course, a positive difference between the birth and death rates has accounted for a mere 15–20% of population growth in recent years (Fig. 2).

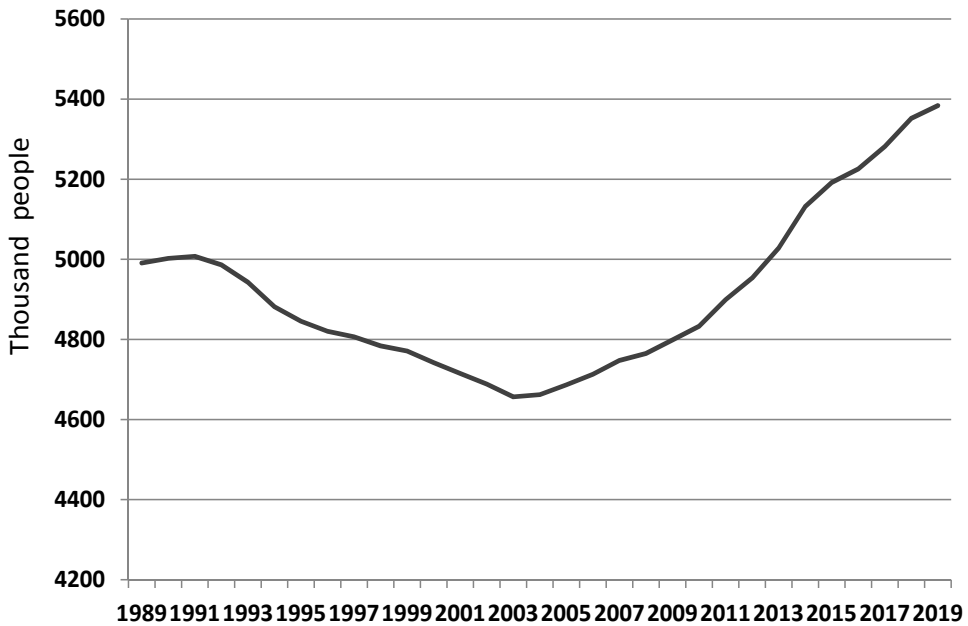


Fig. 1. Population change in St Petersburg in 1989–2019

Since 2000, the population of St Petersburg has increased by 15.6%.³ The rate of increase, however, varied from district to district.

In the past three decades, the city has gone through significant changes in population distribution. The city experienced the most rapid growth in the second half of the 1960s when large-scale residential development started behind the

³ Saint Petersburg. 2018. A book of statistics. Petrostat. St Petersburg, 2019.

factory belt⁴ that surrounded the 20th century St Petersburg. This resulted in the fragmentation of the city — its division into the centre and peripheral dormitory districts. Each of the latter is connected to the city centre by one-two transport corridors. Connections between contiguous dormitory districts are often less stable than those with the centre are.

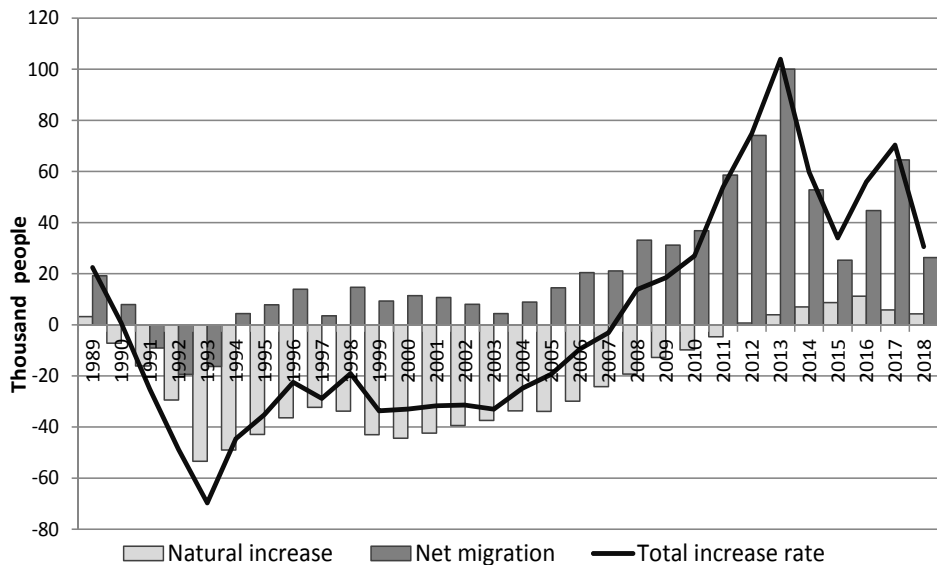


Fig. 2. Natural increase and net migration in St Petersburg, 1989—2019

Over the sixteen years from 2003 to 2018, thirty-four of St Petersburg's 111 municipalities saw their population increase by 10—30%, eleven by 30—50%, ten by 50—100%. The population of three municipalities (the villages of Pargolovo (Vyborg district), Shushary, Aleksandrovskaya (Pushkin district) more than doubled.⁵

In the same period, ten municipal units (MU) in the city saw their population decrease by 10—30% and one (the 'Palace District' in the city centre) by 34%. In forty-two municipalities, the number of residents has changed within 10% from the last census (2002) (Fig. 3).

There are distinct spatial patterns of the population dynamics in the districts of St Petersburg. Most municipalities in the historical centre are losing population, whereas suburbs are turning into new dormitory districts, and the number of their residents is growing. The lack of residential development lands within

⁴ The so-called 'grey zone' of the city.

⁵ The population of the villages of Pargolovo and Shushary, which have become sites of frenetic residential development, more than quintupled. Source: Rosstat official website. Municipal indicator database. URL: http://www.gks.ru/free_doc/new_site/bd_munst/munst.htm (access date: 10.09.2019).

the administrative boundaries of the city and the spatial configuration of St Petersburg contribute to rapid population growth in the municipalities located in the north (Primorsky and Vyborgsky) and south (Pushkinsky and Krasnoselsky) of St Petersburg. The population is redistributed from the centre of the city to its periphery.

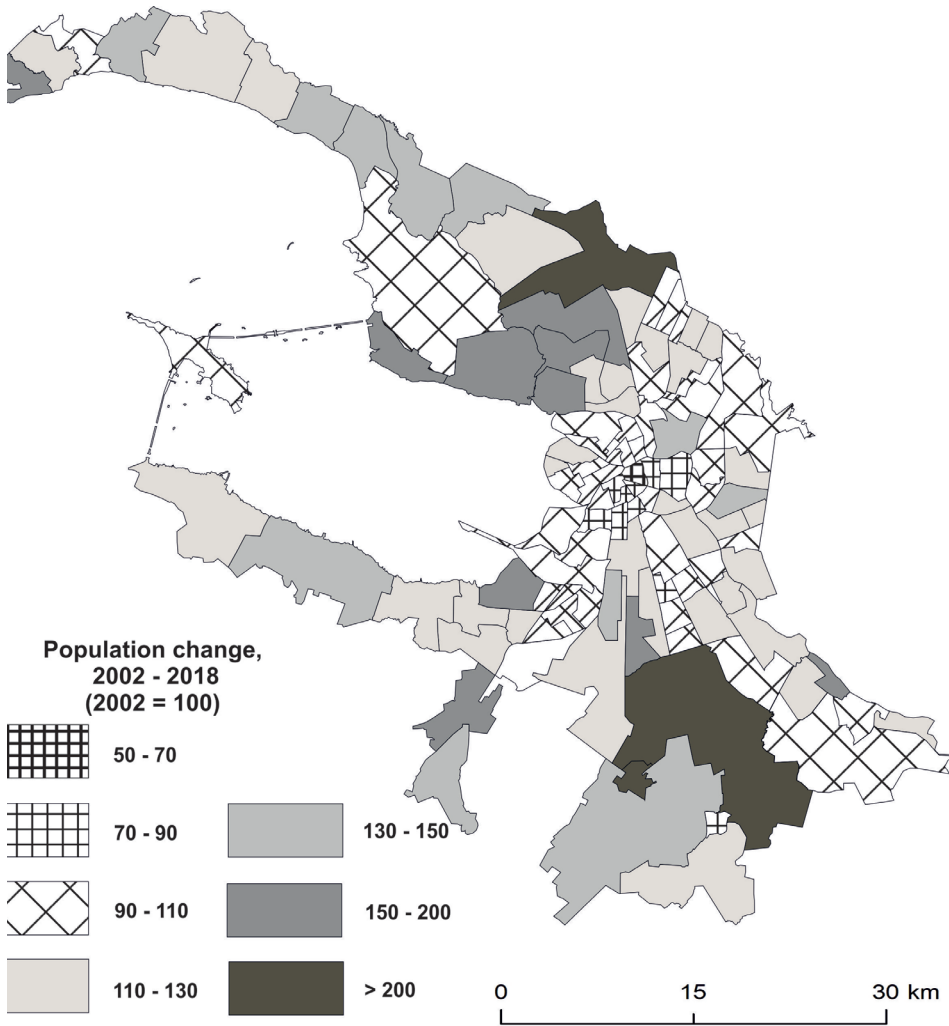


Fig. 3. Population change in St Petersburg municipalities, 2002—2018

All large cities (St Petersburg is no exception) are socially heterogeneous. Although in the Soviet period, inequality was effectively concealed, the residential quarters of Leningrad differed dramatically in comfort and thus had different social compositions. The Stalinist buildings of the 1930—50s with better layouts had a higher consumer value than the ‘khrushchyovkas’ and ‘brezh-

nevkas' of the 1960–70s. During the 1990s' transition to market relationships, the spatial division of urban societies started to resemble differentiation, primarily, in terms of income. For most people, the flat they owned was the main and often only financial asset and an indicator of their living standards [20].

