FILOSOFIJA. SOCIOLOGIJA. 2015. T. 26. Nr. 4, p. 277–292, © Lietuvos mokslų akademija, 2015

Socio-economic segregation in growing urban regions of Lithuania

DONATAS BURNEIKA, RŪTA UBAREVIČIENĖ, VYTAUTAS VALATKA
Institute of Human Geography and Demography, Lithuanian Social Research Centre, A. Goštauto St. 11, LT-01108 Vilnius
E-mail: donatas.geo@gmail.com; ruta.ubareviciene@gmail.com; vytautas.valatka@gf.vu.lt

This study attempts to analyse socio-economic segregation in three metropolitan areas of Lithuania. Indexes of segregation, dissimilarity and isolation were analysed trying to reveal different aspects of socio-spatial segregation in the urban regions, which experienced major shifts in their occupational structure over the last decades. The main occupational groups were used as a proxy for the socio-economic status. Data from 2001 and 2011 censuses was used to investigate segregation processes in the metropolitan areas and their main structural zones – urban cores and suburbs. Notwithstanding major economic and social changes of the post-communist society, all measured indexes indicated low levels of segregation and limited changes during the analysed period. The results showed that the fastest increase of segregation was in the capital city. It was also revealed that the richest groups of population are the most segregated, and they tend to live more and more separately from other groups. The differences in the concentration of high and low status occupational groups and the changes in those patterns were illustrated in the maps.

Key words: Vilnius, Kaunas, Klaipėda, metropolitan area, urban region, social segregation, post-communist city, residential differentiation

INTRODUCTION

The problem of social segregation has been among the most topical themes in various fields of urban studies in Western European and especially North American city spaces since the beginning of the 20th century (Hamnett 1996). However, very limited research was done on the communist cities of the Central and Eastern Europe (CEE). The policy of the communist regime was directed towards the uniform development of the socio-spatial organization (Stanilov 2007; Szelenyi 1996), and it was greatly reshaped during the communist period, which corresponded with a massive industrialization and fast urbanization (Demko, Regulska 1987). Later on, the transition from the Soviet regimes to a market-led neo-liberal economy resulted in actual annihilation of public housing policies and fast sprawl of metropolitan cities into city-regions mostly through processes of poorly planned and unregulated suburbanization (Boren, Gentile 2007; Gentile et al. 2012; Hamilton et al. 2005). Nowadays, most research is focused on the capital cities, where processes related to the centralisation of economy and population resulted in the most intensive and visible urban sprawl followed by certain trends of increasing social and spatial inequalities (Smętkowski et al. 2011; Ubarevičienė et al. 2011; Valatka et al. 2016). Second-tier cities received much less attention, though similar processes should be evident there too.

This paper presents one of the first attempts to analyze and compare socio-economic segregation processes in the three major urban regions (metropolitan areas (MAs) of Vilnius, Kaunas and Klaipėda, which include city cores and areas transformed by suburban developments) in Lithuania. The recent studies of European capital cities revealed that segregation processes are gaining pace everywhere across Europe (what is mostly related to neo-liberal policy of economy, which dominates in all studied countries), but the actual situation and degree of existing spatial inequalities differ (Tamaru et al. 2016).

The main aim of the paper is to explore the spatial patterns of the recent socio-economic segregation processes in the major metropolitan areas of Lithuania between 2001 and 2011. Three major cities with distinctive historical development, geographical location, urban structure, economy, demographic structure and trends of growth started to play a new role in the settlement system of Lithuania. These are the only macroregional centres, which still have potential to grow in Lithuania, albeit the population decline is evident in their central parts. Such a situation also illustrates growing disproportion of incomes of the residents, what enables us to hypothesize about the growing socio-spatial segregation. We expected to find increasing levels of segregation in all three MAs of Lithuania, but we also expected that the processes of segregation are different in different MAs.

This study uses Census data from 2001 and 2011 and the analyses are based on the occupational structure of residents at the level of census tracts. Nine ISCO-89 major occupational groups were used as a proxy for the socio-economic status, because no available data on incomes or other indicators of the social structure exist at the local level. The statistical surveys indicate that a significant relationship between professional groups and their incomes exist, though it is not always straightforward (Statistics Lithuania 2015). We analysed two major housing zones: city core (downtowns and large housing estate neighbourhoods) and outer city (less densely populated, newly built suburban zone). We expected that essential differences of housing stock and environment should result in noticeable differences of their attractiveness, social structure and consequently segregation processes. Three traditional segregation indexes were calculated and maps illustrating the distribution of certain occupational groups were drawn in order to reveal the ongoing processes and to test our hypothesis about the growing spatial inequalities in the rapidly sprawling urban regions.

This paper does not try to discuss positive or negative sides of the segregation processes. Some limited segregation is not perceived as a negative phenomenon, though it is recognized that high levels of segregation can be disastrous for the social stability and competitive power of cities; therefore it is important to follow the trends of segregation processes (Tammaru et al. 2016).

The research was funded by a grant (agreement No. MIP 086/2014) from the Research Council of Lithuania.

METROPOLITAN AREAS – HOTSPOTS OF CHANGING URBAN NETWORK

In order to better understand the segregation processes inside the MAs, brief introduction of the major trends of the population change is needed. During the Soviet period a uniform settlement system without a clear dominance of a single metropolitan region has been implemented in Lithuania. Therefore, it is not surprising that the shrinkage of the medium-sized cities was a major feature of development of the Lithuanian urban network in the last two decades. In 1996–2012 the Vilnius city municipality lost 7.6% of its population, meanwhile all other cities lost more than 20% (the Lithuanian average is 16%) (Statistics Lithuania, 2015).

Municipalities surrounding the three biggest cities were the only ones which have gained population during 2001–2011. The population in the whole Vilnius metropolitan area was growing, while other MAs were shrinking, but still not as fast as the cities themselves. The peripheral wards of the Vilnius city municipality (Verkiai, Antakalnis) were also growing because of the intensive suburbanisation therein. None of the wards in Kaunas and Klaipėda cities gained population, and many of them experienced a quiet sharp – up to 25% – population decline. It is very likely that metropolization will continue in the future, thus internal migration will remain to be one of the most important factors of segregation processes, which leads to the changing social, ethnic and age structure in all parts of the MAs. The greatest changes should appear in Vilnius, since it will be playing more and more dominating role in the urban system. On the other hand, socio-spatial changes will be also evident in the second-tier cities, which are playing the central roles in the middle and western regions of Lithuanian, as the existing trends of inner migration suggest (Burneika et al. 2014). In addition, an ongoing suburbanization redistributes population inside the MAs. As a result, the central parts of the MAs are emptying and the regions surrounding the cities are growing. The inflow of population towards the biggest cities and the outflow of residents from the central parts (to the suburbs, but also to other parts of the country and abroad) should have a significant effect on the socio-spatial structure and the processes of segregation in the MAs.

