Residential Segregation at the Local Level in Poland.
Case Studies for Praga Północ, Włochy and Ursynów

Abstract

The aim of this article is to answer two questions concerning the scale and the pattern of residential segregation in Warsaw at the local level and the character of contemporary processes accompanying and modifying this phenomenon. While examining residential segregation we have applied a multidimensional approach to underline the complex nature of this phenomenon. We have focused on data concerning different demographic and socio-economic categories. Furthermore we indicate and describe three socio-spatial, contemporary processes that have accompanied an increase in social inequalities in Warsaw (the creation of enclaves of poverty and wealth and the process of gentrification). The research reveals increasing social inequalities at the local level that began in the socialist era and have strengthened during the transformation period, as well as the stability of the socio-spatial pattern in selected districts that influence their local specifics.

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Introduction

Research on residential segregation has proceeded through several stages but has not lost any of its importance. Drawing on the wealth of literature we can define four key phases of research: "the ecological approach; research on the relationship between social and spatial inequalities inspired by a global city thesis; studies that begin with the impact of welfare regimes on residential segregation; and, most recently, studies that emphasise the importance of the contextual embeddedness of residential segregation" (Tammaru et al. 2016:3). In line with the last approach, which allows for a better understanding of the multidimensionality of factors affecting this phenomenon, we have, in this article, built a discussion around the local socio-spatial realties, that is, built environments, social relations inscribed in property patterns, urban histories, and ideologies as a factor influencing segregation structures in Warsaw districts.

The aim of the article is to answer two questions concerning the scale and the pattern of residential segregation in Warsaw at the local level and the character of contemporary processes accompanying and modifying this phenomenon.

The research was conducted at the local level, starting from the premise that processes of globalisation create a fragmentation of the city and enhance microscale segregation, but these are not seen in traditional analysis. Based on previous statistical analyses (Jaczewska & Grzegorczyk 2016) we selected three districts for which the social characteristics were the best (Ursynów), the worst (Praga Północ) and average (Włochy). [1] Further

we described three socio-spatial, contemporary processes that modify residential segregation in Warsaw: the creation of enclaves of poverty, wealth, and gentrification.

Research on segregation in Warsaw has a long-standing tradition, documented in countless publications. A significant amount of research focuses on changes in the socialist era, transformation period, and later (Węcławowicz 1979, 1998, 2004, 2008; Jałowiecki et al. 2003; Atlas Warszawy 2009, Marcińczak 2013, Górczyńska 2014, Smętkowski 2009). Some are dedicated to changes that occurred after the transformation, and some of these refer to the analysis of socio-spatial changes that took place in Warsaw as compared to other post-socialist cities (Marcińczak 2013, Tsenkova & Polanska 2014, Marcińczak et.al. 2015). These studies highlight growing social inequalities, but also the stability of the historically conditioned socio-spatial pattern.

We can find a considerable number of academic papers referring to changes in social segregation processes, but there are fewer studies focusing on the pattern. Segregation multidimensional analyses conducted at the local level are applied even less often. In this paper we have attempted to combine the results of research on the segregation pattern with socio-spatial processes that change the positioning of spatial inequalities.

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[1]Social characteristics were measured using data on professional categories and education. Located in the south of Warsaw, Ursynów constituted the biggest of the districts investigated and it was divided, based on the 2002 census, into 101 census

areas with populations ranging from 119 to 3373 inhabitants. Praga Północ is located in the east of Warsaw on the right side of the river that runs through the city. This district contained 67 census areas, each inhabited by between 484 and 2,196 people in 2002. Situated in the southwest of the capital, Włochy was divided into 41 census tracts with a range of 364 to 2,160 inhabitants in 2002. In 2016 Ursynów was inhabited by 149 thousand residents, Praga Północ by 66 thousand and Włochy by 41 thousand. Social characteristics were measured using data on professional categories and education.

As Marcińczak et.al. (2015:188) has stated "there is a general consensus in the literature that the implementation of socialist town planning principles and the administrative allocation of housing made socialist cities less segregated than their capitalist counterparts," whereas housing inequalities were more important than spatial segregation. Nevertheless the transformation has driven an increase in inequality, which is partially visible in a special manifestation that is often characterized by a spatially separated concentration of poor and rich.

In most Central and Eastern European cities researchers have explored the different underlying processes that contribute to segregation; processes such as gentrification and urban regeneration (e.g., Sykora 2005), suburbanisation (e.g., Mantey 2016, Tammaru 2005), demographic and lifestyle changes (e.g., Haase et.al. 2012), and the proliferation of gated communities (e.g., Polanska 2014). We concentrated our considerations on the creation of enclaves of poverty, wealth, and gentrification. The chosen processes have developed spontaneously and often rapidly, causing an increase in contrast that is demonstrated visually at the local level.

Enclaves of poverty, defined as places in which an underclass culture develops (Warzywoda-Kruszyńska 2011, citing Murray 1996), can be observed in former industrial cities, small towns, and villages (mainly former state-owned collective farms) (Skulmowska-Lewandowska 2006). The research underlines the *permanent character of enclaves*, the structural and cultural character of their creation, and the limited effectiveness of various aid institutions.

