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City as a text. What can we read about inequalities from the urban space?[1]

Katarzyna Sadowy
Warsaw School of Economics

Abstract

Urban space is a reflection of a public sphere and economic relations within a society. Differentiation of the housing conditions, access to the public amenities, discrimination by design, stigmatization related to the "mean streets", all these may be found in historic and contemporary cities. Spatial analysis of the tangible elements may be translated into a better knowledge of urban inequalities and urban policies. The aim of the paper is twofold. First, it presents broader perspective on the existing inequalities and the methods of their identification, based on the current literature and statistical data. The second aim is to apply a specific spatial analysis to the case study of a policentric urban pattern of Warsaw, Poland. It is based on own field studies and interviews, as well as statistical data and analysis of the municipal documents. In-depth analysis of chosen districts allows to identify spatial outcomes of urban policies and the path-dependent differentiation of the urban space. The results present the strong influence both of the long-term evolution processes and of the current municipal policies on the quality of the neighborhoods.

Keywords: city; public space; urban patterns; inequalities; urban policies; land use; localism; policentricity

1. Introduction

Currently more then a half of human population on Earth lives in the cities. This proportion is expected to increase up to 68% in 2050 [1]. Right now only Africa remains more rural, with 43% of urban dwellers, but with a rapid population growth and strong urbanization processes. Cities are the engines of the world economic development, hubs of technical innovations, industrial production, governmental and financial centers. Percentage of the total GDP contributed by the metropolitan areas (cities larger then 500 000 inhabitants) surpasses the share of the employment located there. Also the percentage of jobs is higher then the share of metropolitan

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dwellers in total number of country population. The gap between the GDP per capita contributed by metropolitan area and by the rest of the economy is approx. 35% for OECD countries, reaching almost 40% in Europe and almost 50% in Americas [1]. Globally cities generate 85% of total GDP [2]. Such performance is due to high productivity of the firms located in metropolitan areas, density of the labor markets, synergy effects of the proximity (clusters, research and learning opportunities). Attraction of the high quality urban life has been also perceived as an important factor both for the enterprises and skilled professionals for last few decades [3, 4], fueling the competition and creation of the livability ratings [5, 6].

However, another significant phenomenon has been lately observed and largely commented in literature and economic policies - the growth of socio-economic inequalities (eg. [7, 8, 9]). Several EU countries experienced negative growth in household disposable income (eg. in 2013: Austria, Belgium, Czech Republic, Greece, Ireland, Slovenia, UK) and in some cases it was quite high (Greece 8,4%, but also Italy 5,7% in 2012, Portugal 5,6% in 2011). This problem results also in diminishing household net saving rates as a percentage of household disposable income [1]. In most OECD countries relative poverty rates in 2012 were higher then in mid 1980s and 1990s [1]. Metropolitan areas, on one hand, are offering the most important professional opportunities and high income in the world, but on the other, are also more unequal places to live than the rest of the country [1]. As some authors argue, after the 2007-2008 crisis cities are replicating the problems and challenges from the 1980s, emphasized by the weakening of the role of the state in general and the troubles of democracy [10, 11].

By using urban space and spatial patterns as a text it is possible to conceptualize and evaluate several type of socio-economic inequalities [12]. In part, they are path-dependent, resulting from the historical evolution of the city. In part they are influenced and shaped by the current municipal policies. They provide an acute example of the state of the public realm. They may serve as a test for the well described crisis of the commons in contemporary cities [13].

Inequalities in cities may be measured in several ways. Households differ in the disposable income and savings, which may be presented in share of absolute numbers. Real estate market provides similar quantitative type of information. More qualitative measures also apply, as job opportunities or stigmatization of the area. In this paper the quality of the space will be taken into account, as a visual and spatial information which can be read to assess the inequalities of the urban life. Accessibility of urban amenities, necessary in everyday life will be used as the evaluation factors.

The aim of the paper is twofold. First, it is to present the methods of spatial analysis of the existing socio-economic inequalities within the city limits. It is argued that all socio-economic activities need space to be performed and therefore they are intertwined with the spatial character of the city. On one hand, socio-economic performance is path-dependent of the former spatial urban development. On the other hand, it is constantly shaping urban space, creating more or less inclusive environment for the present and the future.

The second aim is to apply a specific spatial analysis to the case study of a policentric urban pattern of Warsaw, a capital of Poland. In this case, it is argued, that the imminent neighborhood and its quality is a good indicator of the possible existing differences in the quality of urban life. For the case study the local hubs are used, identified in the municipal program of Warsaw Local

Centers. The paper presents their more in-depth analysis, regarding the number, complexity and quality of local hubs in chosen districts.

The paper is organized as follows: in the **Section 2** the theoretical framework regarding the relation between the urban space and the socio-economic inequalities is presented, with reference to the relevant literature and methods of analysis. In the **Section 3** the scope, methodology and the description of the research methods are provided. The main results and key findings are presented in the **Section 4**, followed by the discussion and conclusion in the **Section 5**.

2. Theoretical Framework

2.1 Urban inequalities

Growing inequalities became of point of focus for several researchers and writers in recent years. Phenomena observed by academic world on the macro level lead to the political and social outbursts in various points of the world. They happen often in the cities and are intertwined with the urban culture and space – from the Arab Spring [14,15] to the most recent protests of *les gillets jaunes* in France [16].