The changes in the population and its structure were followed by serious economic changes that also made a strong impact on the occupational (and social overall) structure of the analysed areas. Employment and earnings have been growing strongly in all sectors from 2001 till 2008 in the whole country; however, this did not reduce an income gap between different social groups. In Lithuania the GINI index was constantly among the highest in EU, exceeding 30, and stood at 35 in 2014 (Eurostat 2015). The gross earnings of managers were 1.3 times higher than that of professionals (also high status group), and 3.4 times higher than that of unskilled workers in 2010, when the National labour force survey was carried out (Statistics Lithuania, 2014); therefore occupational status can at least partly be used for the analysis of more general socio-economic segregation processes. Although the GINI index is quite high, the previous studies indicated that the most severe income gaps in Lithuania set aside up to 10% of the most disadvantaged and richest population from the remaining majority (Lazutka 2003), which could be relatively classified as low-middle class, therefore actual social inequality could be even higher than the GINI index indicates.

All three metropolitan areas were experiencing quite significant transformations in their occupational structure during the first decade of the 21st century. There was an increase of the higher occupational groups (both in absolute numbers and percentage) in all MAs, especially in Vilnius (Table). This increase is a good indicator of metropolization (centralisation) processes taking place in the country and it is mostly expressed in the capital city. Shrinkage of labour force (employed and unemployed persons) was evident in all country, except Vilnius MA. While the unemployment was very stable and stood between 11–12% in all MAs during both censuses (they took place during the post-crisis periods), the numbers of employed residents changed substantially. Despite the financial crisis (GDP fell by around 15% in 2009 in Vilnius county), the level of employment increased in Vilnius MA (by 6.8%). However, it has significantly decreased in the other two MAs (by 6.6% in Kaunas and 8.1% in Klaipėda). On the other hand, the decrease in employment there was more than two times smaller than the decrease in population.

The number and share of unskilled workers was much more stable, although a slight decline can be observed, especially in Klaipėda MA (Table). When talking about other low status groups (mostly professions which do not require higher education), we should mention that the sharpest decrease was found among the craft workers and machine operators, what might

illustrate deindustrialization of the analysed areas. It could also be explained as a short term crisis effect. Meanwhile the rise of high status groups (managers and highly skilled professionals, such as doctors or researchers) clearly shows a concentration of Lithuanian economy in MAs. The number of those belonging to the middle status socio-economic group – associate professionals and clerks – was stable.

We may summarize that Vilnius MA experienced a major shift in its occupational structure what illustrates concentration of wealth in this city. The concentration of more affluent groups was also prominent in other MAs, but on the lower scale. Therefore we can also expect that the processes of segregation are more intensive in Vilnius MA – the region, which, among other things, has experienced more change in the population related to greater mobility of the residents.

SOCIO-SPATIAL SEGREGATION – GENERAL THEORY AND LOCAL KNOWLEDGE

Table. **Changes in employment and occupational groups in MA, 2001–2011 (Source: Census 2001, 2011)**

		2001				2011				2001–2011, %, p. p.			
		TOT	MAN	PRO	UNS	TOT	MAN	PRO	UNS	TOT	MAN	PRO	UNS
Vilnius MA	No.	277224	30770	58777	18959	296047	42700	88588	19749	6.8	38.8	50.7	4.2
	%	100	11.1	21.2	6.8	100.0	14.4	29.9	6.7	0.0	3.3	8.7	–0.2
Kaunas MA	No.	179123	17878	34163	11496	167222	21423	46300	12423	–6.6	19.8	35.5	8.1
	%	100	10.0	19.1	6.4	100.0	12.8	27.7	7.4	0	2.8	8.6	1.0
Klaipėda MA	No.	98128	8032	13858	7452	90139	9935	19393	7239	–8.1	23.7	39.9	–2.9
	%	100	8.2	14.1	7.6	100.0	11.0	21.5	8.0	0	2.8	7.4	0.4

Serious economic and consequently social changes will inevitably cause certain spatial changes in any urban region, though short time economic or social changes will be expressed in built environment in a much longer period. An actual pattern of those changes depends on various unpredictable factors (Sýkora 2009). Despite the fact that the spatial structures adapt to the new situation much slower than the principles behind production of urban environment change, the combined effects of major political, economic and social transitions have resulted in a large-scale spatial changes in all Central and East European countries during the last two decades (Brade et al. 2009; Sýkora 1999, 2009; Ubarevičienė et al. 2011; Marcińczak et al. 2012).

The primary task of this study is devoted to the spatial quantitative analysis of the Census data illustrating the present situation and recent changes of segregation in three metropolitan areas, but the forces driving those changes cannot be ignored. The concept of segregation itself raises some discussion because often somehow different meanings of this term are being used. In this paper the term "segregation" is used according to the definition provided in the Dictionary of Human Geography. According to it, "the phenomenon of segregation is said to occur when two or more groups occupy different spaces within the same city" (Gregory et al. 2009). In that sense it basically corresponds to the concept of socio-spatial residential differentiation. Sometimes when the concept of segregation is used, it stresses the "forcible" character of the process when the low status groups are pushed out of the best locations and concentrate in the certain places at least partly against their preferences. The term "segregation" in that case would emphasize abilities of different groups, while the term "socio-spatial differentiation" can also indicate choices and preferences (Žilys 2013). There is no reliable data that would allow us

to precisely distinguish between various reasons of population concentration in MAs, though previous studies gave some examples of forcible segregation of the lowest status groups at the inter-regional level. One of the consequences of the segregation process is the concentration of certain groups in certain areas (Van Kempen, Özüekren 1998); therefore it is important to know more about the direction of the present changes.

Social segregation (mostly its three dimensions – class, race (ethnicity) and household structure) has been among the most topical themes in various fields of urban studies since the beginning of 20th century, when the famous Chicago school developed (Park et al. 1925; Hamnett 1996). Since then an urban change has been interpreted as an interaction between choices and constraints. Positivistic approaches relying on ecological principles or rationality of human behaviour, structuralist views stressing the role of city managers or the capitalism itself, behavioural or phenomenological approaches noticing influence of subjective knowledge of environment and experience – all of them found their rationality explaining urban transformations and segregation processes (Hall 1998). We may assume that preferences and choices of those groups, which have higher purchasing power, will make a certain impact on changing social environment in our cities. Managers of the city space – banks, city planners, municipal clerks, real estate and construction companies as well as many other actors are also playing their role. As the structuration theory presumes, structure-agency relations are mutually dependent and all of the factors (people making choices and constraints under which they act, so reinforcing them) play their role (Gregory 1981).