Gated communities that "reflect a deepening physicality to existing levels of segregation" (Atkinson 2008:3) are on the opposite side of the axis and can be treated as an example of enclaves of wealth. Gated communities are defined as estates with limited access, where public space has been privatised (Blakely, Snyder 1997). In Poland we can speak more often about "gated housing estates" (Jaczewska 2014) as the scope of enclosure is usually smaller than those seen in the US. Their popularity in Poland stems from many causes: the reaction to the housing conditions under communism and liberal politics, the neglect of spatial planning during the transition period and also currently (Polanska 2011, Gądecki 2009), not to mention the role of developers (Gądecki & Smigiel 2009).

Gentrification, which is "a typical feature of a developed capitalist city" (Grzeszczak 2010:13, citing Williams & Smith 1986) is the third process we analysed. It is defined as a process, particularly "on account of its universality, its scale and, its regularity in the differentiation of urban space" (Grzeszczak 2010:13, citing Smith 1982). In Poland, it is turning into an important, although unplanned form of housing rehabilitation (Grzeszczak 2010, citing Jarczewski 2010). Gentrification may take different forms, as in: (1) "apparent gentrification" when social change is not accompanied by physical improvement, (2) redevelopment that is connected to the development of new buildings in a district, or (3) communal housing restitution by pre-war owners; the last type is characteristic of post-socialist cities (Górczyńska 2014).

Research methodology

In this article a multidimensional approach has been applied, after Massey and Denton (1988) (knowing imperfection of selected measures) to underline the complex nature of the segregation phenomenon (Grzegorczyk & Jaczewska 2015). It includes the calculation of the following measures, which corresponds to five segregation dimensions: the dissimilarity index D (dimension of inequality), the $_xP_x$ isolation index (dimension of exposition), the DEL delta index (dimension of concentration), the ACE absolute centralization index (dimension of centralization), and the SP spatial proximity index (dimension of clustering) (for formulas see in Grzegorczyk & Jaczewska 2015). Cartograms were developed using

the LQ_p (modified location quotient) for which the quotient results were the highest. As a starting point, census data from 2002[2] for age groups, the number of members of independent households, education, and the receipt of various social welfare benefits, were used to reveal which population categories were segregated to the greatest extent (Appendix 1). The names of urban units were used to localise processes since census tracts have no specific name (Appendix 2). The second section contains the results of our own qualitative observations (conducted in 2014–2016) and reference materials.

Socio-spatial realities and residential segregation

Ursynów had the highest segregation values with regard to the various indicators and data compared to other districts (although the scale of segregation was still small) (Figures 1, 2, 3). This applied, above all, to people living off state-provided allowances, mostly unemployment benefits and social welfare, but also, in terms of education, to those with the poorest education, as well as all age groups, in particular the elderly. Ursynów showcased the biggest spatial variations in terms of demography. The district was divided into three parts: (1) the northern part, inhabited by an older population, and which encompassed enclaves with high concentrations of people with university education, as well as enclaves of people living off social welfare; (2) the southern part (encompassing Natolin and Kabaty) was demographically young and boasted the highest concentration of inhabitants with higher educations, although here too, one might encounter enclaves of welfare-dependent population;[3] and (3) the western part, which was inhabited by elderly and people with poorer education levels, it also stands isolated from the rest of the district by a major exit route for Warsaw.

Praga Północ was the most uniform of all the analysed districts, with segregation indices usually ranging lower than in the other districts (Figures 1, 2, 3). However in centrally located Nowa Praga one could clearly discern the so-called "Bermuda Triangle of Praga" – an area inhabited by a younger, poorly educated population, living off welfare.

Włochy is a highly diversified district with intermediate measures of segregation (Figures 1, 2, 3). The highest segregation indicator (*D*) compared to other districts was recorded for households with the biggest number of members and for inhabitants with university educations, although segregation was more pronounced for poorly educated people, as it was in the other areas. The relatively homogenous area in the centre of the district, featuring a worse social characteristic, included the quarters, Salomea, Raków, Opacz Wielka, Załuski, Paluch and the western part of Okęcie. Meanwhile Nowe Włochy and Stare Włochy in the northwest constituted a coherent, albeit socially mixed zone.

Socio-spatial processes accompanying residential segregation

The heritage of socio-spatial patterns can be seen in the districts analysed (Gawryszewski 2010), onto which the socio-spatial transformation processes typical for a neoliberal city are superimposed. These processes are strongest in Ursynów Północny and Praga Północ.

Ursynów Północny's planners from the 1970s attempted to form resident-friendly elements, such as creating small clusters of buildings surrounding inner yards, and diversified heights and

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[2]These are the last census data with which one can carry out an analysis at the census area level. Also, due to limited access to statistical data, the segregation analysis for census tracts is static, and based on the national census of 2002.