In the most famous book in recent decade dealing with this matter, Thomas Picketty [7] points out to three types of economic inequalities: of labor income; of capital ownership; of total income (labor and capital). He applies the traditional division of the "upper class" (top 10%, divided additionally between the top 1% of "dominant class" and the next 9% of "well-to-do class"), "middle class" (middle 40%) and "lower class" (the bottom 50%). The Gini coefficient varies significantly between the inequality types. For the share in the labor income it was as low as 0,19 for Scandinavia in the 1970s-1980s. Low inequality of the shares in the capital ownership was probably never present, according to Picketty, and even in an "ideal society" it would still be 0,33, almost twice higher then the Gini coefficient for the labor income. In reality, in the most equal societies, in Scandinavia during the 1970s-1980s, Gini coefficient for the capital ownership was 0,58. In United States in 2010 it was 0,73, while the highest coefficient presented by Picketty was 0,85 in Europe in 1910.

Establishing the relations between the socio-economic status and spatial inequalities represnts a difficult task and to date only partial attempts have been made to provide better understanding of this matter. Following part of the paper presents some already investigated links and some analysis focusing on such relations. First, the links between spatial patterns and quantitative measures are presented, followed by qualitative measures of the social inclusion and quality of life.

The most direct relation exists between the urban space and the basic economic inequalities (income and capital ownership). It is the real estate ownership. As Picketty shows [7], in time of the biggest inequalities regarding the share in the capital ownership (Europe, late 19th and early 20th century) real estates consisted approx. 1/3 of the total private capital in France. The highest share belonged to the top 1% in 1872, when 43% of their total capital was in real estates. There was also a significant difference between Paris and the region. Real estates in the capital created 30% of the total capital of the dominant class, while the real estates in the rest of the country,

merely 10%. It shows both the importance of the real estate as an capital asset and the role of the metropolitan regions in the general wealth.

The income nominal value creates the differences in the purchasing power of household in terms of everyday consumption. Additionally, its relation to the housing prices influence the household or individual's ability to become an owner. House Price Index (HPI) is an index measuring the changes in the transaction prices of dwellings purchased by the households[2]. In recent years the HPI in European Union shows the tendency to grow, and in comparison to 2015 already reached higher level than during the bubble in 2007 and 2008 (Fig. 1).

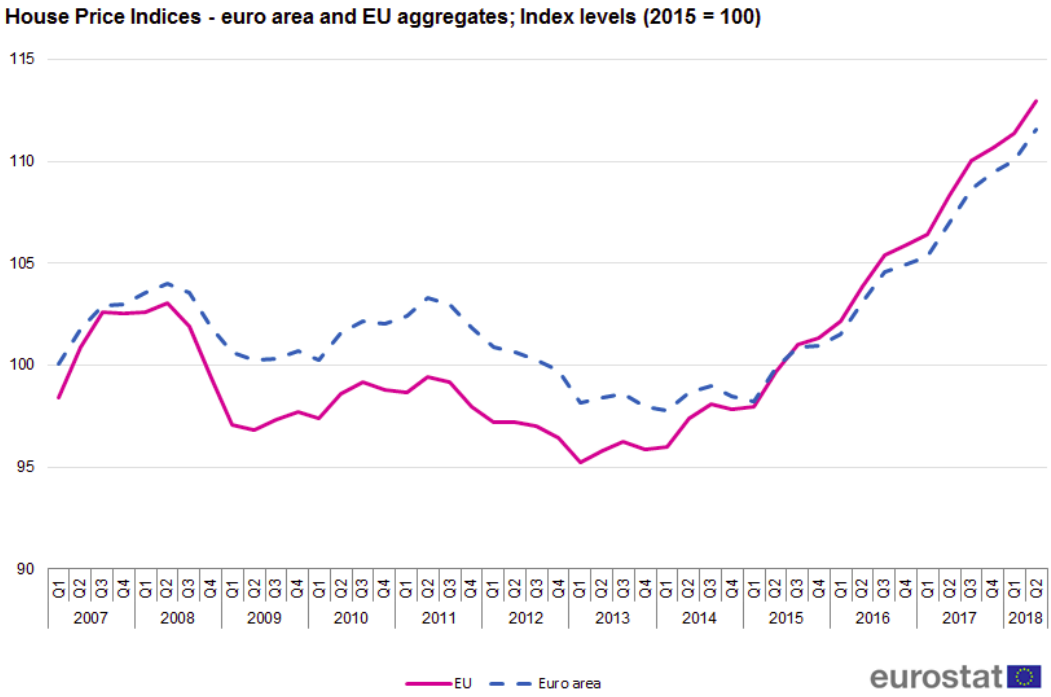


Figure 1. House Price Indices for euro area and EU aggregates; Index levels (2015 = 100). Source: Statistics Explained Available online: http://ec.europa.eu/eurostat/statisticsexplained/ (accessed on 28th December 2018)

There are differences in the HPI among the EU countries. The highest HPI in 2017 was noted in Iceland (19,5%), the lowest in Italy (-0,8%, provisional data), the only country with the negative HPI value, the next being Finland (1,6%). In Poland, which capital is the case study of the paper,

2 HPI measure inflation in the residential property market. The HPI captures price changes of residential properties purchased by households (flats, detached houses, terraced houses, etc.), both new and existing. Only market transactions are considered, self-build dwellings are therefore excluded. The land component of the residential property is included. The national HPIs are produced by National Statistical Institutes, while the European aggregates are computed by Eurostat. Source [17].