The main theoretical idea of this paper is related to the statement that changing social structure should sooner or later lead to the changes of the urban landscape, as increasing social inequalities result in segregation of urban space (Sýkora 2009). However, the relationships between social and spatial structures are not straightforward and are dependent on many local factors; therefore consequences are unknown in advance and might vary substantially between cities with similar historical pathways (Tammaru et al. 2016).

Unsurprisingly, studies investigating the socio-spatial structure of post-socialist countries of Central and East Europe were very scarce until very recently. It is especially true when talking about Lithuania. The first survey-based sociological research on the class structure of the society was carried out only since the very end of the 20th century (Masiulis 1997; Brazienė 2002; Matulionis 2005). Later on research on the social segregation has started. Works by Morkevičius and Norkus (2012), Aidukaitė (2014), Krupickaitė (2011), Žilys (2013) and Tereškinas et al. (2013) used a concept of residential segregation when analysing the major Lithuanian cities.

The studies carried out by Tereškinas (2012), Žilys (2013, 2015) and their colleagues have made the deepest insights into the segregation processes in the major Lithuanian cities so far. Using the sociological approach, authors have sought to reveal and compare the major residential differences between the typical districts of Vilnius, Kaunas and Klaipėda. Indexes of segregation and dissimilarity were measured, which revealed major social differences between the working class districts and suburban neighbourhoods, though in general the measured indexes were very low compared to the western cities.

The low-level census data has been used for the spatial quantitative analysis of the Vilnius city municipality. First, Marcińczak and co-authors (2015) analysed socioeconomic segregation in the post-socialist cities. This study revealed a relatively low level of segregation in Vilnius at the turn of millennium (2001). Similar results were obtained in the following study by the authors of this paper (Valatka et al. 2016), where deeper analysis of segregation processes and their causes has been conducted. The latter study was part of the comparative analysis of the European

capital cities, which revealed that the segregation of urban space was growing in most of the cities since the beginning of the 21st century, but it took place in different ways and pace (Tammaru et al. 2016). The results showed that the level of segregation is different between the three Baltic capitals: Tallinn appeared to be among the most segregated cities in Europe, and the situation in Vilnius and Riga is the opposite.

DATA AND METHODS

This study presents a spatial quantitative analysis, which is based on the 2001 and 2011 census data provided by the Statistics Lithuania. Both censuses took place during the post-crisis periods of a very modest growth; therefore we had two pictures of a stagnant development. The labour market was stagnant and out-migration was at its highest point. This is an important factor when assessing the reliability of the results obtained in this research, and especially making general conclusions about the 10-year period.

Metropolitan areas, instead of cities in their administrative limits (which is much more common), are the subjects of this research. Their outer limits illustrate the dispersion of the suburbanization processes, and they were determined at the level of LAU 2 regions (seniūnija). Several indicators were taken into account: the change in the population between 2001 and 2011, the number of new individual houses (built before 2006) and in-migration (number and origin of newcomers in 2010–2011*). The distinction between the urban core zone and the outer city was made according to the share of one-family dwellings in the census tracts.

In order to explore and to compare the processes of social segregation in different housing zones (city core and outer city (or suburbs)) of MAs we used standard indicators of socio-spatial residential differentiation – indexes of segregation, isolation and dissimilarity. The standard methodology of calculation was used (see Marcińczak et al. 2012; Jonston, Jons 2010). The analysis is based on the data of occupational structure. ISCO-89 major groups were used as a proxy for the social status because no data on incomes or other direct indicators of the social status of individuals was gathered during the population censuses. We consider occupational groups' data as a rational choice for the socio-spatial analysis at the census tract level, though the links between occupational and social status are not necessarily strict, especially in the post-communist countries with fast changing societies and a high share of shadow economy. The resent research carried out by the consultancy company "Hey Group" (2015) revealed that the gap between earnings for similar jobs are much greater in Lithuania compared to those of the Western European countries, thus an identical professional status does not guarantee a similar social status (therefore we use the concept of socio-economic status, which is more related to the person's position in the labour market than to its income, though often there is a correlation). Salaries for similar jobs might differ up to 60% in Lithuania (excluding ¼ of the highest and lowest-earning persons), while the West European average is only 33%. Although it can be expected that the socio-economic (occupational) segregation reveals common features and trends of social segregation, the exact situation cannot be established using this methodology. It is obvious that high differences in incomes for the same occupations hide the real picture to some extent. Thus a more detailed analysis, probably based on a case study approach, is needed for a better picture.

The spatial scale of analysis is an important dimension; segregation on a lower scale does not necessarily mean segregation on a higher one or vice versa. For example, taking into account the local administrative level (LAU 2 region) with some 20–30 thousand residents, the ethnic

* The census only captures the population moves in the last 12 months prior to the census.

segregation is minimal in Vilnius because Lithuanians constitute the majority in all of them. But if we look at the census tracts level (600 residents), we find that Lithuanians compose less than 15% in some areas and more than 90% in another areas.

We created some maps to better illustrate the segregation processes taking place in the MAs. The maps show differences in the concentration of high and low status occupational groups on the census tracts level in 2011. Due to the shortage of geographical data on the census tracts locations in 2001, changes of the concentration of different occupational groups at the LAU 2 level were used to illustrate the ongoing trends.

THE RESULTS OF QUANTITATIVE ANALYSIS OF SEGREGATION IN THE METROPOLITAN AREAS

Significant changes of the occupational structure have to make a certain impact on the socio-spatial residential differentiation. A rising share of the richest groups that can actively participate in the housing market should, hypothetically, be the main element of these changes in Kaunas, Klaipėda and especially in Vilnius. This section addresses the following questions: How even was the distribution of different occupational groups across the urban space? How their social distance was related to the spatial one? How much isolated from each other were different groups?

We used three indices to explore different aspects of the social segregation of the urban space in 2001 and 2011. The index of segregation (IS) indicates how evenly occupational groups are distributed across the space, and measures which share of the members from the selected group should be relocated to make their distribution even. The index of dissimilarity (ID) differs so that it compares a distribution of two selected groups. The index of isolation (II) illustrates the actual spatial separation of different groups, and shows a probability to meet the member of the same group in the analysed area. According to Johnston and Jones (2010), II "is a better surrogate for segregation than unevenness".

The previous analysis of the Vilnius city municipality indicated that there is a major spatial divide separating the highest and the lowest status socio-economic groups: managers (MAN) and professionals (PRO), on the one side, and unskilled workers (UNS), on the other side. Those groups tend to occupy different spaces and concentrate in different places. All calculated indexes showed that the highest degree of segregation is common for the most affluent and most disadvantaged (to the lesser extent) groups. Middle class residents are quite evenly distributed across the city (Valatka et al. 2016). Therefore, in this paper only the most socially distant groups are analysed.