The commercial value of residential property is an important, yet not the only, indicator of social differentiation. There are many indicators, which can be divided into several groups measuring *the level of income, the level of education, occupation, and behavioural rule compliance*.

Unfortunately, the available statistics reporting the standards of living across all 111 municipalities of St Petersburg has a limited number of indicators. Many of these measures register the situation at the time of the census only. The most recent national survey was held in October 2010.

Nevertheless, we will consider the indicators of quantitative differences in the social composition of St Petersburg population at a municipal level and try to identify the least well-off districts.

We selected the following available indicators of social differentiation in the city: 1) *the commercial value of a sq. m of residential housing*; 2) *individual property tax per person in a given municipality*; 3) *percentage of entrepreneurs employing any number of people*; 4) *the percentage of people with a university degree*; 5) *the percentage of people with a doctoral/postdoctoral degree*.

Housing prices. The source of data on housing prices in St Petersburg municipalities is the database of CIAN⁶ — Russia's largest real estate agency. According to CIAN, at the beginning of 2019, housing prices ranged between 62 to 247 roubles per sq. m across St Petersburg municipalities (Fig. 4).

The most expensive residential properties are in the historical centre of the city — the Central, Admiralteyski, and Perogradsky districts. The most luxurious area is the 'Palace District' municipal unit, which lies between the Palace Embankment of the Neva and the beginning of Nevsky Prospect. The average price of one sq. m of residential property in the area is almost 250 thousand roubles (around 3.5 thousand euros). Above 200 thousand roubles per sq. m are the prices for residential property in the Chkalovskoe municipal unit (Petrogradsky district), which include Krestovskiy Island — a favoured open-air spot of St Petersburgians. This area is being built over with posh residential properties, which already cost almost as much as those lining the main street of the city — Nevsky Prospect.

The cheapest residential property is in the industrial outskirts of St Petersburg, primarily, its southern districts. In the villages of *Pesochny (Kurortny district), Pontonny, and Saperny (Kolpino district both)*, and the 'town of *Krasnoe Selo*' (Krasnosel'sky district), the price per sq. m did not exceed 70 thousand roubles (below one thousand euros). Fig. 4 demonstrates the centre-periphery distribution of housing prices in St Petersburg with a northward axis of expensive properties.

⁶ CIAN property database. Online resource. URL: <https://www.cian.ru/> (access date: 19.06.2019).

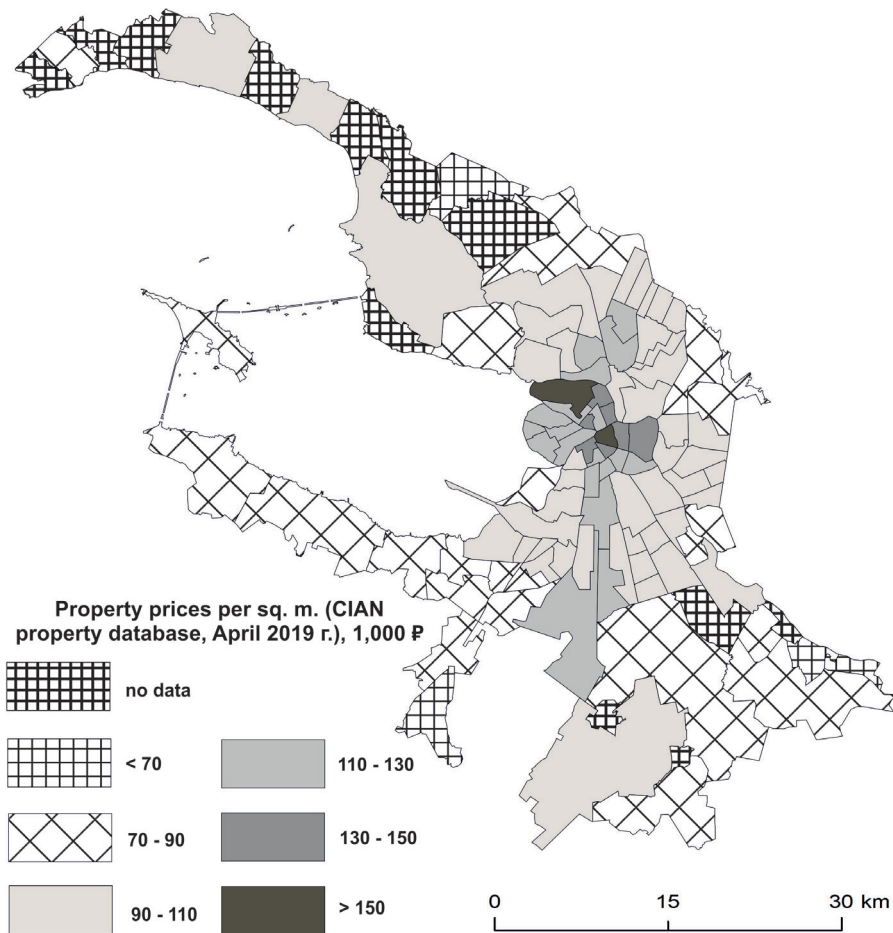


Fig. 4. Housing prices in St Petersburg municipalities, 2019

Property tax. The places where citizens live, their houses and flats, account for the largest proportion of their immovable property. The tax is levied by municipalities, and the relevant information is available through the *Municipal Indicator Database (MID)*. The amount of tax per person is another indicator of housing prices and thus the well-being of St Petersburgians. In 2016⁷ the average property tax per person in St Petersburg was 434 roubles a year; the amount of tax ranged from 50 to 2000 roubles.⁸

The largest tax amounts are paid in the municipalities in the city centre: *Smolninskoe, No. 78, 'Palace District'* (Central district all), *Chkalovskoe, Petrovskoe, Aptekarsky Island* (Perogradsky district all), and in some villages of the *Kurortny district (Komarovo, Repino, Solnechnoe, Ushkovo, Molodezhnoe)*. In these municipalities, the amount of tax per person is two-five times the city average (Fig. 5).

⁷ The most recent open data on taxes collected by St Petersburg municipalities.

⁸ Rosstat official website. Municipal indicator database. URL: http://www.gks.ru/free_doc/new_site/bd_munst/munst.htm (access date: 10.09.2019).

Housing prices are higher in the municipalities that have been built over rapidly in recent decades. These are MU No. 65 and *Kolomyagi* (both *Primorsky district*), *Yuzhno-Primorsky* (*Krasnoselsky*), *Zvezdnoe* (*Moskovsky*), *Pravoberezhny* (*Krasnogvardeyski*), and *Aleksandrovsкая* (*Pushkinsky*).

The lowest property tax is associated with the municipalities that saw frenetic residential development in the 1960–80s. In most MUs of the *Kolpinsky*, *Krasnoselsky*, *Petrodvortsov*, *Kalininsky*, and *Nevsky districts* as well as in *Kronstadt*, this indicator is 0.3–0.7 times the city average. The lowest levels are observed in the municipalities of *Krasnoselsky district* — *Sosnovaya Polyana* and *Gorelovo* where the amount of property tax is 1.28–0.22 the city average.