HPI in 2017 was 3,6% [18]. Increasing gap between the household purchasing power and housing prices will further distance the well-to-do from the bottom 50%.

Ownership and value of real estate assets are straightforward links between socio-economic inequalities and urban space. They are mirrored by such phenomena as gentrification and spatial segregation. Spatial segregation was researched as early as in the late 19th century, when Charles Booth provided the Maps of Poverty for London [19]. Since then, the question was investigated by several researchers (eg. [20, 21], however it is usually stressed, that we are yet far from having the very explicit and universal results. As the authors of "Residential Segregation in Comparative Perspective" [20] argue in some cities spatial organization matters significantly in reproducing class relations and ethno-racial hierarchies, while it may be much less important in others. Depending on the local context more stress is put onto socio-economic or ethno-racial segregation. Some authors suggest that current challenges of migrations overshadow the "class" narration, which was typical for the second half of 20th century and which is still important but presently with less focus [22].

Spatial segregation may be quite durable but it may also gain the dynamic. Main triggers to change the localization of various groups within the city are the changes in the real estate value and the housing costs. New investments, both public and private may cause such changes, often leading to the gentrification. Due to this phenomenon, public venture aimed at the enhancement of poor districts may even be counterproductive [23, 24]. Quality of urban space influences significantly the perception of the life quality in specific neighborhood. Dwellers with higher income and/or capital assets are looking to increase their wellbeing and happiness by living in the attractive neighborhoods, providing not only the high quality place of residence but also public space, green space and easy access to the urban amenities. Thus, quality of life in subjective terms depends also on the place where the individuals live [25, 26]

Attempts to describe and measure the relations between the spatial patterns and socio-economic inequalities require two important elements. One is the definition of socio-economic groups being investigated, the other are methods of spatial analyses. The first difficulty lies mostly in the variety of socio-economic environments in various cities. However, it may be and usually is overcome by the generally universal definition of the "lower class", "middle class" and top 10% (or top 1%), based on the share of income [7]. Even as some discrepancies appear, they are generally successfully applied in several studies. Another type of socio-economic description is based on the professional situation of the urban dwellers. It starts with the age description (pre-working, working and post-working age). People in the working age group are employed, unemployed or inactive on the labor market, and the employed persons may be described according to their skills and professions or to the formal contracts they have (eg. full-time paid employees and part-time paid employees; employees with permanent job, employees with temporary job). Closest to the "class narration" is the division between high-skilled professionals and low-skilled workers.

Another type of the analysis is focused on the migration and has a twofold meaning. One is a differentiation between established city dwellers (born in the city or eg. based there for min. 10 years or 25 years or any other period defined for the investigation) and newcomers. The other one describes the ethnicity of the city dwellers. In this case, even dwellers already born in the city may be described as migrants in second generation. Yet another attempt to analyze the socio-

economic situation of urban dwellers propose to define the excluded or underprivileged groups, from homeless persons, to the unemployed, to the elderly, physically disabled or discriminated for societal reasons (gender, religion, ethnicity).

2.2 Reading a city – methods of analysis and evaluation of spatial patterns

According to E. L. Glaeser the lack of connection between urban social science and the physical city is in part driven by a lack of data on the physical attributes of urban space [27]. For comparative study between the cities maps and GIS analyses provide useful tools. Public records more and more often provide constantly updated and interactive maps with several information regarding ownership status, land use status, legal procedures, heritage values, environmental situation (including air pollution). They may be also used for the research on various types of inequalities, of a qualitative nature and embedded in the spatial patterns themselves [28].

Urban quality of life depends highly on the access to the desired amenities and services and on the lowest possible exposure to risks and discomforts. Risks in the cities comprise such phenomena as:

- air pollution
- noise exposure
- heat islands during the summer heat waves
- floods
- traffic risks
- crime rate (including risk of terrorist attacks).

Important amenities to which city dwellers depend on in their daily life comprise:

- drinkable water
- public transport
- health centers
- educational and cultural centers
- grocery stores, pharmacies and basic services (eg. laundry)
- green and recreational areas
- sport facilities.

Access to urban amenities should be possible without commuting. Walking distance is a popular measure, usually defined as a radius of a 5 minutes or 10 minutes walk. Part of the amenities and services are provided by municipality (eg. public sport facilities, green areas). Some are part of the local market, like grocery stores or small service shops. Mapping the amenities and local density provides the information about the their effectiveness and the number of dwellers living in a close proximity. Further analyses of the amenities characteristic, price levels and potential clients create the image of the homogeneous or mixed neighborhood.

Access to amenities may also be part of the economic polarization and segregation of city dwellers depending on their income. In publicly accessible space there are more and more of ways to gain the privileges for the price. Fast lanes for the private cars driven by people who are ready to pay for them, VIP lounges on the stadiums and airports [29], separate side entrances to the operas for the spectators from the last balcony are visible ways of spatial segregation not only

in residential areas but in several other places, when some decades ago people from different paths of life could, if even for a short time, meet and share the common space.

Gentrification is the phenomenon of pushing out the former inhabitants who can no longer afford the rising rents in the upgraded areas [30, 31]. There are also other types of pushing out the lower income dwellers from the public space. It happens when there is no tangible design to allow spending time free of charge in the theoretically common space. For example on the streets where the only places to meet and spend time among others are pricey cafés and restaurants there will be homogenization of the city dwellers. Parks, street benches or other types of urban furniture, municipal cultural centers, constitute places which lower the social barriers between classes. Really accessible public space, with variety of use and functions, both commercial and free of charge is an important part of social inclusion and cohesion.