To start with, we want to emphasize that the values of traditional global segregation measures – IS, ID – and the index of isolation (II) were low in all measured MAs in 2001 (IS below 20 indicates that segregation is negligible; IS exceeding 30 starts to indicate a high degree of differentiation of a certain group). The segregation character could be best described as visible only on the small scale and it was expected that segregation levels can potentially rise as existing (and growing) social inequalities may start to change the urban space. However, the initial stages of our analysis showed different results – not only IS levels were low – the actual decrease of the IS index in all studied MAs was monitored in 2011 (Fig. 1). Decreasing the IS index should indicate decreasing segregation levels in the MAs, but it actually only reveals increasing evenness of distribution of analysed groups in quite vast areas. A fast growth in the number of the high status groups resulted in their more even distribution, especially in suburbs, where new settlements of higher classes were scarce and highly concentrated back in 2001. Though

suburban areas remain the most uneven in a sense of distribution of the highest and lowest status groups, the most intensive changes took place here as well. The largest decrease of IS was monitored among the group of professionals and this goes in line with the fact that this group was growing fastest. If the present trend will persist, we may expect that the previously poor suburbs will turn into the richest areas in the coming decades.

Figure 1 also reveals that the bigger the city is the more uneven its residential space is. Vilnius remains the most uneven city, while Klaipėda became less even in a sense of distribution of the most prosperous group of managers than Kaunas, where the segregation index for this group dropped quite high during the last decade. The analysis of other indices should help to understand if this trend was caused by the higher mobility of the richest group in the rapidly developing port city. A growing number of managers and professionals and their suburbanization to the newly constructed neighbourhoods led to their more even distribution in all parts of the studied regions. The decrease was the largest in the areas where individual housing dominates – outer cities and suburbs, while urban cores were much more stable. Suburbanization processes have been changing previously much poorer semi-rural areas. Changes in the distribution of the least prosperous and consequently less mobile group of unskilled workers were smaller. Their distribution became less even in the Kaunas suburban zone. A stable situation in the city core areas could also be explained by the fact that the more expensive housing development, which took place during 2001–2011, mostly had an infill character. New housing stock was scattered around the whole city and did not form any bigger residential areas. There were few exceptions – new greenfield Northern housing estates and brownfield redevelopment of the former military area in Žirmūnai in Vilnius. Moreover, heating compensation mechanism decreases any incentives for lower income and elderly home-owners to move out from their 'luxury' (usually in terms of space) apartments. They have a quite similar power to own large, non-renovated apartments as new households have power to rent them. To sum up, a global socio-spatial segregation in MAs is strongly conditioned by a housing structure and has a small-scale polarized character reaching the highest levels in the outer city and outside the formal city limits. Although IS indexes were the highest in Vilnius, all MAs were quite even in a sense of spatial distribution of different occupational groups.

The analysis of the index of dissimilarity in MAs showed quite different results, which raised questions about the actual trends of segregation in the urban space (Fig. 2). Distances

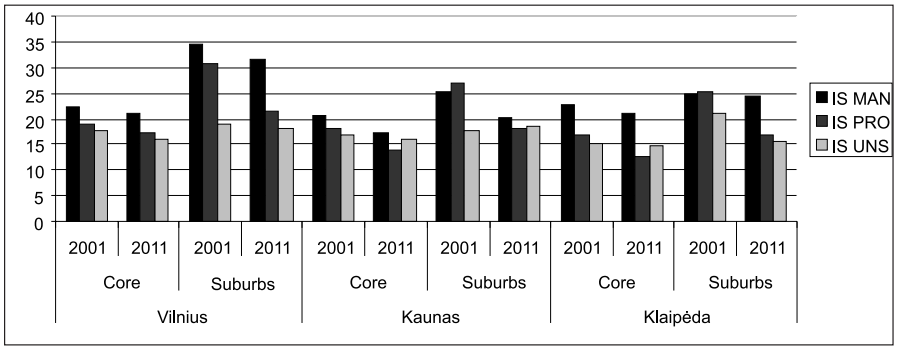

Fig. 1. Index of segregation of occupational groups in the metropolitan areas of Lithuania in 2001 and 2011 (Source: Census 2001, 2011; authors' figure)

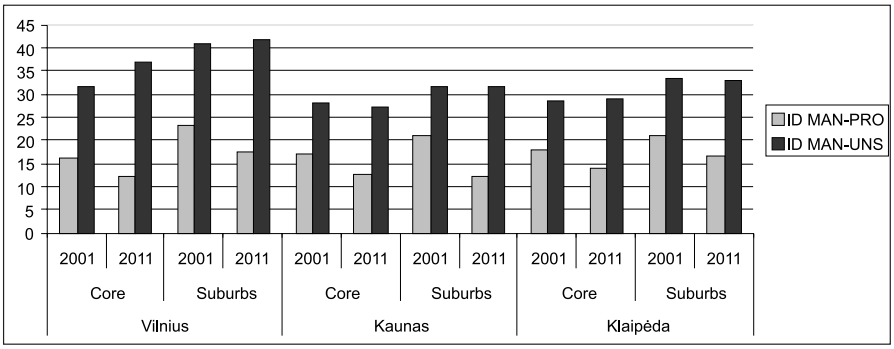

Fig. 2. Index of dissimilarity between occupational groups in the metropolitan areas of Lithuania in 2001 and 2011 (Source: Census 2001, 2011; authors' figure)

between opposite groups did not decrease and even grew (particularly in Vilnius). It suggests that decreasing IS only shows spread of more prosperous groups, which still live separately from less affluent groups. The growing number of high status residents and spreading "islands" of their concentration (in suburban settlements or new infill residential development inside the cities) decreases IS, but actually does not reduce spatial segregation at a smaller scale. On the other hand, the spatial distance between managers and professionals decreased; they started to live closer to each other in all MAs and their parts. This could be related not only to the fast growth of the number of professionals but also to the increasing incomes among this group because of new well-paid jobs in IT and related business services.

We may sum up that still moderate but growing separation of high and low status groups in Vilnius basically confirms expectations one could have about the post-communist society with growing income inequalities. Smaller cities with smaller changes in the labour market are more stable and less segregated. ID indicated that the spatial segregation is not a problem for the second-rank cities at the moment.

The index of isolation is probably the best indicator illustrating how much apart different groups live in the area. While the previous indices revealed a quite stable situation, especially in smaller MAs, II shows quite different results and the processes we have expected to find. The graphs in Fig. 3 show the distribution of occupational groups in different parts of MAs and the change in their isolation between 2001 and 2011. As in the cases of other indices, the most polarized situation was in Vilnius, and smaller cities had less segregated spaces. However, there were trends of growing separation among the higher status groups in almost all parts of all MAs. The differences were also visible among the low status groups, where isolation (II) was lower and relatively stable in most of the cases, except Vilnius. It could suggest that lower groups were concentrating in less attractive parts of the city. We may hypothesize that a great deal of this concentration is related to those in-migrating to the city and, namely, to its core areas. It would explain why the growth of II of the lower status groups is monitored only in Vilnius (flows of in-migration are much more numerous here). A character of the profiles suggests that the high status groups are more mobile, while the existing socio-economic system prevents lower status groups to change their residential location.