[3]The southernmost area is occupied by the Las Kabacki nature reserve, and is surrounded by single-family houses, which accounts for the different social character of this area.
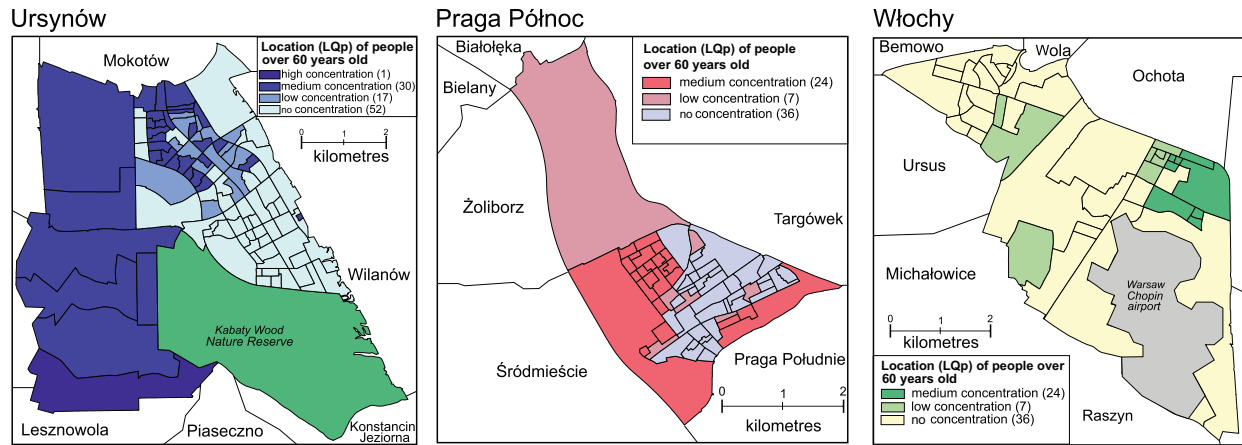
Figure 1. Location (LQ$_p$) of elderly people (based on census data from 2002)
Source: own elaboration

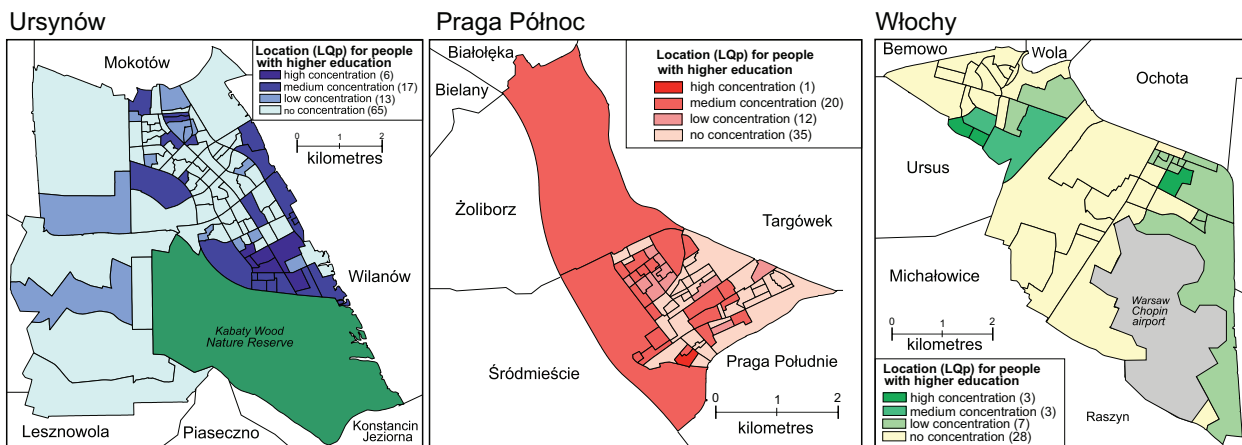*Figure 2. Location (LQ$_p$) of people with higher education (based on census data from 2002)*
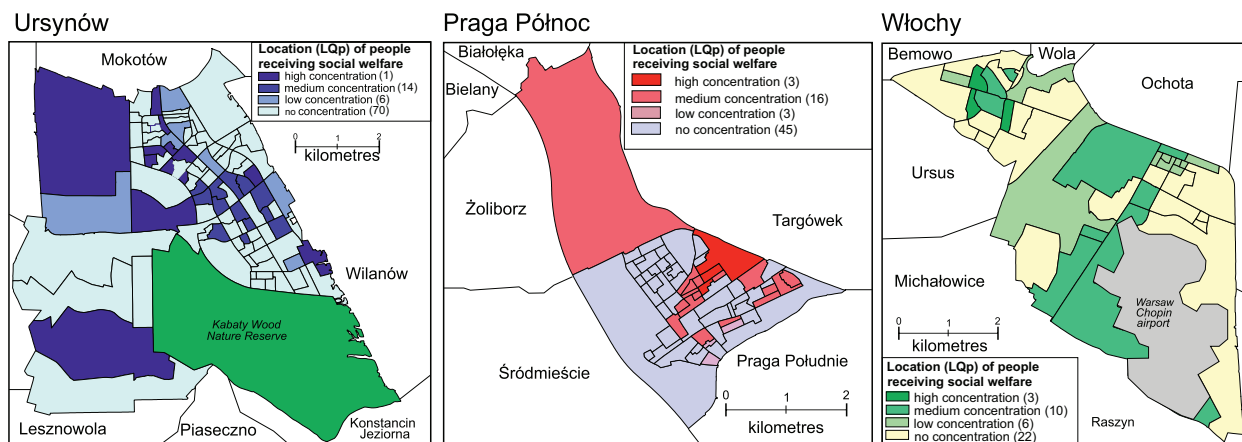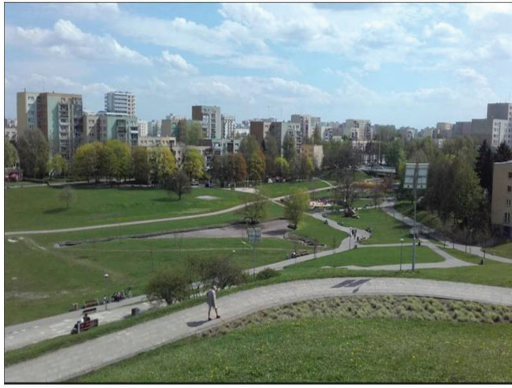*Source: own elaboration*