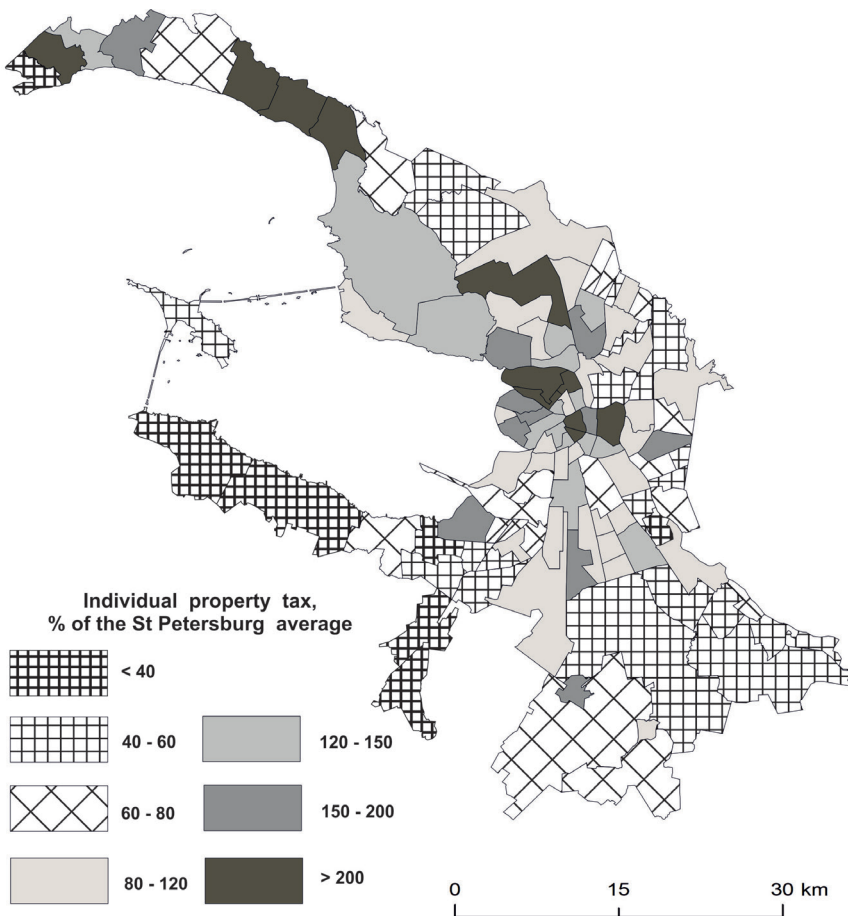


Fig. 5. Individual property tax in St Petersburg municipalities, 2016

Percentage of entrepreneurs. The distribution of business owners across St Petersburg is also very uneven. According to the 2010 census, 4.4% of the economically active population of St Petersburg owned a business, yet only half of them (2.2%) employed any number of people. The largest number of employers, two-three times higher than the city average, is observed in the suburban villages

of *Ust-Izhora* (*Kolpinsky district*), *Repino*, *Solnechnoe*, and *Komarovo* (*Kurortny district* all). The percentage of business owners employing others was the highest in the village of *Aleksandrovskaya* in the *Puskinsky district* where this category of entrepreneurs accounted for almost 10% of the employed population. Among St Petersburg multi-storey housing areas, the number of entrepreneurs is twice the average in the historical centre, namely, the municipal units of the *Perogradsky* (*Aptekarsky Island MU*), *Central* ('Palace District' MU), and *Vasileostrovsky* (*Dekabristov Island MU*) districts.⁹

In eleven MUs, most of which are situated in the south of St Petersburg, this proportion does not exceed 1.3%. Overall, there is a correlation between the concentration of entrepreneurs and the amount of property tax paid (a correlation coefficient of 0.544) (Fig. 6).

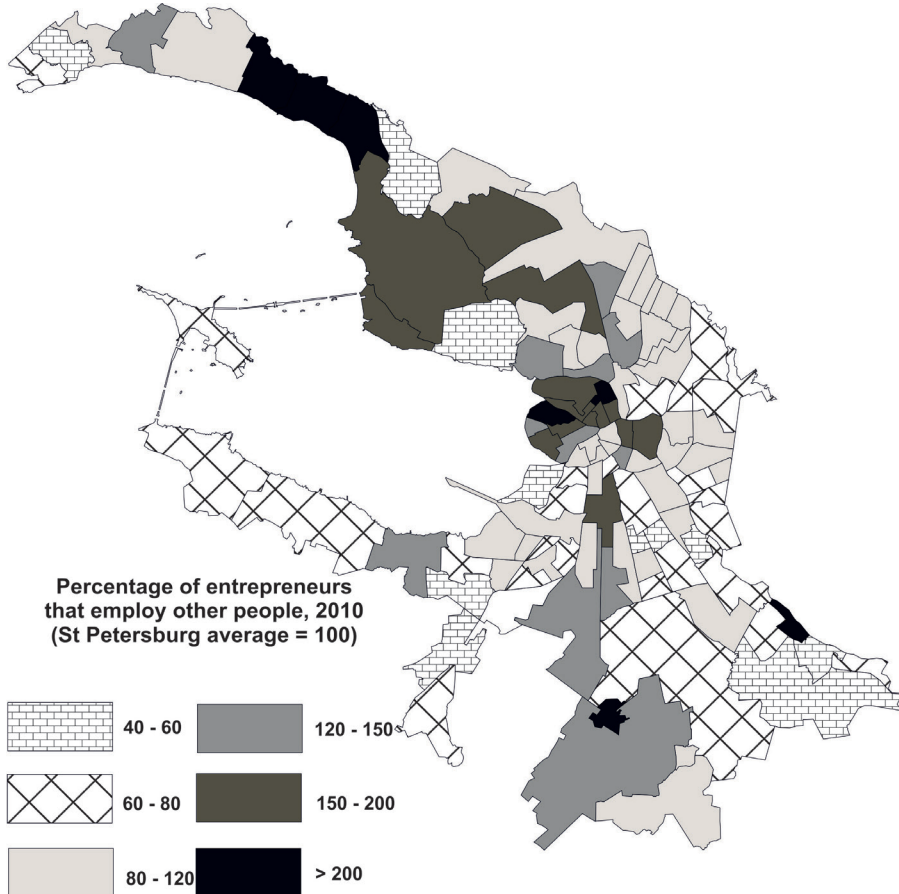


Fig. 6. Percentage of entrepreneurs employing other people, by St Petersburg municipalities, 2010

⁹ The economic activity of St Petersburg population. 2010 Russian national census results. A book of statistics. Part 2. Petrostat. St Petersburg, 2013.

Percentage of people with a university degree. An important indicator of social structure is the level of education. A major Russian centre of culture and education dubbed the ‘cultural capital’, St Petersburg has a high percentage of people with a university degree. According to the 2010 census, 38%¹⁰ of the city’s population aged twenty and older had a university degree. In this respect, Saint Petersburg ranks second in Russia after Moscow (42.4%).¹¹

The distribution of people with a university degree is very uneven in St Petersburg. The highest concentration of this category of St Petersburgians is associated with the central districts. In the *Admiralteysky district*, their proportion among all residents aged 20 and older is almost 39%; in the *Petrogradsky* and *Central districts*, it is above 46%. Moreover, in some municipal units, such as *Aptekarsky Island* in the *Perogradsky* district and the *Palace District* in the *Central district*, over half of the adult population had a university degree.¹² A high level of education is characteristic of the population of some remote municipalities: *Komarovo (Kurortny district)* (51.8% of people with a university degree) and *Tyarlevp (Pushkinsky district)* (49.4%)¹³ (Fig. 7).

The *Moskovsky* and *Puskinsky* districts also stand out for their high percentage of people with a university degree (40% on average).

The largest dormitory districts of St Petersburg, *Primorsky* and *Nevsky*, as well as the town of *Kronstadt* and the remote industrial *Kolpinsky district* have the lowest proportion of people with a university degree. In 2010, this indicator ranged between 26.4 to 29.8%, which is 13–23% below the city average. The lowest level of education is associated with small municipal units of the *Kurortny* and *Kolpinsky districts* — the villages of *Smolyachkovo*, *Molodezhnoe*, and *Pontonny* located at the farthest distance from the centre of St Petersburg. The percentage of people with a university degree in those municipalities was one-third below the city average.

When analysing spatial differences in the level of education of St Petersburg residents, it is important to keep in mind that the transition from districts (municipalities) performing better and worse on this indicator is rather abrupt. This may be attributed to the incipient spatialization trends of social segregation.

¹⁰ Of respondents who answered the question about the education background.

¹¹ According to the 2010 census, the national percentage of people aged 20+ with a university degree was 23.8%. Source: Russian census 2010. Volume 3. Education. The population of Russian regions by age, sex, and level of education. URL: http://www.gks.ru/free_doc/new_site/perepis2010/croc/perepis_itogi1612.htm (access date: 02.09.2019).

¹² Here and below, the percentage of people with a university degree is calculated as a proportion of people aged twenty and older.

¹³ The population of St Petersburg by age and level of education. Russian census 2010 in St Petersburg. A book of statistics. Part 1. Saint Petersburg, 2012.