We may summarize that although most of the groups were quite evenly distributed across the urban areas, a real spatial segregation understood as an isolation from the other groups is

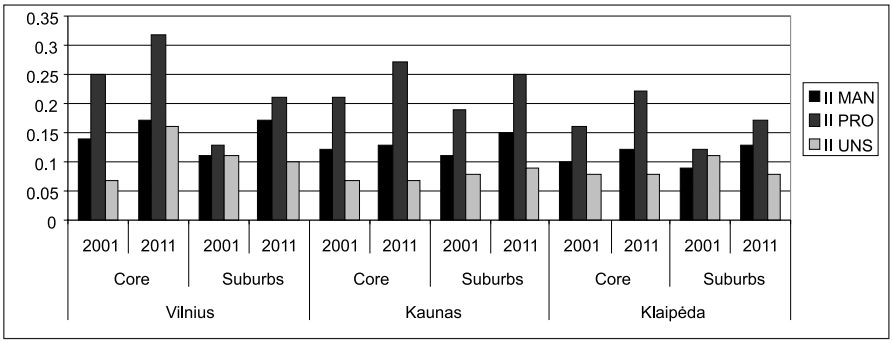

Fig. 3. Index of isolation of occupational groups in the metropolitan areas of Lithuania in 2001 and 2011 (Source: Census 2001, 2011; authors' figure)

quite high in the case of managers and especially professionals that tend to live in their own "worlds". The actual social segregation based on income differences would reveal even more polarized situation because of high income differences within the occupational groups. Part of managers and professionals, which belong to the high status socio-economic group, cannot be qualified as having the high social status since their income levels are too low to enable them to move out of the Soviet housing estate neighbourhoods. The presence of these groups in such areas namely illustrates their low income levels instead of even spatial distribution of the high status social group. This could be confirmed by the absence of higher class cars in the parking lots of these neighbourhoods, what can be noticed by everyone visiting them.

CHANGING LOCAL PATTERNS OF SEGREGATION IN THE METROPOLITAN AREAS

The index based analysis, which we presented above, is a helpful tool to explore the trends of socio-economic segregation. Such method does not require cartographic background and informs us about the spatial transformations when the actual spatial pattern of the measured phenomena is unknown (we do not have georeferenced data for 2001 census). On the other hand, mapping of the studied phenomena might reveal different trends, which could be hidden because of levelling effects of contradictory processes. For a better understanding of the processes of segregation we have created some maps that illustrate changing concentrations of the professional groups in the MAs at the LAU 2 level (seniūnija). The distribution of occupational groups in 2011 is shown on the lowest possible level – census tracts.

The changing distribution of the most prosperous occupation groups (managers and professionals are analysed as a single group based on the previous findings that showed similar trends in their segregation) clearly correlates to the more general trends of the urban sprawl (Fig. 4). Once again this confirms the fact that it is namely the wealthier households that are taking place in the suburbanization process and this is evident in all MAs. Although the proportion of high status groups grew in all seniūnijas of all MAs, the pace of that growth was highly differentiated. The biggest increase was evident in the suburban areas, especially to the North of Vilnius City. For example, the number of managers increased more than 4 times in the Riešė seniūnija and 4.5 times in the Sudervė seniūnija.

The Soviet-built microdistricts, especially those near the big industrial zones, became relatively less prosperous in Vilnius and Kaunas – the proportion of managers increased there by

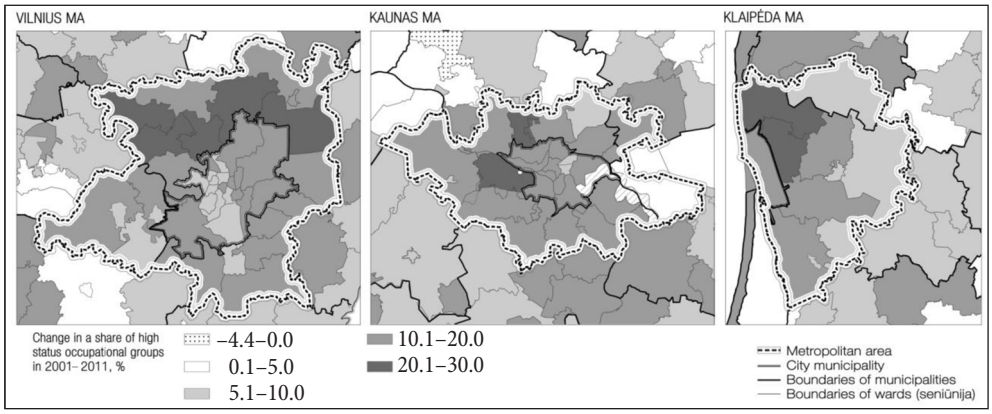

Fig. 4. Change in a share of high status occupational groups in metropolitan areas of Lithuania in 2001–2011 (Source: Census 2001, 2011; authors' figure)

5–10 percent points, what is below the average (data for Klaipėda is not available, because it does not have this administrative level). Such stagnant (or in fact diverging) areas include Vilkpėdė and Naujininkai in Vilnius and Dainava and Gričiupis in Kaunas. The western seniūnijas of Vilnius City with the dominant Soviet housing were also among the stagnant ones (Lazdynai, Karoliniškės, Šeškinė, Pašilaičiai, Baltupiai, Viršuliškės), notwithstanding that some new development projects took place here. In all three MAs the highest increase in the high status proportion has been found outside the municipal borders, though this growth was concentrated only in some, mostly northern, directions. Those are the most expensive districts, located closest to the cities and therefore attracting the wealthiest households. An increase of residents belonging to the highest status groups was less evident in more distant areas of the urban regions and outside the MA where the number of population was decreasing. This illustrates ongoing metropolization and following peripherisation processes in the country.

Having in mind the changes in the distribution of the higher income groups, one could expect that the lower status groups should show the opposite character (Fig. 5). This is largely true. Suburban zones of all MAs are characterised by the decreasing share of the lower income residents, though the spatial patterns of this decrease are quite different. Vilnius MA had a highly differentiated picture with a stable situation in the urban core (especially monofunctional housing zone), the modest decrease in the south-eastern part and extreme decrease (more than 20 p. p.) in the peripheral north-western part (the share of unskilled workers decreased by 35 p. p. in Dūkštų seniūnija, for example). Situation in Klaipėda is the opposite – all suburban areas (which predominantly are located outside the city limits, unlike in Vilnius) have quite similar trends of change with a quite fast decrease in a share of unskilled workers, while the situation inside the city municipality was very stable. This trend illustrates a relative redistribution of wealth in this city. More prosperous residents are leaving the city and we could see the reverse situation, when a previously richer city becomes poorer than its surroundings. This trend exists in all three MAs, but it is expressed best in Klaipėda, which has a quite compact and even urban core as well as a quite uniform natural landscape outside the city. Urban and natural landscapes in Kaunas and especially in Vilnius are much more differentiated and fragmentized, what could explain more diverse trends here.