Figure 3. Location (LQ$_p$) of people receiving social welfare (based on census data from 2002)
Source: own elaboration

a. Resident-friendly environment in Ursynów
(photo B. Jaczewska)

b. Public spaces occupied by parking lots of cars
(photo B. Jaczewska)

c. Example of double fencing in Kabaty
(photo B. Jaczewska)

d. Gated community „Kabackie Zacisze"
(photo B. Jaczewska)

Figure 4. Socio-spatial processes in Ursynów, 2016

appearances of buildings (Trybuś 2012) (Figure 4a).[4] In the 1990s many of the buildings and surrounding areas were modernised, which supports research indicating that the socialist era high-rise housing estates have not become slums as they are still inhabited by mixed populations (Marcińczak et al 2015, Gorczyca 2016, Szafrańska 2013). At present, the estates in the north of Ursynów boast a good internal (inside the estates as such, and between them) and external (with other districts of Warsaw) spatial integration. At the moment, former public spaces (of high quality) are being appropriated as parking lots for cars (Figure 4b). Furthermore the area is seeing the construction of new infill between existing buildings, usually fenced in and taking up space which hitherto had been public.

All new residential buildings built in Ursynów over the past few years are being walled off, particularly in the Kabaty quarter. Gated communities have become very popular, and diversified in terms of ownership models (private flats and rentals), construction forms (single and multifamily housing) as well as to the degree the estate is closed off (Figure 4c, 4d). There are residential communities where the fences do not stand out (e.g. architectural forms are used to enclose the estate); but there are also ones that have solid fences, intercoms, and monitoring; through to

those that are the most isolated and heavily guarded (Jaczewska 2014, Gąsior-Niemiec 2007). Public spaces have been reduced to communication tracts and green patches. We can observe the fencing off of buildings that had not initially been designed to be walled off, and also double walls being put up. Consequently the fragmentation of public space and the isolation of particular areas is very strong and sometimes causes local conflicts between inhabitants, as well as generating spatial chaos.

Changes are occurring also in the western part of Ursynów. The area of Wyczółki can serve as an example of the gentrification of peripheral areas. It used to be an industrial and ware-house dominated zone, with sparse single-family housing located close to the Okęcie Airport. In the past few years new investment developments (i.e. Central Park Ursynów) have arisen. Municipal housing, managed by the Municipal Office for the Ursynów District, have been built adjacent to it.

The gentrification process is slowly becoming an important factor in the revival of housing in Praga Północ in line with progressing liberalisation of the housing market (Jadach-Sepioło 2007). Thanks to the relatively small losses incurred by the district of Praga Północ during the war compared to other parts of central Warsaw, its buildings are old and have urban value, although they are also dilapidated due to pre-war and post-war neglect in housing policy, lack of renovations, and low human capital[5]

[4]The street design referred to the idea of boardwalks, surrounded by dense urban construction, with shops and service outlets for pedestrians only. At the initial stage, the biggest problem for Ursynów was the isolation of the estate from the rest of Warsaw. The construction of the metro began in 1983 and the line was completed in the 1990s. In 1980 the first large store was inaugurated in Ursynów, after which other service outlets, cultural centres and a church followed in the 1990s.