Access to green areas and recreational and sport facilities has an additional value. It is directly related to health, as it provides colder space during the heat wave [32], helps to reduce the noise and air pollution [33]. It is also important for physical activity, helping to reduce the obesity risk and several related health risks, including cardiovascular diseases. Access to recreational areas reduce stress and is beneficial for mental health. Thus, the spread of green areas across the city should be perceived as an element of spatial justice [34]. However, also in this case, municipal policies should be prepared with care. Upgrading the area too much may cause the increase in the real estate value and start the process of gentrification. It is important to enhance the local quality of life without the risk of pushing out the low income resident and in fact increase spatial injustice [35].

Last but not least feature of the urban space is its architecture. Architectural forms and their quality create the image of the district or the neighborhood. It may provide the high-end environment for the well-to-do class or it may stigmatize the local inhabitants. 19th century Haussman houses in Paris are emblematic for French bourgeoisie. Large scale prefab estates cast shadows on many neighborhoods, perceived as low-class with high crime rates, even if the data contradict such general opinion.

Looking at the urban patterns as they were a text we are able to read a lot about quantitative and qualitative differentiation of the quality of urban life. In the following sections the case study of the spatial structure of Warsaw will be discussed. Chosen elements of evaluation, namely the spatial patterns, architecture characteristic and access to urban amenities will be used to evaluate the differentiation of specific districts.

3. Materials and Methods

Presented findings are based on the data analysis and field studies conducted between 2014 and 2018. Data analysis is based mostly on the statistics from Panorama of Warsaw Districts [35] published by Warsaw Statistical Office. The other source of data is municipal public record.

Apart from the quantitative analysis, also observations and findings from the field research are presented. There were two significant part of this investigation. First was conducted by the team involved in the municipal program of Warsaw Local Centers and discussion is based on the published [36] and unpublished [37] findings from 2015 and 2016. Second part of the research, which creates the original basis for the presented conclusions were conducted by the author in

2017 and 2018. It comprises direct observation of the Local Centers, structured and semi-structured interviews with the stakeholders and the evaluation based on the criteria presented in following part of the paper.

3.1 Case study

City of Warsaw is situated almost in a very geographical center of the country. Its administrative boundaries cover over 500 square kilometers with a total number of inhabitants approx. 1,7 million [35]. It is the biggest city in Poland, with approx. million more inhabitants then two next big Polish cities, Cracow and Lodz (respectively approx. 760 thousands and 700 thousands [38]). Warsaw is also the most important labor market in the country. While city dwellers consist 4,6% of all Polish citizens, 9,9% of the entities of the national economy registered in the REGON and 9,7% of all jobs in Poland are located in the capital city, while only 2,6% of the registered unemployed persons live there [35]. It is the strongest hub of universities and research institutions, in terms of the number of students and appointed grants of National Science Centre (NCN). Almost 18% of Polish students study in Warsaw. Total NCN granting funds for Mazovia region exceeded 170 million zlotys (approx. 40 million euros) in 2017, with Warsaw as an uncontested leader of the region [39]. Warsaw GDP in current prices consists 13% of the country GDP, same as the gross value added.

City consists of 18 districts, varying from less than 10 square kilometers to above 40 square kilometers, and from less than 25 thousands of inhabitants to over 200 thousands . Warsaw constantly attracts new inhabitants, with approx. 4 newcomers per 1000 inhabitants every year in last 15 years [35]. There are however significant differentiation in the total net migration between the districts (Tab. 1).

Table 1. Number of inhabitants and total net migration for permanent residence per 1000 population in 2016.

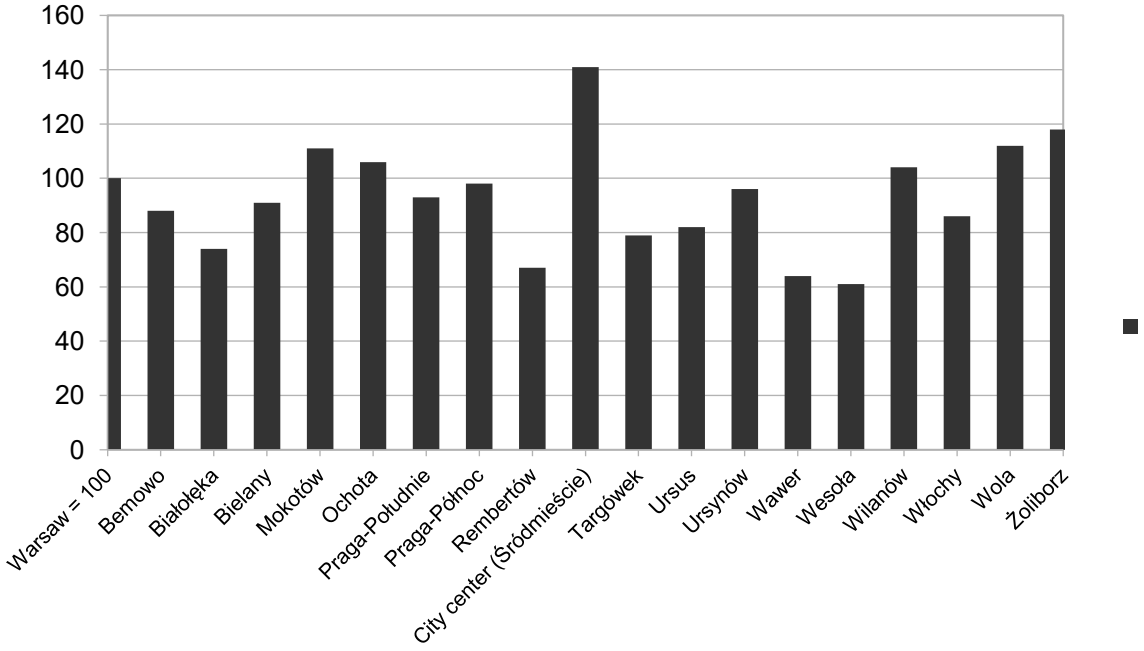
District	Number of inhabitants in thousands	Total net migration
Bemowo	120,4	4,53
Białołęka	116,1	15,29
Bielany	132,0	1,53
Mokotów	217,8	0,13
Ochota	83,6	0,75
Praga-Południe	178,4	1,77
Praga-Północ	**65,9**	**-5,76**
Rembertów	24,1	3,83
Śródmieście (city centre)	118,3	-3,20
Targówek	123,5	0,68
Ursus	58,2	7,42
Ursynów	**149,8**	**0,02**
Wawer	**74,9**	**11,16**
Wesoła	24,8	10,42
Wilanów	**35,2**	**50,67**
Włochy	41,4	10,53
Wola	138,5	6,27
Żoliborz	50,8	14,88 [1]