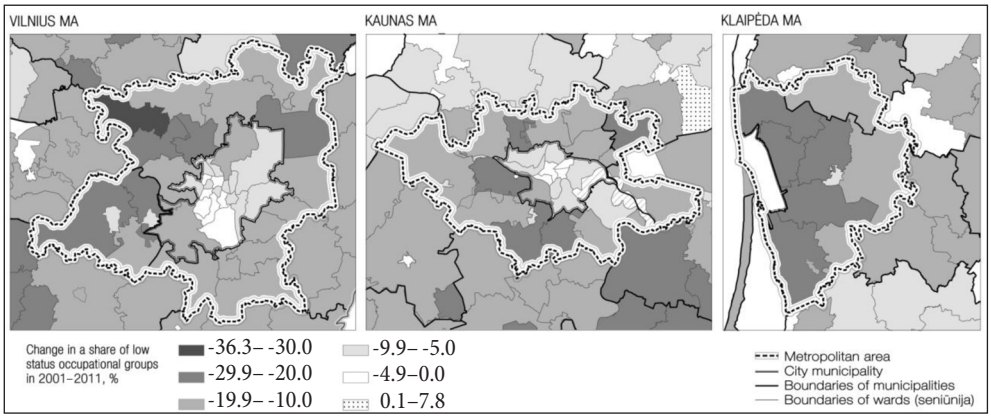

Fig. 5. Change in a share of low status occupational groups in metropolitan areas of Lithuania in 2001–2011 (Source: Census 2001, 2011; authors' figure)

The following maps (Figs. 6, 7) illustrate concentration of different occupational groups at the census tracts level in 2011. It can be seen that significant spatial residential differentiation exists in our cities, notwithstanding that the measured indices did not reveal that. All three MAs had neighbourhoods where the share of high status residents exceeded 2/3 or even 3/4 of all labour force (Fig. 6); it was mostly the suburban areas at the outskirts of the cities. On the other hand, all MAs also had territories where high status groups composed less than 40% or even 20% and these were the neighbourhoods of the Soviet housing estates located near the big industrial zones. In general, the areas located to the north of the cities are relatively richer and the southern parts are poorer; this goes in line with the findings of the previous studies – the major divide between north and south. The central parts of Vilnius and Kaunas cities also held neighbourhoods with higher concentration of wealthier residents (more than 2/3 of residents), but poorer

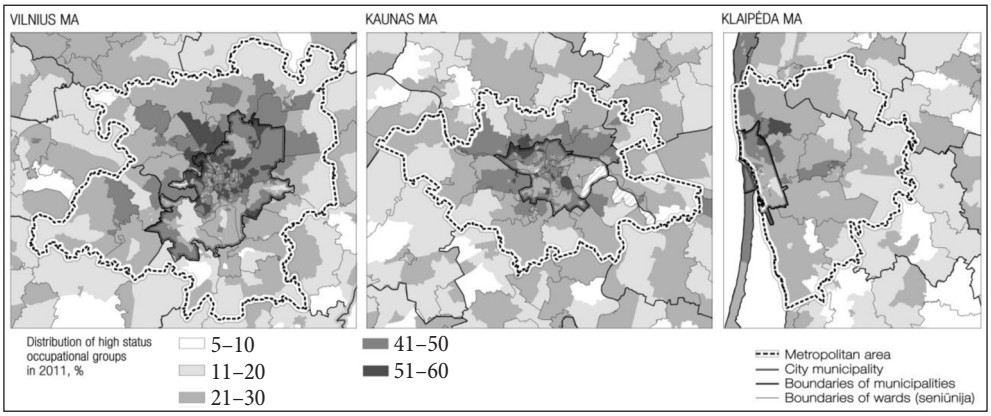

Fig. 6. Concentration of high status occupational groups in census tracts in metropolitan areas of Lithuania in 2011 (Source: Census 2001, 2011; authors' figure)

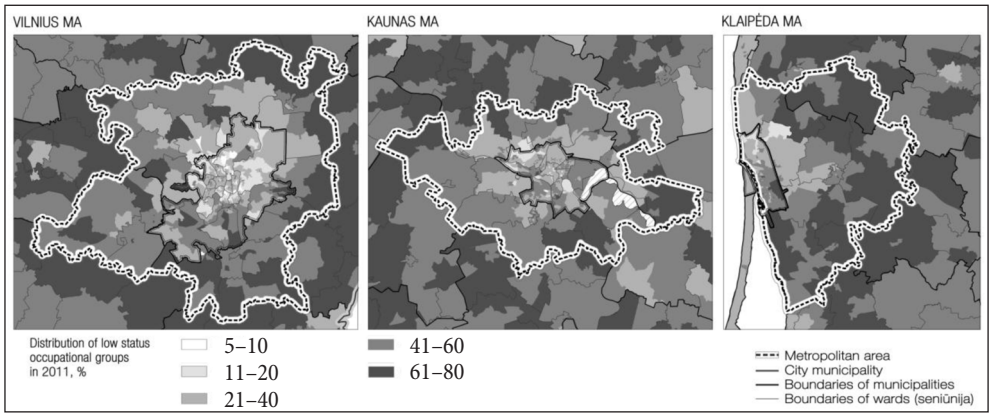

Fig. 7. Concentration of low status occupational groups in census tracts in metropolitan areas of Lithuania in 2011 (Source: Census 2001, 2011; authors' figure)

areas (less than 1/3) were located right next to them. Such a small scale fragmentation could be the reason of low levels of IS. Klaipėda once again emerged as the most uniform MA.

The distribution of low status occupation groups is somehow opposite to the one of the richest groups (Fig. 7). Due to the low numbers of unskilled workers we had to map the distribution of lower status employees (there were fewer than 10 unskilled workers in many census tracts, therefore publication of such data would be indiscrete). Service workers, craft workers, machine operators and unskilled workers are usually qualified as less skilled and less paid workforce (Marcińczak et al. 2015). We did not analyse the distribution patterns of unemployed residents due to the fact that the short-time crisis effect could have made a serious impact in this case.