[5]As one of the central districts of Warsaw, Praga Północ is facing ownership problems resulting from the Bierut Decree passed in 1945.

a. Physical deterioration of residential buildings in Stara Praga (photo A. Grzegorczyk)

b. Deterioration of residential buildings and new investment Port Praski in Stara Praga (photo A. Grzegorczyk)

c. New and trendy place to encounter (ul. Ząbkowska)(photo A. Grzegorczyk)

d. New gated community Port Praski in Stara Praga (photo A. Grzegorczyk)

Figure 5. Socio-spatial processes in Praga Północ, 2016

(Figure 5a). Praga Północ contains large areas of long-term poverty.[6] The first measures undertaken under the *Mikroprogram rewitalizacji dzielnicy Praga Północ m. st. Warszawy* [Microprogramme for the rehabilitation of the Praga Północ district in Warsaw] (2015) concern Stara Praga and Szmulowizna and anticipates spatial planning, and economic and social projects.[7] Unfortunately actions are often limited to the renovation of facades, while local problems remain unsolved.[8]

The gentrification process in Praga Północ is related to the construction of the second metro line and also because it is becoming fashionable for freelancers, and sometimes foreigners, to live in the district – these are the true "pioneers" of the process. It is mostly a bottom-up, spontaneous process. Cultural places, such as theatres, galleries, artists' studios, are popping up at the border between Stara Praga and Szmulowizna (Figure 5b). An

"aesthetisation" of space and traditional symbolic elements, new landmarks, and places of encounter have begun to appear. On the other hand commercial gentrification can also be observed, with property developers carrying out projects all over Praga Północ in various selected spots, turning empty spaces into fenced areas with CCTV monitoring; their extremely high degree of isolation stems not only from physical barriers, but also from their visual dissimilarity (Figures 5c, 5d).

The research indicates a low degree of integration between the old and new inhabitants of this part of city, which is a consequence of the reluctance of old residents to meet with others, the new residents' circle of acquaintances being limited to people to those outside the district, and the two groups using and visiting different places (with the exception of city parks which are areas of the least social segregations) (Korcelli-Olejniczak et al. 2015).

In Włochy, gentrification, as well as the fencing in of new housing estates and the occurrence of enclaves of poverty is also visible. The district faces many problems.[9] The rehabilitation

[6]Especially visible in the eastern part of Szmulowizna, next to the so-called "Bermuda Triangle" in the south of Nowa Praga, are the largest enclaves of long-term poverty.

[7]The crisis zone in Praga Północ, delineated by the Municipal Office of the Praga Północ District, covers 59% of its area and s inhabited by 98% of its population. Among the chief problems of Praga Północ, experts list the following: (1) housing problems (prevalence of old, often national heritage buildings, and their physical deterioration; poor technical installations and equipment for houses; the small floor area of flats; low standard of apartments and the poor physical state of buildings), (2) environmental problems (i.e. shortage of green spaces and high pollution), (3) social problems (decline of population numbers, high negative demographic growth rate, ageing of society, poor level of education etc.).

[8]The current initiative is the Integrated Programme for the Rehabilitation of Warsaw for 2014–2020.

[9]The main problems for the district are as follows: (1) spatial problems (fragmented spatial development plan and the establishment of new investments on the basis of building condition decisions issued by the city, which results in chaotic construction and mounting impediments to road transport), (2) residential problems (unfavourable age structure of municipal houses, low standard of municipal flats and buildings, shortage of municipal housing, low degree of social and service infrastructure in and around housing estates), (3) social problems (depopulation and ageing of the population, low level of education and growing youth crime rate) and (4) environmental problems (uneven distribution of green areas, which, in addition, are often rundown and of low aesthetic value, high level of transport-generated noise, illegal waste dumps)

a. Private rehabilitation in Nowe Włochy
(photo A. Grzegorczyk)

b. Spatial chaos (diverse size and architectural style)
in Stare Włochy (photo A. Grzegorczyk)

c. Fashionable meeting spots (Artistic House
of Animation) in Nowe Włochy (photo A. Grzegorczyk)

d. Degradation of residential buildings in Stare Włochy
(photo A. Grzegorczyk)

Figure 6. Socio-spatial processes in Włochy, 2016

projects are extremely limited in coverage (the rehabilitation programme covered barely a few residential buildings) and quality (mostly limited to facades). Bottom-up rehabilitation conducted by private investors is also erratic (Figure 6a). The diverse functions, sizes, and architectural styles of existing buildings, and the form of the gated communities under construction, is evidence of spatial chaos[10] (Figure 6b). New developments are often financed from the housing subsidy programme entitled *Mieszkania dla Młodych*, MDM (Flats for the Young). In Stare Włochy we can see modern blocks of flats being built inside gated communities next to old pre-war mansions. This is an extremely attractive area on account of its historical and environmental value, but also because of its convenient connection with the centre of Warsaw via rapid urban rail. Nowe Włochy constitutes a similarly attractive area, with its city garden designed in the 1930s. This is where new, fashionable meeting spots are created, such as the arts centre, Artystyczny Dom Animacji, or ADA(Artistic House of Animation) – a branch of the municipal culture centre *Dom Kultury 'Włochy'*(Culture Centre 'Włochy') – which ties in with the cultural development of pre-war Włochy, and which is an important place for local communities and new

(Mikroprogram rewitalizacji dzielnicy Włochy m. st. Warszawy [*Microprogramme for the rehabilitation of the Włochy district in Warsaw*], 2015).