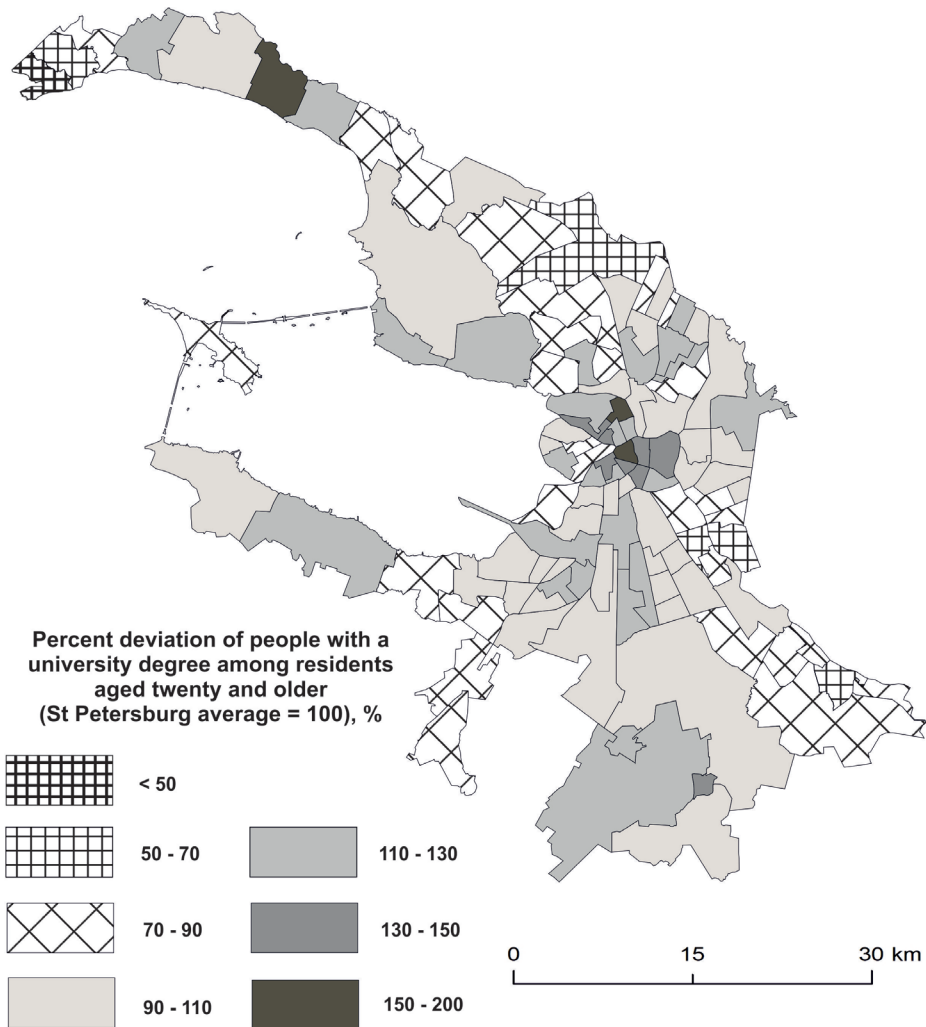


Fig. 7. People with a university degree by St Petersburg municipalities, 2010

Nevertheless, the spatial unevenness of the level of education in St Petersburg should have a demographic explanation since the characteristic in question depends strongly on the age structure of the population. Whereas the average city percentage of people with a university degree among the population aged 20 and older is 38%, in the 25–29 age cohort, this indicator reached 45.7% in 2010. In the 50–54 age group, it was 33.4% and, among the population aged seventy and older, only 24.5%. Thus, the older the age group, the lower the percentage of people with a university degree. For St Peterburgians, as well as residents of other Russian regions, higher education is becoming obligatory, turning from

an indicator of one's professional status to that of social status. This category is more numerous in the areas where there are many young (and technically more educated) people.

Percentage of people with a (post-doctoral) degree. Today, when higher education is becoming universal, not to say obligatory, the percentage of people with a university degree cannot any longer be considered a reliable indicator of social differentiation. It is necessary to consider the spatial distribution of both the population with a university degree and those with a doctoral/postdoctoral degree (Fig. 8). These data, similarly to other information on the level of education, are reported in censuses.¹⁴

According to the most recent census (2010), St Petersburg was home to 56.1 thousand people with a doctoral and 12.9 thousand with a postdoctoral degree. In the 25+ age group,¹⁵ the percentage of people with a doctoral/postdoctoral degree averaged 18.4‰ across the city. The highest concentration of people in this category was observed in the municipal units of the *Petrogradsky* and *Central districts*. In these areas, there were 34–35 people with a doctoral/postdoctoral degree per 1,000 population.

The percentage of people with a doctoral/postdoctoral degree is high in some municipal units of the *Admiralteysky (Sennyoy and Admiralteysky MUs)*, *Vasileostrovsky ('The Harbour' and Morskoy MUs)*, *Vasileostrovsky (Svetlanovskoe and Sampsonievskoe MUs)*, *Kalininsky (Akademicheskoe and Grazhdanka MUs)* and *Moskovsky (Moskovskaya zastava and Zvezdnoe MUs) districts*. A high concentration of academicians is characteristic of villages of *Komarovo* and *Repino* in the *Kurortny district* as well as of the town of *Pushkin*.¹⁶ In the municipalities of the *Kolpinsky, Krasnoselsky, Nevsky, and Frunzensky districts*, the percentage of people with a doctoral/postdoctoral degree is rather low.

A comparison of the above indicators makes it possible to rank St Petersburg municipalities by the level of social affluence. To this end, we will rank municipalities by each indicator in descending order. For our indicators (*property tax; the percentage of entrepreneurs employing any number of people; the percentage of people with a university degree; the percentage of people with a doctoral/postdoctoral degree*), the rank will be from 1 to 111, and for one indicator (*housing prices*), it will be from 1 to 99: data on the commercial value of one sq. m of housing is unavailable for twelve St Petersburg municipalities. The obtained ranks summed up, and the average rank value calculated.¹⁷

¹⁴ The population of St Petersburg by age and level of education. Russian census 2010 in St Petersburg. A book of statistics. Part 1. Saint Petersburg, 2012.

¹⁵ In view of the years of study at secondary school and university in Russia, it is virtually impossible for a person under twenty-five to obtain a doctoral degree. The 2010 census did not report in St Petersburg any people under twenty-five with a doctoral degree.

¹⁶ The 'town of Pushkin' municipality.

¹⁷ For ninety-nine St Petersburg MUs, the sum of ranks is divided by five and for twelve MUs by four.

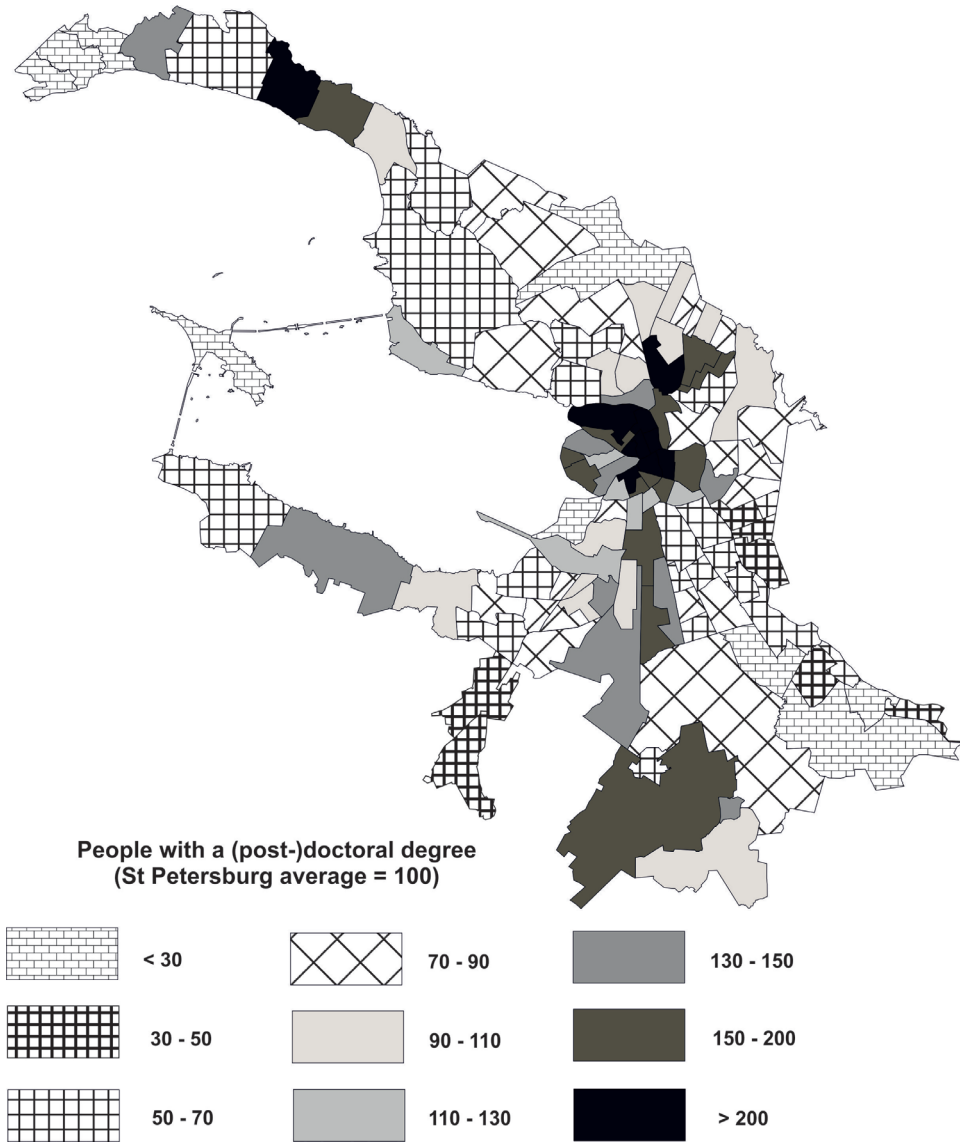


Fig. 8. The concentration of people with a doctoral degree by St Petersburg municipalities, 2010

The lowest indicator score (let us call it *an average rank by social affluence, ARSW*) is associated with the most prosperous municipalities. Vice versa, the highest indicator score is characteristic of areas with lower living standards. Although, theoretically, the ARSW of St Petersburg municipalities can range between 1 and 111, its actual range is narrower — from 2.6 (*the 'Palace District' MU in the Central district*) to 107.3 (*Smolyachkovo MU in the Kurortny district*) (Fig. 9).