[1] Districts investigated in detail are in bold.

Source: own work, based on the Panorama of Warsaw Districts [35].

High total net migration indicates the areas of a fast development, which in some cases may even be called urbanization of the land which previously was wasteland or agriculture. They are also the areas of the higher share of newcomers. Only two districts, Praga-Północ and Śródmieście (city center) are loosing inhabitants in absolute numbers. Ursynów consists a case of steady situation, having already absorbed high number of newcomers in recent years. Wawer has a total net migration closest to the Warsaw medium, while Wilanów may be call a district under construction, with the highest net migration in the city. Regarding the housing stock Warsaw consists 6,5% of the country [35]. 2,5% of the existing stock is currently on sale [40] and the prices differ among the districts as shown in Fig. 2.

Figure 2.



Average prices on the housing market in Warsaw districts compared to the average price in Warsaw. Source: own work based on Sonarhome report [40].

In Warsaw four distinctive types of urban structure may be defined:

- traditional urban layout. Mostly built in 19th century (in some part rebuilt in the similar pattern after the Second World War). It consists of a network of streets, lined by the tenant houses with small inner courtyards, generally of 4-6 floors.
- Socrealist architecture, from the 1950s. There are situated mostly in downtown part of the city and are not very common even there. However, the consist a specific urban feature, with monumental architecture andsquares.
- large scale housing estates. Constructed during the era of centralized economy, mostly in the late 1960s, 1970s and early 1980s. They create a very characteristic modernist urban patterns of green areas, with meandering lanes, and punctuated by a free-hand pattern of prefab buildings. There are two dominating heights: 4-5 floors and 10-11 floors.
- single family houses, dating from various periods, from late 19th century (however rare), 1920s. and 1930s, with significant stock from last 25 years.
- gated condominium, mostly constructed by developers in last 25 years. Very characteristic feature is the maximization of the land use, with building or condominium covering the plot boundaries, with the inner yard, accessible only for the residents.

Districts usually have a dominant form of the urban pattern. As all urban structure it is path-dependent. Large-scale estate construction ceased in the 1980s. New investments are usually transforming the existing pattern towards a gated community model. It may be either a multi-family housing condominium or terrace houses enclosed by gating their common areas. Districts are

governed by local mayors, however local policies must comply with the municipal strategy and operational documents. They have their separated budgets and are in charge of the land use planning and buildings permits (with the exception of the large-scale buildings).

For the analysis presented in this paper four districts were chosen: Praga Północ, Ursynów, Wawer and Wilanów. They represent distinctively different urban patterns. Two of them are located on the right bank of Vistula river, two one the left. River consists a strong boundary between more attractive and dominant left bank, where the city center and most of the administrative functions are located and the right bank, developed mostly as late as in the 19th century, through the industrialization and workers housing.

Praga Północ is the only Warsaw district which were almost untouched by the destruction of the WWII, thank to the location on the right bank of Vistula River. Therefore the dominant urban structure is 19th century, part of the oldest and most densely populated core of the city. From the beginning it was less prestigious and poorer then the left bank. It is still densely populated, with the highest share of the municipal housing stock in whole Warsaw.

Ursynów was mostly constructed in the 1970s and 1980s as neighborhoods of large housing estates in prefab technology. There are also some single family houses, concentrated in the west part of the district, with the strong division of the route out of Warsaw between two parts. Dominant large-scale housing structure has been complemented by new investments since 1989, mostly attracted by the metro line. These are mostly gated condominia, however only part of them are built by the developers, many being constructed by the existing cooperatives, owners of large housing estates and the major part of the land in the district. Municipal housing and land ownership is practically non-existing.

Wawer and Wilanów are two peripheral district, the first on the right river bank, the latter on the left one. Originally they were both agricultural areas with low number of single family houses. Wilanów developed around a royal residence built in 17th century. Since then it was the area of well-to-do class, in late 20th century including successful owners of high-end agricultural production, especially flowers. In last 15 years Wilanów became a location of vast developers investment on the former agricultural land. Several gated condominia were constructed from scratch, with no context of a former urban patterns. Ownership structure resulted in lack of public facilities, such as schools and health centers, however there any several private educational and health-care amenities.