Southern industrial parts of all city municipalities were the areas with higher concentration of the low skilled workers. The most peripheral parts of MAs and the settlements outside their limits also had higher concentration of lower status groups; those are traditionally poorer rural areas with a minimal influence of suburbanization. Some "islands" of poorer neighbourhoods could be found even in otherwise rich areas, and it is often related to the former satellite industrial towns or rural settlements. A typical example of such "islands" could be found in the rich northern part of the Vilnius city municipality, where the concentration of poorer groups exceeded 2/3 in the Naujieji Verkiai neighbourhood (Fig. 7). The distribution of lower income residents once again confirms that high degree of fragmentation is common in the urban areas, especially in Kaunas and Vilnius. Rich areas were next to the poor ones; for example, the Old Town of Kaunas was next to one of the poorest neighbourhoods – Vilijampolė or "rich" tracts of Čiurlionio Street in Vilnius were located near much poorer tracts of Savanorių Avenue. Much more even Klaipėda city confirms our hypothesis that the uniform urban landscape prevents small scale fragmentation and that the social division of urban space has less fragmented character, what somehow prevents segregation of urban space at the micro level. However, this cannot prevent segregation at the macro level, as the poorer groups concentrate in the Soviet housing estates in the industrial southern part of Klaipėda MA. Their concentration is monitored even in the southern suburbs (namely, former "datcha" areas), what is not the case in Vilnius or Kaunas, where close suburbs contain wealthier occupational groups. In the case of Klaipėda,

richer groups tend to choose the northern location closer to the sea resorts and forests. A small micro scale (census track level) segregation is not perceived as a serious problem, because it does not create larger "seas" of poverty and consequently does not damage urban social environment to the critical level; macro level trends in the studied cities and especially in Vilnius, on the other hand, should rise attention, because it could result in a formation of large deprived areas with all negative social consequences common for many Western cities.

CONCLUSIONS

Our results demonstrated that the levels of socio-economic segregation in the metropolitan areas of Lithuania were very low in the first decade after gaining independence from the USSR. This can be confirmed by the low levels of all measured indexes, though differences in the distribution of the socio-economic groups were obvious at least since 2001. Major socio-spatial divisions of the wealthier northern parts and poorer southern ones have already existed in all analysed cities. These divisions tended to increase in 2001–2011, but the processes of urban space differentiation were not similar. Various socio-economic groups are still quite evenly distributed throughout all Lithuanian metropolitan areas, and this evenness seems to be growing further. Suburban zones remain the most differentiated spaces; however, rapid changes are taking place here due to the suburbanisation of more affluent groups.

The social structure of all MAs is unstable. The size of the occupational groups at the city level changed as much as 50% in the 10-year period. A popular belief about the small segregation does not approve if we take into consideration a large share of housing estates, which definitely has a smoothing effect on socio-economic segregation. Lithuanian cities seem to be segregated both at micro (small neighbourhoods) and macro (whole city and MA) levels, though intermediate "mezo" divisions are quite small yet. Low and high occupational status groups are living side by side in the housing estates, which is a dominant housing type in Lithuanian MA, but the question of real social positions of higher status professions residents remains. A scale of socio-economic segregation of the lowest status occupational groups in the inner and outer city should be considered to be moderate. Because of the data limitations, a quantitative analysis is not sufficient in order to reveal the actual social segregation of urban space, therefore different approaches such as case studies or field research should be employed.

The analysis of the local patterns of segregation demonstrated that the small areas of the city centres underwent a gentrification wave. We have identified that the social status of the residents in the oldest housing estates – even the ones with a good image – is in decline compared to the newer ones. Though socio-economic segregation at the micro level is evident, the real threat for the stability of urban social systems is related to the concentration of lower socio-economic groups in the southern industrial parts of all analysed cities and especially Vilnius. Our related study showed a growing concentration of ethnic minorities in the same areas of the city, what makes this trend even more threatening.

The spatial analysis suggests that actual patterns and levels of segregation depend on the structure of urban landscape; therefore rational planning and controlled sprawl of metropolitan areas could reduce spatial segregation. Planning and construction policies should aim to prevent development projects of low quality housing with potentially negative images, which could become "attraction" nodes or concentration points of exceptionally socially disadvantaged groups, what might already happen in some newly-built dense and low quality housing estates in Vilnius and other cities.

Received 25 March 2015
Accepted 12 November 2015

References

1. Aidukaitė, J. 2014. "Housing Policy Regime in Lithuania: Towards Liberalization and Marketization", *GeoJournal* 79(4): 421–432.
2. Boren, T.; Gentile, M. 2007. "Metropolitan Processes in Post-communist Communist States: An Introduction", *Geografiska Annaler* 89(2): 95–110.
3. Brade, I; Herfert, G; Wiest, K. 2009. "Recent Trends and Future Prospects of Socio-spatial Differentiation in Urban Regions of Central and Eastern Europe: A Lull Before the Storm?" *Cities* 26(5): 233–244.
4. Brazienė, R. 2002. *Socialinių sluoksnių formavimasis nepriklausomoje Lietuvoje*. Kaunas: KTU.
5. Burneika, D.; Daugirdas, V.; Ubarevičienė, R. 2014. "Migration as a Factor of Development of the Depopulating Areas in East EU Countries – the Case of Lithuania", *Europa XXI* 27: 79–94.
6. Demko, G. J.; Regulska, J. 1987. "Socialism and Its Impact on Urban Processes and the City", *Urban Geography* 8(4): 289–292.
7. Eurostat. 2015. *Gini Coefficient of Equivalised Disposable Income*. Available from: http://ec.europa.eu/eurostat/
8. Gentile, M.; Tammaru, T.; van Kempen, R. 2012. "Heteropolitanization: Social and Spatial Change in Central and East European Cities", *Cities* 29(5): 291–350.
9. Gregory, D. 1981. "Human Agency and Human Geography", *Transactions of the Institute of British Geographers* 19(2).
10. Gregory, D.; Johnston, R.; Pratt, G.; Watts, M.; Whatmore, S. (eds.). 2011. The *Dictionary of Human Geography*. John Wiley & Sons.
11. Hall, T. 1998. *Urban Geography*. London: Routledge, 16–28.
12. Hamnett, Ch. 1996. *Social Geography. A Reader*. Arnold: London, 7–26.
13. *Hey Group*. 2015. Available from: http://www.haygroup.com/lt/Press/Details.aspx?ID=44410, accessed on 05/11/2015.
14. Johnston, R. J.; Jones, K. 2010. "Commentary", *Environment and Planning* 42(6): 1264–1270.
15. Krupickaitė, D. 2011. "Vilnius – Between Persistence and Socio Spatial Change", *Europa Regional* 19: 21–31.
16. Lazutka, R. 2003. „Gyventojų pajamų nelygybė", *Filosofija. Sociologija* 2: 22–29.
17. Marcińczak, S.; Musterd, S.; Stepniak, M. 2012. "Where the Grass is Greener: Social Segregation in Three Major Polish Cities at the Beginning of the 21st Century", *European Urban and Regional Studies* 19(4): 383–403.
18. Marcińczak, S.; Tammaru, T.; Novák, J.; Gentile, M.; Kovács, Z.; Temelová, J.; Valatka, V.; Kährik, A.; Szabó, B. 2015. "Patterns of Socioeconomic Segregation in the Capital Cities of Fast-track Reforming Postsocialist Countries", *Annals of the Association of American Geographers* 105(1): 183–202.
19. Masiulis, K. 1997. „Lietuvos elitas: Ekonominės vertybės. Politinės orientacijos. Prognozės", *Pradai*. Vilnius.
20. Matulionis, A. 2005. *Lietuvos socialinė struktūra*. Vilnius: Firidas.
21. Morkevičius, V.; Norkus, Z. 2012. „Šiuolaikinės Lietuvos klasinė struktūra: neovėberiška analizė", *Sociologija. Mintis ir veiksmas* 31(2): 75–152.
22. Park, E.; Burgess, E.; McKenzie, R. 1925. *The City: Suggestions for Investigation of Human Behavior in the Urban Environment*. Chicago: University of Chicago Press.
23. Smętkowski, M.; Gorzelak, G.; Kozak, M.; Olechnicka, A.; Płoszaj, A.; Wojnar, K. 2011. *The European Metropolises and Their Regions: From Economic Landscape to Metropolitan Networks*. Warszawa: Wydawnictwo Naukowe Scholar.
24. Stanilov, K. (ed.). 2007. *The Post-Socialist City: Urban Form and Space Transformations in Central and Eastern Europe after Socialism*. Dordrecht: Springer.
25. *Statistics Lithuania*. 2015. Available from: http://osp.stat.gov.lt/en/web/guest/home
26. Sýkora, L. 2009. "Post-Socialist Cities", in *International Encyclopedia of Human Geography*, Vol. 8, eds. R. Kitchin, N. Thrift. Oxford: Elsevier, 387–395.
27. Sýkora, L. 1999. "Changes in the Internal Spatial Structure of Post-communist Prague", *GeoJournal* 49: 79–89.
28. Szelenyi, I. 1996. "Cities Under Socialism – And After", in *Cities after Socialism. Urban and Regional Change and Conflicts in Post-Socialist Societies*, eds. G. Andrusz; M. Harloe; I. Szelenyi. Oxford: Blackwell