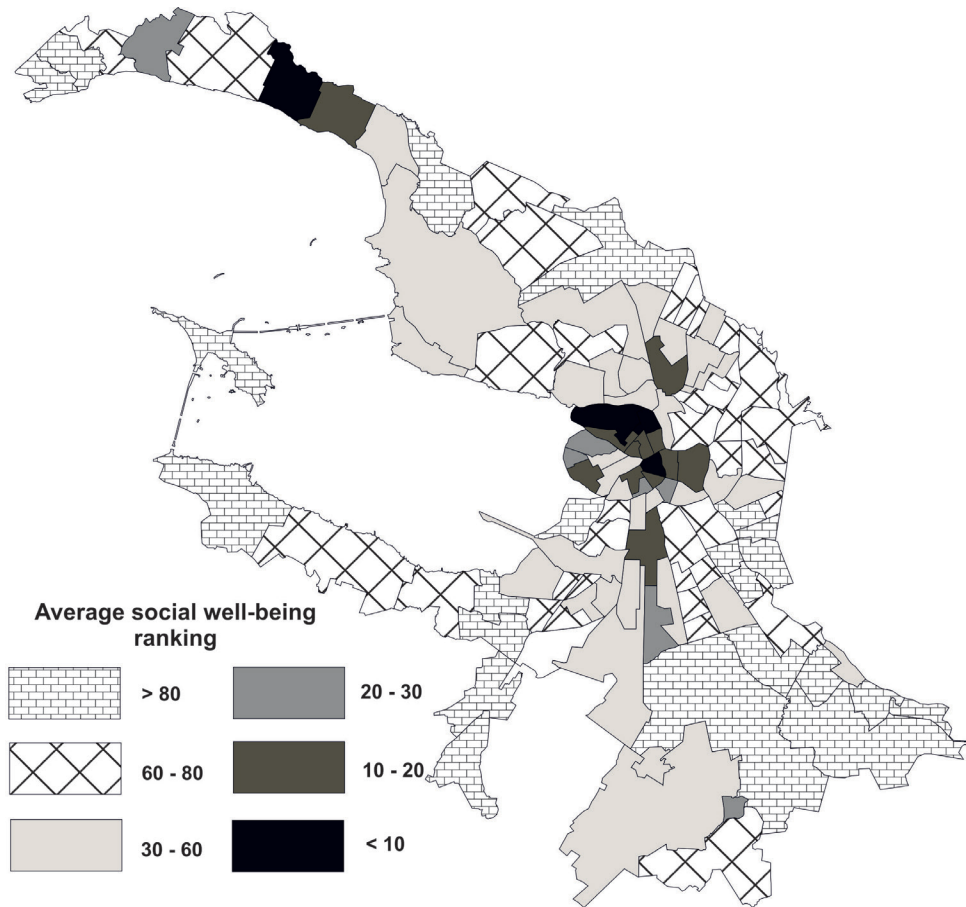


Fig. 9. Average ranking of St Petersburg municipalities by social affluence

The most prosperous municipalities of St Petersburg are situated in the city centre in the *Petrogradsky* and *Central districts*. Among affluent areas are the municipal units of *Moskovskaya zastava* (*Moskovsky district*), *Svetlanovskoe* (*Vyborgsky district*), *Admiralteysky* (*Adirealteysky district*), and 'The Harbour' (*Vasileostrovsky district*) as well as the villages of *Komarovo* and *Repino* in the *Kurortny district*.

The worst-performing municipalities in terms of social affluence are those in the southern part of the city (*Kolpinsky*, *Nevsky*, *Krasnoselsky*, and *Petrodvortsovy districts* and *Kronstadt*). Fig. 9 shows that the incipient social differentiation of St Petersburg has clear spatial localisation: 'poor' and 'rich' municipalities group in different parts of the city.

Results. Riga

At the beginning of 2019, Riga — the capital and the largest city of Latvia — had a population of 632.6 thousand people and was home to almost half of the country's urban residents. Since the early 1990s, the population of Riga has been gradually decreasing (Fig. 10). Both natural decline and negative net migration contributed to that process. Immigration became a decisive factor in the 2000s when Latvia acceded to the EU (Fig. 11).

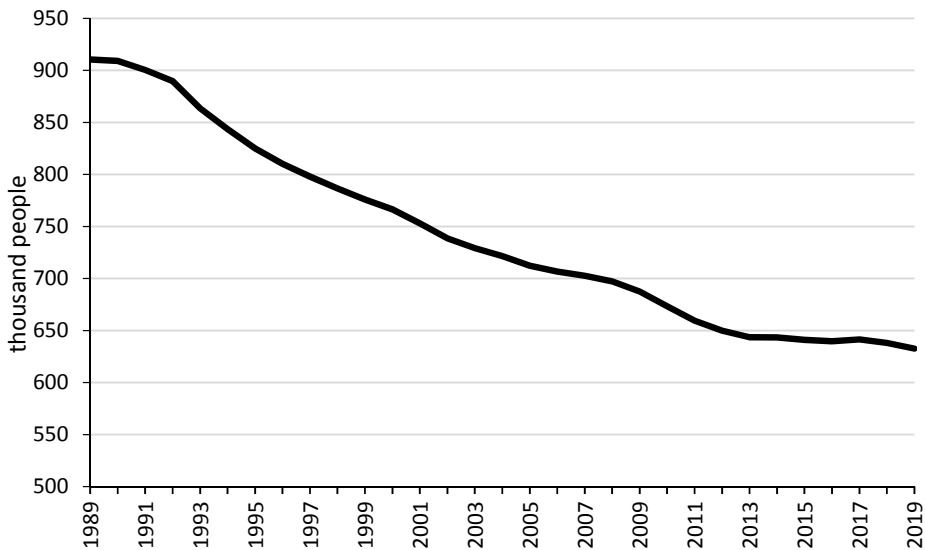


Fig. 10. Population change in Riga, 1989—2018

In the past three decades, the population of Riga has been rapidly decreasing: in 1989—2008, it declined by almost one-third (in 1989, Riga was home to 915.1 thousand people).¹⁸ The post-Socialist transition brought about dramatic changes in population distribution across different parts of the city. This process accelerated after 2000. Large residential areas built in the Soviet period (dormitory districts) were also becoming less populous, albeit at a higher rate. Only in the suburbs of Riga where new low-rise residential properties appeared, the population was growing in that period. The above applies to both new detached house districts and luxurious historical suburbs such as *Mežaparks* and *Vecāķi*. Out of the districts in the centre of the city, only one, *Skanste*, saw its population increase. The growth is explained by the area's advantageous location and large-scale residential development (Fig. 12).

¹⁸ Central Statistical Bureau of Latvia. URL: <https://www.csb.gov.lv/en/statistika/db> (access date: 03.09.2019).