Wawer, included into administrative limits of Warsaw in 1951, apart from the agricultural production was a commune popular among tradesmen thanks to the railway line built in the 19th century. In the 1920s and 1930s there were also artistic colonies, summer resort and a numerous Jewish minority. Today Wawer is still dominated by the single family houses urban structure. There is a small number of jobs in the district so majority of the city dwellers commute to work. Railway line continue to be a backbone of the urban structure of the district, doubled by the car routes.

3.2 Scope of research and methods of analysis

A method applied to this analysis is an extended and tailored method previously constructed for the municipal program of Warsaw Local Centres (WCL). The program was publicly launched in 2015, as a cooperation between the municipality and Polish Architects Association Warsaw

Branch (OW SARP), the oldest professional association of specialists in architecture and urban planning in Poland. The aim of the program was to identify local hubs of economic and societal activities, concentrated around public space, accessible for the neighborhood residents. In further steps identified Local Centers were to be enhanced in terms of tangible elements (quality of the public space) and in terms of their socio-economic quality. Effective network of the Local Centers should result in several benefits for local communities. It should diminish the need to commute, providing goods and services in the proximity to housing areas. It should empower local communities, giving them better opportunity to co-create important public space and the way the local hubs operates. It should also create a sense of local identity through the high quality and character of architectural features. Last, but not least, it should provide the space for meeting, rest and recreation for everyone, free of charge, helping to establish social bonds and to improve or create the healthy environment.

Local Centers were defined as hubs, concentrated around generally accessible public space. They had to be multi-functional, so various types of activities and/or services had to be present. Only hubs situated within a walking distance from places of residence (10-15 minute walk) were taken into account. Per definition, hubs of supra-local character, eg. with institutions important for Warsaw as a capital of Poland were excluded form the analysis. On this basis the most central district of Warsaw, Śródmieście, where most of the country-level administration and institutions are situated, was also excluded. In 2015 167 Local Centers were identified and 10 of them recommended for the pilot municipal investments. Analysis and recommendation were also published in 2015 [36].

For the purpose of this analysis the evaluation proposed in the original study has been further developed. It comprises more detailed elements of evaluation of Local Centers.

Evaluation of the quality of local centers were based on three main characteristics:

(1) variety of use / functions present in the Local Center

(2) possibility of social activities and free of charge forms of recreation

(3) mobility - access to the public transport.

Detailed evaluation criteria are presented and explained in the Tab. 2. Each specific amenity accounts for one in the evaluation of a Local Center.

Table 2. Evaluation criteria of the chosen local centers.

Main characteristic	Detailed characteristic (specific amenities)	Comment
Variety of use		
	Grocery store	Basic place for everyday shopping. Stores may vary from small local stores with basic goods to supermarkets accessible on foot by local dwellers.
	Pharmacy or drugstore	
	Other stores and/or services	Only local stores or services were taken into account.
	Health care center	Public and private centers were taken into account, as the amenities where help can be obtained in emergencies. Therefore specialist centers where general help or advise could not be provided even in emergencies (due to their specific nature) were not included (eg. for mental care only, dentists).
	Education and/or culture (commercial or public)	Points are given for the presence of cultural or educational function, regardless if it is generally accessible (free of charge or paid for). Only centers of a local importance were taken into account (not. eg. universities or national research institutes).
	Cafes and/or restaurants	
Social and free of charge activities		

Main characteristic	Detailed characteristic (specific amenities)	Comment
	Public space with the possibility to hang out (seat, play games, meet with people)	One point accounts for the public space which is friendly, with benches and other elements of urban furniture allowing to hang out, spend time reading or talking. If there is a public space but it allows only short time hanging out (eg. serves mostly as walking routes even as some benches are present) 0,5 points is given.
	Public cultural and/or educational amenities (eg. libraries)	Additional points are given for the presence of the public amenities, as they area generally accessible and provide broader scope of meeting and events, possibly free of charge.
	Green areas	One point accounts for the green area providing: the possibility to enjoy the greenery (attractive trees, flowers): benches or other places to seat/lay down); convenient space for physical activities (eg. with outdoor gym). If there is some greenery with the space to seat (eg. benches) but which consists no recreational or sport environment 0,5 point is given.

Main characteristic	Detailed characteristic (specific amenities)	Comment
Public transport		Proximity of the public transport is important for two reasons. First, it is one of the strongest factors creating local hubs, therefore it also enhances its importance and ensures its durability by providing the constant stream of dwellers. Second, it provides connection with the rest of the district and rest of the city, including Local Center into a bigger network of an effective and inclusive city. Commuting by public transport is a way of leveling various social groups and putting them together into the same space, shared even for a short period of time.
	Bus stop	
	Metro / railway station or tram stop	Metro, tramway and railway are more effective way of commuting, and also more attractive, or acceptable, for the better-to-do groups of dwellers. Usually if there is a metro or railway station or tram stop, there is also a bus stop, so in the evaluation there is a significant additional value for these types of transport.

[1] Source: own work.

In total 11 points which may be given to a Local Center, with 6 points for the variety of use (as the most important characteristic of a Local Center), 3 points for the social and inclusion potential and 2 points for the proximity of public transport.