[10]The example of the gated community, Kasztanowy Park Włochy, within whose walls lies a local architectural monument – the Porayowy Dworek mansion.

initiatives (Figure 6c). In spite of its appeal, the area is partially dilapidated (Figure 6d). At the same time, municipal housing is located in close proximity to these attractive spots within Stare Włochy and Nowe Włochy, which further contributes to the socio-spatial diversity of this district. The low degree of spatial isolation in Stare Włochy and Nowe Włochy (internal: presence of green spaces, bottom-up initiatives; and external: convenient location in terms of accessibility via rapid urban rail) is negatively affected by the rail track running right through the district, which divides it without providing convenient crossing points between the two parts; and by the spatial chaos that obstructs the clarity of the urban design of this district.

Conclusions

The aim of this article was to answer two questions concerning the level of segregation of particular population categories in Warsaw at the local level, and the character of the contemporary processes accompanying the segregation and modifying the process. A multidimensional approach allowed us to identify the demographic and social categories segregated at different intensifications and in different ways, for selected districts (despite its limitations). First, based on census data from 2002, the hierarchical character of the population categories, which were affected mostly by segregation within census tracts, was similar to the outcome of an analysis carried out for the city

segregation level (higher values of D)

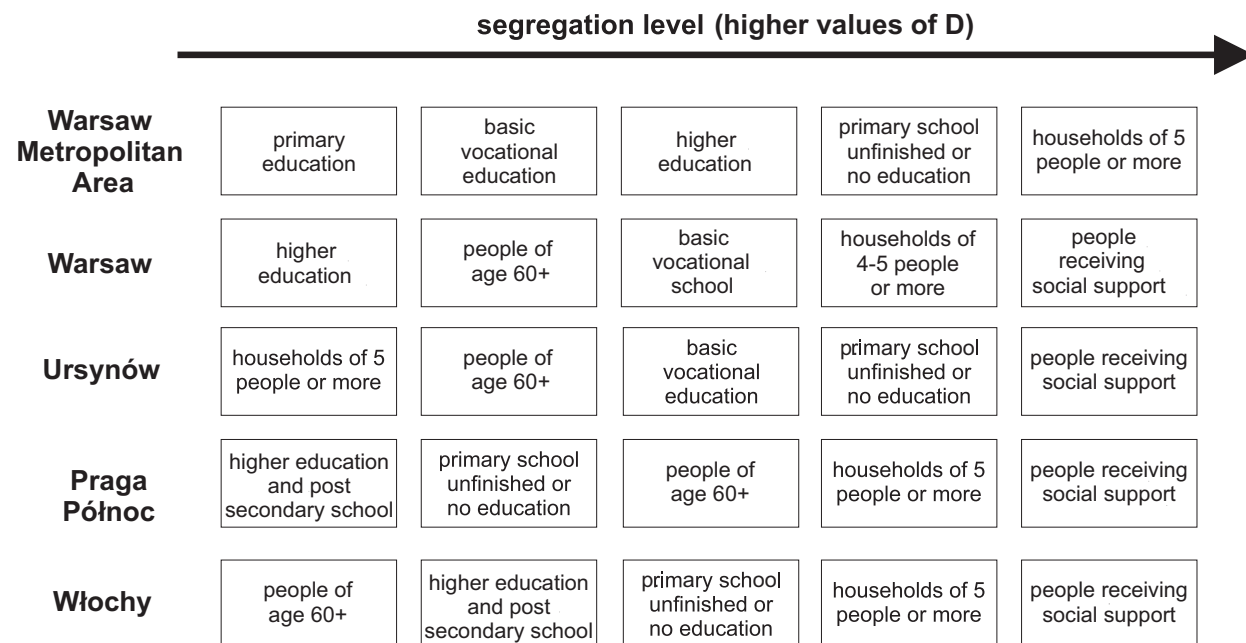|					
Warsaw Metropolitan Area	primary education	basic vocational education	higher education	primary school unfinished or no education	households of 5 people or more
Warsaw	higher education	people of age 60+	basic vocational school	households of 4-5 people or more	people receiving social support
Ursynów	households of 5 people or more	people of age 60+	basic vocational education	primary school unfinished or no education	people receiving social support
Praga Północ	higher education and post secondary school	primary school unfinished or no education	people of age 60+	households of 5 people or more	people receiving social support
Włochy	people of age 60+	higher education and post secondary school	primary school unfinished or no education	households of 5 people or more	people receiving social support

Figure 7. Categories that indicated the highest values of the segregation indices in the Warsaw Metropolitan Area, the city, and in Ursynów, Praga Północ and Włochy based on census data from 2002.
Source: own elaboration

and the Warsaw Metropolitan Area (Jaczewska & Grzegorczyk 2016). The analysis of a district revealed a microscale segregation that was not being seen in the traditional analysis at the city level. In figure 7 the categories that indicate the highest values of the segregation indices (based on the dissimilarity index *D*) are presented.