Publishers, 286–317.
29. Tammaru, T.; Marcińczak, S.; van Ham, M.; Musterd, S. (eds.). 2015. *Socio-Economic Segregation in European Capital Cities: East Meets West*. London and New York: Routledge.
30. Tereškinas, A.; Žilys, A.; Indriliūnaitė, R. 2013. „Pilietiškumas ir tapatumas šiuolaikinėje visuomenėje: socialinė atskirtis ir socialinė segregacija Lietuvos didmiesčiuose", *Vytauto Didžiojo universiteto mokslo klasteriai* 2: 171–185.
31. Ubarevičienė, R.; Burneika, D.; Kriaučiūnas, E. 2011. "The Sprawl of Vilnius City – Establishment and Analysis of Growing Urban Region", *Annales Geographicae* 43–44: 96–107.
32. Valatka, V.; Burneika, D.; Ubarevičienė, R. 2016. "Large Social Inequalities and Low Levels of Socio-economic Segregation in Vilnius", in *Socio-economic Segregation in European Capital Cities: East Meets West*, ed. T. Tammaru. Routledge: London and New York, 313–332.
33. Van Kempen, R.; şule Özüekren, A. 1998. "Ethnic Segregation in Cities: New Forms and Explanations in a Dynamic World", *Urban Studies* 35(10): 1631–1656.
34. Žilys, A. 2013. „Rezidencinė diferenciacija ir skirtumai Lietuvos moderniajame mieste: (po)sovietinis ar Vakarų miestas?" in *Kultūra ir visuomenė, Socialinių tyrimų žurnalas* 4: 67–101.
35. Žilys, A. 2015. *Modernios visuomenės miesto plėtra: rezidencinė diferenciacija Lietuvos didmiesčiuose*. The Doctoral Thesis. Kaunas: VDU, 114–152.

DONATAS BURNEIKA, RŪTA UBAREVIČIENĖ, VYTAUTAS VALATKA

Socioekonominė rezidencinė diferenciacija augančiuose Lietuvos miestų regionuose

Santrauka

Straipsnis aptaria socioekonominės Lietuvos miestų regionų rezidencinės diferenciacijos (segregacijos) tendencijas XXI amžiuje. Erdvinės kiekybinės analizės, paremtos visuotinių gyventojų surašymų duomenimis, metodu tiriami Lietuvos miestų regionai (metropolinės erdvės) bei pagrindinės jų sudedamosios dalys – branduoliai bei priemiesčiai. Pagrindinės profesinės grupės buvo naudojamos kaip gyventojų socioekonominio statuso rodiklis, nors ryšiai tarp gyventojų profesijos statuso ir jų pajamų dydžio nėra idealūs. Surašymo apylinkės, apimančios teritorijas, kuriose vidutiniškai gyveno apie 600 žmonių, buvo naudojamos kaip teritorinis analizės pagrindas apskaičiuojant naudotus segregacijos indeksus. Segregacijos indeksas, nepanašumo indeksas bei izoliacijos indeksai buvo apskaičiuoti, siekiant įvertinti įvairius segregacijos aspektus Lietuvos miestų metropolinėse erdvėse. Nors visi indeksai rodė palyginti nedidelę miestų regionų erdvės segregaciją, tačiau buvo pastebėti esminiai skirtumai skirtinguose miestuose ir jų dalyse. Segregacijos indeksas rodo tai, kad miestams būdingas mažas ir mažėjantis įvairių grupių išsidėstymo netolygumas. Indeksai, tiksliau iliustruojantys faktinę gyventojų segregaciją (t. y. teritorinį atskirtumą), labai aiškiai iliustruoja esamus ir augančius pasiskirstymo skirtumus tarp aukštesnio ir žemesnio statuso socioekonominių grupių. Kuo didesnis miestas, tuo didesni segregacijos rodikliai, ypač tai pastebima Vilniuje. Priemiesčiai buvo ir lieka labiau segreguoti nei miesto branduoliai. GIS analizės atkleidė, kad visuose miestuose, o ypač Vilniuje, pastebimi augantys skirtumai tarp turtingesnių šiaurinių ir mažiau pasiturinčių pietinių dalių. Kaunui ir Vilniui būdinga žymiai didesnė turtingų ir mažiau pasiturinčių grupių išsidėstymo miesto regionuose fragmentacija nei Klaipėdoje. Tai gali būti siejama su žymiai aukštesniu kultūrinio ir gamtinio kraštovaizdžio fragmentacijos laipsniu šiuose miestuose.

Raktažodžiai: Vilnius, Kaunas, Klaipėda, metropolinė erdvė, miestų regionai, socialinė segregacija, pokomunistinis miestas, rezidencinė diferenciacija