In 2015 the list of local centers was created for the municipal investments and policies [35] based on following sources of information:

- experts` own knowledge
- field studies of the experts
- analysis of the planning documents of the municipality
- analysis of the local media (both traditional and social media and Internet for a)

- propositions from the general public and local NGOs during the public debates (drawn on the map, communicated orally or described in the written form)
- propositions from the general public and local NGOs sent to the dedicated email address.

For the purposes of the program even small centers, with few functions or underdeveloped public space were taken into account. The goal was to propose municipal actions and investments which would allow in the future to create a network of strong and effective centers, always using some existing hub, however weak, as a starting point. Current analyses has a different goal. It is to investigate the existing centers which are close enough to the desired local centers, with variety of functions linked with each other by a public space and with some potential to provide free of charge space for meetings and spending time among people from the same neighborhood. Therefore all Local Centers from the 2015 lists in the four districts were re-assessed. Those which did not reach the threshold of 5 points per 11 were removed from further evaluation.

4. Results

Compared with the list of the Local Centers from 2015 some centers turned out to be too insignificant to be taken into account. Some new Local Center have been created during this period or identified as Local Centers during the current investigation. Some names, identifying the center as a specific localization were changes into more precise. Final number of Local Centers in the chosen districts and informations about the number of centers removed from and added to the list is comprised in Tab. 3. Complete list of the centers is presented in Appendix 1.

Table 3. Number of Local Centers in chosen districts in 2018, compared with the list from 2015.

District	Number of Local Centers identified in 2015	Number of Local Centers identified in 2018	Number of centers removed from the list	Number of centers added to the list
Praga-Północ	8	8	2	2
Ursynów	16	12	4	0
Wawer	9	7	3	1
Wilanów	4	3	2	1

[1] Source: own work, information for 2015 from [35].

Quality and character of Local Centers differ between the districts. Evaluation, aggregated into three main characteristics is presented in Tab. 4. it is worth mentioning that possibility to do grocery shopping is present in almost all investigated Local Centers, only one, situated in Wawer district, has no grocery store. Next detailed element of the evaluation present in all but one Local Centers is bus public transport.

Table 4. Evaluation of Local Centers in the chosen districts. Aggregated values.

Main characteristic	Number of points	Share in the possible maximum number of points [%]	Medium number of points per 1 Local Center
Praga-Północ			**7,5**
Variety of use	34	71	
Social and free of charge activities	13	54	
Public transport	13	81	
Total	**60**	**68**	
Ursynów			**8,25**
Variety of use	62	86	
Social and free of charge activities	19	52	
Public transport	18	75	
Total	**99**	**75**	
Wawer			**7,3**
Variety of use	33	79	
Social and free of charge activities	8	38	
Public transport	10	71	
Total	**51**	**66**	
Wilanów			**6,3**
Variety of use	19	79	
Social and free of charge activities	2	17	
Public transport	4	50	
Total	**25**	**57**	

[1] Source: own work.

The investigation of the urban structure in which the Local Centers are situated was also carried out. Number of the centers situated in a specific urban structure, as well as the dominant and supportive urban patterns of the districts are presented in Tab. 5 and 6.

Table 5. Spatial characteristic of the districts.

District	Dominant urban structure[1]	Other urban structures present[1]
Praga-Północ	19th century	Single multi-level buildings from later period inserted in the existing urban pattern; former factories converted from residential purposes. Monumental scale site: Hallera square from the 1950s, socrealism style.
Ursynów	LSE	Single (mostly western part of the districts); Gated (mostly along the metro line)
Wawer	Single	Few multi-family buildings
Wilanów	Gated	Single

[1] 19th century: typical tenant housing from 19th and early 20th century on the historical street network; LSE: Large-scale housing estates in prefab technology; Single: single family housing; Gated: gated condominium, predominantly from the period of last 25 years.

Source: own work.

Table 6. Number of Local Centers situated in the specific urban structure.

	Praga-Północ	Ursynów	Wawer	Wilanów
Number of centers in 19th century	6	-	-	-
Socrealism	1	-	-	-
Number of centers in LSE	-	4	-	0
Number of centers in Single	-	1	6	2
Number of centers in Gated	-	3	-	2
Mixed patterns	1	4	1	0
Total number of centers	8	12	7	4

[1] 19th century: typical tenant housing from 19th and early 20th century on the historical street network; LSE: Large-scale housing estates in prefab technology; Single: single family housing; Gated: gated condominium, predominantly from the period of last 25 years. There are also areas of mixed patterns. If specific pattern is not present in the district it is shown as "-", if the pattern is present but no Local Centers are situated there it is shown as "0".

Source: own work.

Number of potential users of Local Centers was investigated as well, as the number of dwellers in the district per one Local Center. During the 2015 analyses, when even smaller and in fact potential Local Centers were included, the medium number of inhabitants per center for whole Warsaw was approx. 10 thousands (9673) [36]. Data from current investigation for the chosen districts are presented in Tab. 7.

Table 7. Number of dwellers per one Local Center in the chosen districts.

District	Number of dwellers
Praga-Północ	8 238
Ursynów	12 483
Wawer	10 700
Wilanów	8 800

Source: own work.

Findings and their relevance for the identification of inequalities in the urban structure are discussed in the following Section.