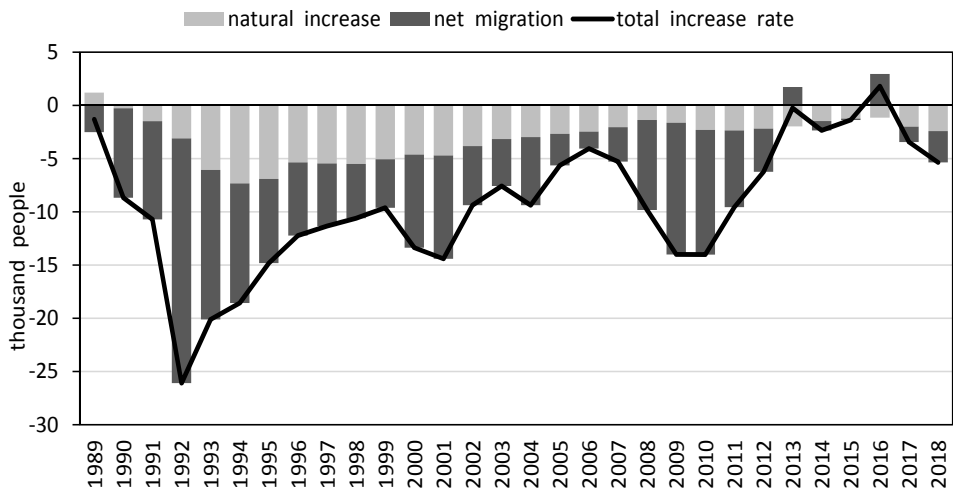


Fig. 11. Natural increase and net migration in Riga, 1989—2018

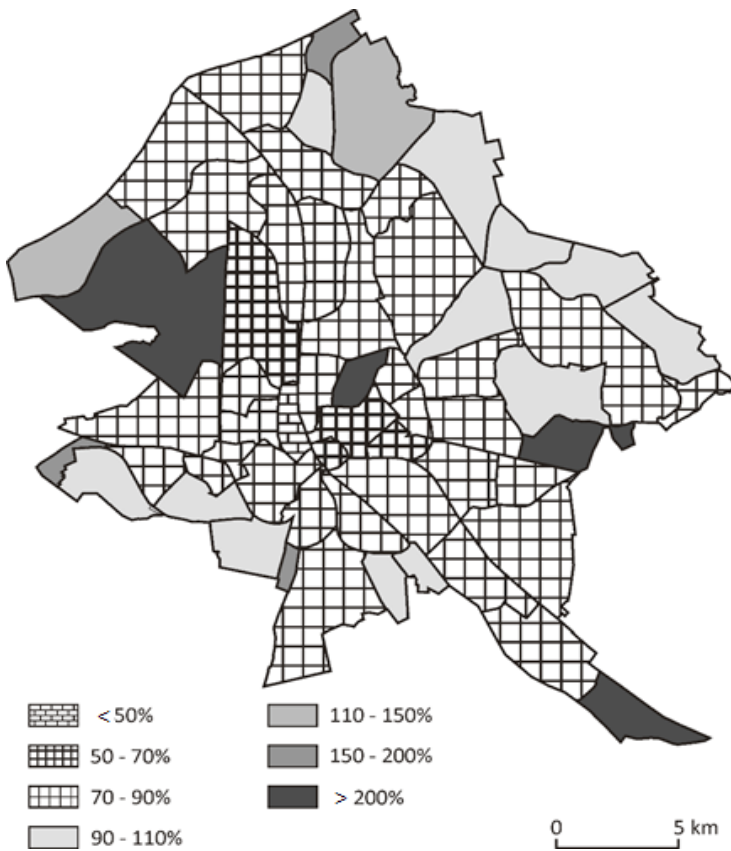


Fig. 12. Population change in the residential areas of Riga, 2000—2018 (2000 = 100%)

The average percentage of people with a university degree among the population aged 15+ is 32.1% across the city. The highest indicator score is observed in the *Old Town* (49.1%) and the lowest in *Spilve* (4.1%), a fringe area of Riga. The concentration of people with a university degree is above average in the most luxurious micro-districts of the historical cities and some multi-storey residential areas of the late Soviet period (the second half of the 1980s), such as *Zolitūde* and *Purvciems*. The percentage of people with a university degree is the lowest in the Soviet-era micro-districts built in the 1960–70s (*Kengarags*, *Daugavgrīva*) and some remote areas that have a ‘semi-rural’ type of housing (Fig. 13).

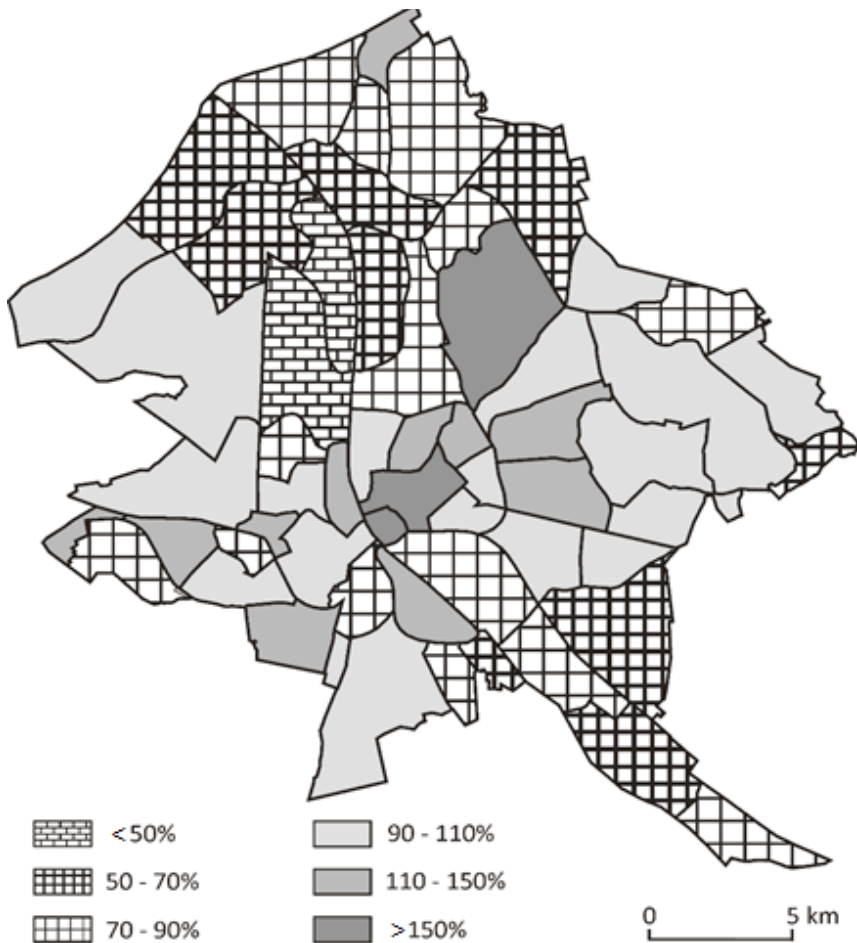


Fig. 13. The distribution of people with a university degree among the population aged twenty and older, 2011 (Riga average = 100%)

The average percentage of people with a doctoral degree among the population aged twenty-five and older is 8%; the highest is in the suburban district of *Kleisti* (32%). In some less populous micro-districts there are no residents

with a doctoral degree. An above-average percentage of people in this category is observed in other affluent districts of Riga, whereas the Soviet-built residential areas, especially remote ones, underperform in this respect (Fig. 14).

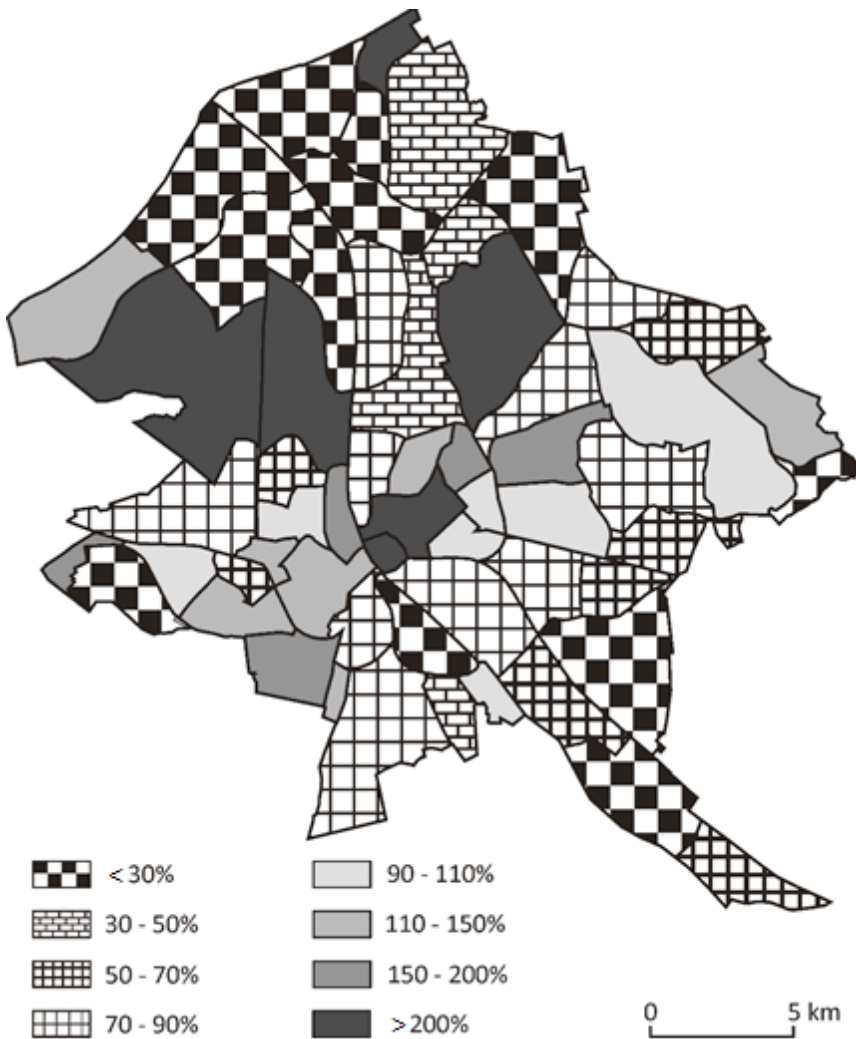


Fig. 14. The distribution of people with a doctoral degree among people aged twenty-five and older, 2011 (Riga average = 100%)

Among the city's population aged fifteen and older, the average percentage of *managers and skilled professionals* is 29.7%. *Mežaparks*, the most luxurious historical district outside the city centre, has the highest indicator score among Riga's districts (50.6%). The percentage of people in the category is the lowest in *Spilve* (3/9%) (Fig. 15).