Second, it turned out that in Ursynów the residential segregation was highest, which can be explained by the high number of gated communities, however, a few enclaves of poverty were also visible in the district. In Włochy, enclaves of gated communities emerged but places with dilapidated communal housing were also present in high numbers. However, the socio-spatial structure was rather mixed at the microscale so Włochy district was positioned in the middle of districts analysed. Praga Północ appeared to be a relatively uniform area inhabited mostly by people of a lower social status, with patches of concentrated poverty. It should be underlined that the gentrification process and the creation of gated communities is not covered by the statistical analysis and it is estimated that residential segregation at microscale is higher, and will increase in the future.

Third, in the three selected districts one can discern interesting discrepancies resulting from the different housing policies of subsequent decades that have given birth to particular housing estates. In Praga Północ, favourable urban design and the social structure of the original socialist construction model (1950s) clash with enclaves of poverty that emerged at the beginning of the 1970s (Szmulowizna blocks of flats) that are also seen in pre-war communal housing. At the same time, housing co-operative projects in Ursynów Północny at the end of the 1970s stand in a more favourable light (interesting urban design and relatively diversified social structure) compared to the chaos of the gated communities built in Kabaty by real-estate developers in the 1990s, which are homogenous in demographic and social terms (enclave of wealth). Meanwhile in Włochy the pre-war urban layout of the Nowe Włochy quarter with its varied social structure,

stands in stark contrast to the chaos of construction in later years, including the present-day developments that are mostly located in Stare Włochy.

To conclude, the residential segregation pattern stems from the stability of the housing conditions created under communist times, liberal politics that were accompanied by a neglect of spatial planning during the transition period and through to today, and the increasing role of private developers who create new investments targeted at strictly defined social groups (i.e. middle and upper class).

Residential segregation in Warsaw is accompanied by gentrification, which is often erratic and connected with bottom-up driven, spontaneous processes that are often only *apparent gentrification*. The remaining problem concerns the low degree of integration between old and new inhabitants. The fact that gentrification is limited to specific spots is related partly to the hitherto inconsequential results of rehabilitation programmes[11] involving the renovation of buildings, the improvement of public space; but also to the advantageous institutional and financial conditions for investments and the perception of social problems resulting from the separation of affluent residents from the poor (Grzeszczak 2010, citing Skalski 2007).

Other features of neoliberal cities that modify the current segregation pattern, and which is also noticeable in Warsaw include the following: the development of gated communities, which are turning into enclaves of wealth; the permanence of enclaves of poverty leading to social exclusion and to advanced marginalisation; and the emergence of neighbourhoods of relegation (Wacquant 2008). Gated communities produce fragmented urban space and reveal emerging housing classes where social

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[11]The rehabilitation was not planned until 2004, i.e., when the pilot program for four central districts of Warsaw was created. It was further developed in 2008 under the *Lokalny Program Rewitalizacji m.st. Warszawy na lata 2005–2013* (Local rehabilitation program for Warsaw for 2005-2013) including an appendix for particular districts. The last continuation of the program is the *Zintegrowany Program Rewitalizacji m. st. Warszawy do 2022 roku* (Integrated rehabilitation program for Warsaw to 2022).

status is defined both by one's profession and by the location and form of housing to which one has access. According to Gądecki and Smigiel (2009) gated housing estates are more effective at creating differences between social classes than traditional factors such as income or education. Additionally, they create the dissolution of the public sphere, individualization of interests, and may threaten local democratic development (Polanska 2011).

The global social phenomena described above takes on local specifics, as they vary in terms of form and range. In the context of particular districts, what stood out was the creation of new spatial systems that were homogeneous in terms of their social structure, but remained in contradiction with the inherited mixed social structure still visible from the past.

Our findings support comparative research on segregation in post-socialist and Western countries (Marcińczak et al. 2015, Musterd et al. 2017), although residential segregation in Warsaw started to resemble the pattern of Western capitals, it still gained low levels in heterogeneity neighbourhoods. Nevertheless, these low levels may be associated with delayed segregation and its dormant potential, as the deep liberalisation transformation in the housing system and the welfare regime has brought an increase in income disparities, but with spatial diversity less visible in the statistical analyses. Still, our fieldwork in selected districts confirms a growing microscale segregation that is visible in the emergence of enclaves of wealth and poverty, and the potential effects of more advanced gentrification. In the literature the 'U' shaped segregation profile is also underlined, which our study confirms, however, we reveal the contemporarily greater importance of the segregation of the poorest cohorts . In our study we focused on the liberalisation of the housing system as a factor that influenced the increase in residential segregation, however, this liberalisation should be seen in the wider perspective of the accompanying increase in social inequality, growing global connectedness, changing economic structures, and the transformations of welfare regimes in Poland as well as other Eastern European countries (Marcińczak et al. 2015).