5. Discussion and conclusion

Character of the Local Centers differ among the investigated districts but also some common features may be identified. In all districts the lowest level in the evaluation is related to the social character and inclusiveness. In two cases, in Praga-Północ and Ursynów it exceeded 50% of all point possible to account, but barely so (respectively 54% and 52%). in other two cases it was as low as 38% in Wawer and even 17% in Wilanów. The strongest point in the evaluation is the variety of use, which is all cases was approx to 80% and in Ursynów in even reached the level of 86%. It also shows the reasons for the centers removed from the original lists to be so ineffective. If generally social aspects of the Local Centers are weak, crossing the threshold of 5 points depends mostly on the variety of functions. If they are too few, other aspects, as public transport accessibility and social functions are not present to make up for this lack of more commercial functions.

This reflection lead to the responsibilities and possibilities of various stakeholders to create Local Centers. Variety of use depends strongly on the private sector or at least may be supplemented by the private sector if the public amenities are lacking. In the evaluation system three elements are expected to be created by the private entrepreneurs: grocery stores, pharmacies or drugstores and cafes or restaurants. They are very numerous in the investigated districts. As it was already mentioned before, only in one center per 31 investigated centers there was no grocery store. Restaurants or cafes were present in 28 centers, every one in Ursynów and in Wilanów, with two centers in Praga-Północ and one center in Wawer with no such a place. If the Local Center is functional it is also usually thanks to the fact that other uses, apart from these enumerated in the evaluation are provided. Again, only in one center in Praga and one in Ursynów this was not the case. In 29 centers there are several various stores and services, among which veterinary services, hairdresser salons and flower shops may be mentioned as quite popular.

“Other stores and service”s are among three elements of the variety of use evaluation which may be provided as well by the public sector (on municipal or districts level) or by the private sector. The other two are health-care centers, culture and educational amenities. In fact, identified “other uses” were mostly of a commercial nature, while health-care, culture and education were provided by both sectors. In this case a public sector role is rather strong. For 19 points given for cultural and/or educational amenities 18 points were also given for being accessible for the general public as provided by public sector. The only exception is also linked to the public sector activities as it is situated in the municipally-owned premises in a result of a profiled public tender.

Amenities depending solely on the private sector are the public transportation systems. Almost all Local Centers, with one exception in Wawer, are served by bus lines with stops located either in the very center or in the close proximity. 15 centers, so almost half of the total number, have the metro station, railway station or tram stop. It also underlines the importance of the transportation system in enhancing the network of Local Centers in the whole city.

The most lacking elements are those which should be the very core of the Local Centers, spaces dedicated for meetings and recreation, spending time among people, relaxation and sport activities. In Wilanów not even one center has a really inclusive public space, designed for a long-

term relax or sport or hanging out with other people in a free of charge way. This role is clearly taken by the numerous cafes and restaurants in the area. It is consistent with the fact that Wilanów is a district inhabited by well-to-do group, but it also shows a low potential for other groups to successfully mingle into such environment. There is also lack of high quality green areas, which is the cause for discontentment of the gated condominium inhabitants [37], even as they have the private access to the green inner courtyards. Clearly, they cannot play role of a more vast green space.

Also in Wawer there is significant lack of such public space. It is in turn consistent with the fact that single family housing urban structure is mostly privatized and it is both difficult and not so needed to create a common ground for the dwellers. It underlines however the individualistic character of such areas and barriers to create more inclusive and varied social environment. In the districts with multi-family housing, Ursynów and Praga, the situation is better, even as far from ideal. In Ursynów 6 centers per 12 got some points for the public space (two of them 0,5 point) and 7 for green areas (in this case also two of them got 0,5 point). In Praga-Północ the situation is similar, half of the Local Centers (4 out of 8) has inclusive public space and access to green areas. It is worth mentioning however that urban structure in Ursynów and Praga differs significantly in respect of green areas. Praga is densely built with some traditional green squares and parks. Ursynów is mostly modernist urban pattern, with prefab bulidings surrounded by green areas, so access to them in the Local Centers is less important then in Praga.

It is argued that effective creation of the local center network depend on following factors:

- presence of private enterprises
- presence of public amenities, especially public transport and cultural and educational facilities
- characteristic of the urban patterns, especially density and single or multi-family housing models
- careful urban planning of municipal side, especially good strategy regarding public space.

Inequalities observed in the investigated local centers are of a twofold nature. One results from the market forces, the other from the public land use planning and investments. Housing prices in Ursynów, Wilanów and Praga-Północ are all approximately of the medium price in Warsaw but in a higher half of Warsaw districts. In Ursynów it reflects the attraction of a rather green district with easy commuting by the metro line. Wilanów became a posh localization for the well-to-do group. In traditionally less attractive Praga such prices reflect both new public investments (cultural institutions but first of all, metro line) and new private housing for higher classes. It is currenlty the most mixed districts of the four in terms of socio-economic status of inhabitants. Therefore the role of Local Centres are very important to provide possibility to integrate newcomers and former dwellers, but also to provide for the less prosperous inhabitants propoer amenities and quality of life. Public space may influence also the gentrification processes.

In the better-to do neighborhoods commercial functions dominate above free of charge ways of spending time. Lack of green ares and public sport facilities may be made up for by commercial functions (gyms etc.). In poorer neighborhoods such absence may more easily result in health problems and general lack of physical activities. It is a public responsibility to provide the space in which people of different paths of life may meet. To some extent it is fulfilled by the presence of

cultural and educational facilities, then it is up to local communities how well they are used fro such purposes. What is seriously lacking is careful and purposeful planning of the public space. Its quality and possibility to include people form different social groups in crucial in creating more inclusive and just city.

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Appendix A

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