Higher values are observed in the city centre, the late Soviet micro-districts, and some of the more affluent suburbs where the population has been increasing after the Soviet period.

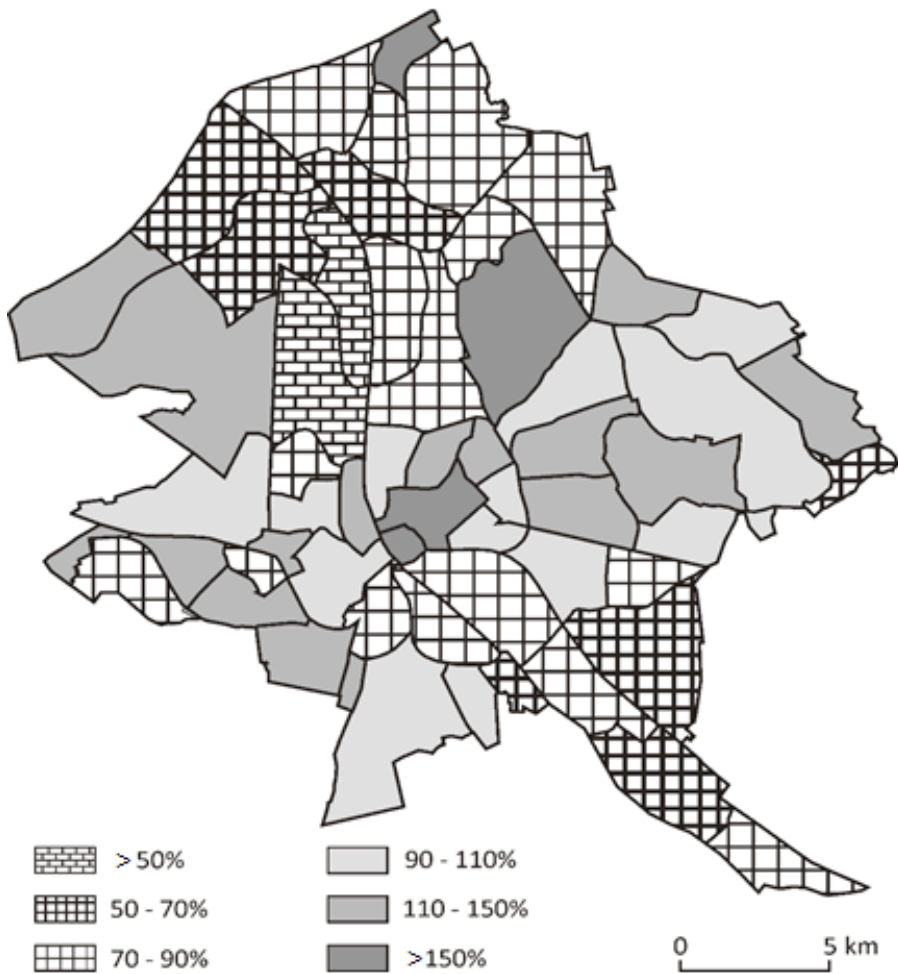


Fig. 15. The distribution of managers and skilled professionals among the economically active population aged fifteen and older, 2011 (Riga average = 100%)

The average percentage of entrepreneurs among the economically active population of Riga aged fifteen and older is 4.0%. This proportion is the highest in the micro-district of Mūkupurvs (13.5%), which is part of the 'outer city'. The distribution of entrepreneurs across Riga districts largely coincides with that of managers and skilled professionals. A high percentage of people in the category concentrating in some 'outer city' districts is explained by the patterns of residential development in the late Soviet period (Fig. 16).

Despite some differences, all the sketch maps illustrate similar trends: residents with higher social status tend to concentrate in the 'inner city', the affluent historical districts of the 'outer city', and the new suburbs that have developed rapidly in the past two decades. Only a few Soviet-era multi-storey residential

areas, the attractiveness of which is explained by their transport accessibility and developed infrastructure, boast a significant concentration of people with high social status.

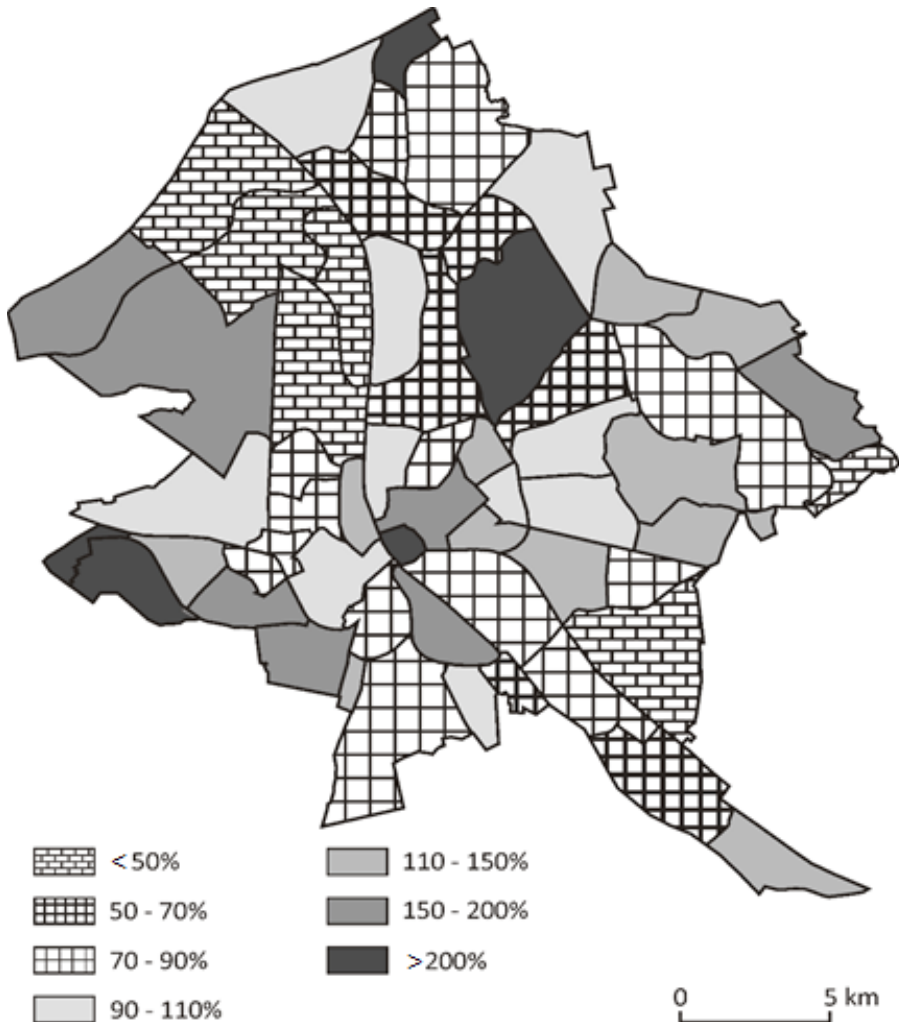


Fig. 16. The distribution of entrepreneurs among the economically active population aged fifteen and older, 2011 (Riga average = 100%)

The ranking of Riga micro-districts by the level of social affluence, calculated using the above indicators, shows that the most luxurious districts of Latvia's capital are the quarters of the historical centre (the 'inner city') and some pre-Soviet quarters of the 'outer city', such as *Mežaparks* and *Vecāķi*. Among socially affluent areas of Riga are some 'dormitory districts' built at the end of the Soviet period and located in the eastern and western parts of the city. The population

of these districts has been growing since 2000. Less affluent areas are primarily located in the southern and northern parts of the city. They consist of quarters built in the 1960–70s, which have low-quality housing and poorly developed infrastructure. One of such areas is the micro-district of *Maskavas*, which receives zero investment in reconstruction and development. It has buildings of both Soviet and pre-Soviet period; its level of social affluence is the lowest among the central districts of Riga (Fig. 17).