Funding

Appendix 1. Segregation indices in Warsaw's chosen districts in 2002

indicators	Ursynów			Włochy			Praga Północ		
	unevenness - D	exposure - $P_a{}_a$	concentration - DEL	unevenness - D	exposure - $P_a{}_a$	concentration - DEL	unevenness - D	exposure - $P_a{}_a$	concentration - DEL
age									
0–15	0.138	0.158	0.652	0.097	0.173	0.593	0.099	0.167	0.661
16–29	0.076	**0.317**	0.681	0.059	0.207	0.579	0.060	0.228	0.662
30–44	0.166	**0.203**	0.648	0.099	**0.243**	0.611	0.053	0.203	0.659
45–59	0.113	**0.320**	**0.713**	0.092	0.209	0.560	0.062	**0.231**	0.662
60+	**0.194**	0.115	0.620	**0.157**	**0.246**	0.594	**0.179**	**0.231**	0.662
no. of members of households									
1	0.079	**0.310**	**0.701**	0.081	**0.384**	0.612	0.079	**0.403**	0.674
2	0.051	**0.243**	0.684	0.057	**0.265**	0.607	0.065	**0.264**	0.660
3	0.041	**0.240**	**0.694**	0.084	**0.201**	0.597	0.083	0.187	0.664
4	0.107	**0.190**	0.682	0.143	0.151	0.579	0.126	0.135	0.660
5 or more	**0.157**	0.056	0.617	**0.232**	0.064	0.562	**0.222**	0.070	0.660
education									
higher education	0.112	**0.383**	0.676	**0.168**	**0.291**	0.640	0.145	0.165	0.653
post-secondary school	0.092	0.060	**0.705**	0.127	0.056	0.601	0.142	0.059	0.668
upper secondary school	0.079	**0.406**	0.676	0.054	**0.401**	0.581	0.052	**0.390**	0.664
basic vocational school	**0.217**	0.090	0.684	0.167	0.137	0.569	0.117	0.179	0.656
primary school	0.104	0.140	0.645	0.124	0.206	0.552	0.091	**0.251**	0.664
primary school unfinished or no education	**0.264**	0.018	0.635	**0.177**	0.020	0.596	**0.162**	0.021	0.662

Continued *Appendix 1. Segregation indices in Warsaw's chosen districts in 2002*

| indicators	Ursynów			Włochy			Praga Północ		
	unevenness - D	exposure - $P_a a$	concentration - DEL	unevenness - D	exposure - $P_a a$	concentration - DEL	unevenness - D	exposure - $P_a a$	concentration - DEL
unemployment									
unemployed	0.105	0.109	0.680	0.137	0.152	0.579	0.114	0.217	0.660
social benefits									
benefits and allowances total	0.134	0.174	0.651	0.128	**0.295**	0.582	0.100	**0.306**	0.664
old-age pension	**0.179**	0.101	0.644	**0.176**	0.205	0.600	**0.193**	0.188	0.663
allowances total	**0.157**	0.048	0.677	0.130	0.071	0.564	0.064	0.081	0.664
incapacity allowance	**0.192**	0.033	0.698	0.152	0.045	0.567	0.072	0.050	0.664
unemployment benefit	**0.488**	0.006	**0.774**	**0.343**	0.009	**0.715**	**0.190**	0.011	0.680
social welfare	**0.618**	0.005	**0.807**	**0.412**	0.008	0.683	**0.320**	0.026	**0.702**
other allowances not related to income	**0.222**	0.035	**0.716**	**0.226**	0.024	0.616	**0.217**	0.038	**0.699**

Source: own elaboration based on census data 2002

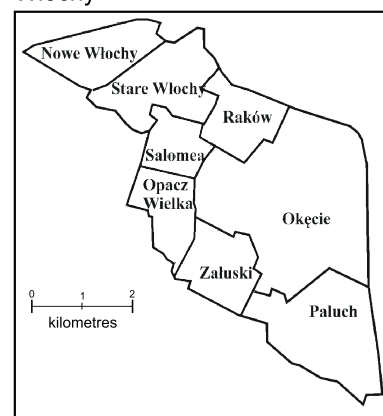*Appendix 2: Names of urban units*
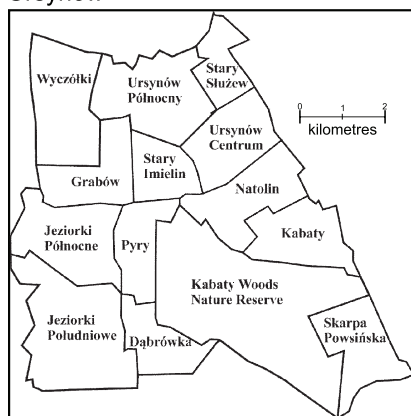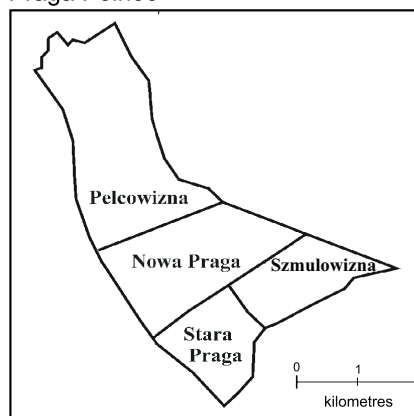
Ursynów   Praga Północ   Włochy

Source: own elaboration

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