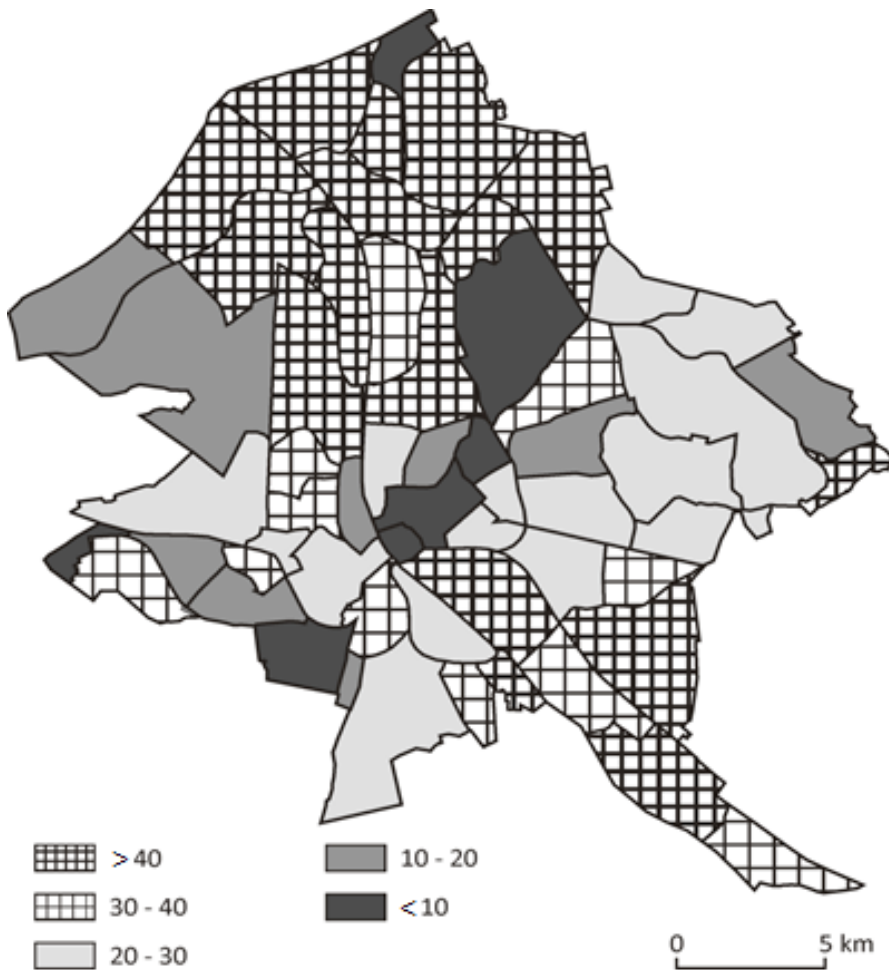


Fig. 17. The average ranking of social affluence in Riga's residential areas, 2011.

Discussion and conclusions

Our study sought to compare spatial trends in demographic development and social segmentation at a municipal level in the post-Soviet cities of St Petersburg and Riga. To this end, we analysed available quantitative data reflecting the social status of residents and the attractiveness of housing.

Overall, the models of post-Soviet spatial segmentation are very similar for the two cities, though St Petersburg and Riga have different geography, demography, and historical traditions of urban development. In both cases, the oblivion of the Soviet period was followed by the socio-economic modernisation of city territories with a high architectural value (pre-Soviet city centres) and/or luxurious suburbs. There are, however, differences in demand for Soviet-era housing. Stalinist buildings are valued in both cities for their high construction quality and bigger apartments. Abundant in St Petersburg, these buildings are quite rare in Riga where the erection of Stalinist houses began only in 1946. Attitudes to the 'economy-class' multi-storey housing built after 1954, which has plenty of maintenance problems, are different in the two cities. In St Petersburg, almost none of the dormitory districts built in the 1960–80s are considered attractive, whereas the situation in Riga is more complicated. Some of Riga's micro-districts built in the late Soviet era (the second half of the 1980s) have good layouts, spacious flats, and high transport accessibility. All this translates into considerable attractiveness to the city's residents [21]. The demand for post-Soviet housing is also different in St Petersburg and Riga. The former city is building multi-storey residential property, whereas the latter is erecting housing aimed at the middle class. Riga's new housing boasts low density and abundant green space. In St Petersburg, this type of new housing is classified as 'premium'. In Riga, new suburbs beyond the bounds of dormitory areas consist almost exclusively of private houses or low-rise buildings. They have greater social homogeneity than their counterparts in St Petersburg do.

In other words, social differentiation manifests itself mainly in the spatial segregation of residents by income and socioeconomic status. Well-off people tend to concentrate in the historical cores and the most exclusive suburbs. Yet the process of social polarization is more complicated. It involves all areas of the two cities, including Soviet-era dormitory districts (Riga) and coastal dacha communities (St Petersburg). This conclusion may be illustrated by the rapid residential development and a high percentage of entrepreneurs in Riga's districts whose level of social affluence is average, as well as by the considerable increase in the population of St Petersburg's northern districts, whose residents are far from being well-off. An earlier spatial analysis of the population composition in Riga shows that the socio-economic polarisation outside the central part of the city was insignificant in 1991 and quite noticeable in 2011 [22]. The emergence of more socially affluent micro-districts can be explained by both the growing fortunes of their residents and the migration of wealthier residents to those areas. To understand the actual dynamics and features of this process, it is necessary to carry out a more detailed micro-level analysis of the population composition. In this respect, data on private investment and the development of the housing market are as important as the information on the occupational structure of labour resources. Limited attraction of EU fund-

ing and an overall lack of investment in the reconstruction of Riga's Soviet-era buildings prompt middle-class residents to contribute money to the construction of new housing rather than to the renovation of the existing ones. New construction projects aimed at more affluent residents lead to the polarization of urban space, segregation at micro-district level, and changes in everyone's quality of life (see [23]).

Table 2

**The Pearson correlation coefficient for social differentiation indicators
in the urban space of St Petersburg**

Indicator	Correlation coefficient				
	1	2	3	4	5
Housing prices (1)		0.739	0.707	0.714	0.813
Individual property tax (2)	0.739		0.544	0.467	0.535
Percentage of entrepreneurs employing any number of people (3)	0.707	0.544		0.430	0.518
Percentage of people with a university degree (4)	0.714	0.467	0.430		0.848
Percentage of people with a doctoral/postdoctoral degree (5)	0.813	0.535	0.518	0.848	

Prepared by the authors.

A comparison of the five indicators of social affluence of St Petersburg municipalities suggests that these measures are interconnected. Our analysis pointed to a high degree of correlation between most of the studied indicators. The Pearson coefficient of correlation between housing prices and the percentage of people with a doctoral/postdoctoral degree, calculated for 111 municipalities, is 0.813. That between housing prices and the percentage of entrepreneurs employing any number of people is 0.797. The coefficient of correlation between housing prices and the amount of property tax per person is 0.739 (Table 2).

The situation is quite similar in Riga. There is a high degree of correlation between the distribution of people with a university degree across the city and the areas of preferred residence of managers and skilled professionals. The Pearson coefficient of correlation between these measures is 0.947. There is a significant correlation between the areas of preferred residences of managers and skilled professions, on the one hand, and entrepreneurs, on the other (0.727); between people with a university degree and entrepreneurs (0.626); between people with a doctoral degree and managers (0.636) (Table 3).

Table 3

**The Pearson correlation coefficient for social differentiation indicators
in the urban space of Riga**

Indicator	Correlation coefficient				
	1	2	3	4	5
Percentage of people with higher education (1)		0.564	0.947	0.609	- 0.012
Percentage of people with a doctoral/postdoctoral degree (2)	0.564		0.631	0.396	- 0.054
Percentage of managers and skilled professionals (3)	0.947	0.631		0.727	0.001
Percentage of entrepreneurs (4)	0.609	0.396	0.727		0.029
Population change in Riga, 2000–2018 (5)	- 0.012	- 0.054	0.001	0.029	

Prepared by the authors.

Our findings point to two conclusions. Firstly, there are similarities between the spatial trends of social segmentation in St Petersburg and Riga at municipal/micro-district level. The differences in the demographic structure and historical urban settlement patterns do not have a significant effect on spatial differentiation, which is shaped by similar parameters as well as the dynamics and logic of socioeconomic and spatial development. The two cities have historical similarities, namely, they are experiencing a strong effect of pre-Soviet urbanisation, which is absent in most industrial cities that developed in the Soviet period [24]. It would be helpful to carry out a comparative study covering different types of cities in the post-Soviet space to investigate their differences in historical development and urban planning. The similarities identified in this analysis suggest that there are transitional processes common to all post-Soviet cities.

Moreover, our analysis of social differences demonstrated that, despite being an important research tool, it is not sufficient to give a comprehensive picture of the spatial dimension of transformations in the urban environment. On the one hand, there is a need to compare urban planning strategies and national spatial development documents to understand how much ideology and political priorities affect the observed processes of social differentiation in post-Soviet cities. On the other hand, the results obtained lay the groundwork for further research into urban space segmentation and social segregation at an intra-district level. This way, our work may contribute to the discussion on the prospects of multi-scale studies of post-Socialist cities.

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