





# **RANKING OF WARSAW DISTRICTS**

**ACCORDING TO** 

# THE ATTRACTIVENESS OF LIVING CONDITIONS



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#### INTRODUCTION

Warsaw is the largest and the most developed Polish city as well as an important academic, cultural, political and economic centre. In the statistics regarding socio-economic development, comparison of the values of some indicators in the biggest Polish cities are in favour of Warsaw. In some domains the potential of the capital city is so high, it is comparable to the potential of the whole voivodships. The full picture of the city is composed of 18 districts which retain their original character. Some of them are elite areas, which have build their prestige mostly upon tradition and history or which have gained their position through fast development. Next to them there are districts with weaker infrastructure, lower level of development and inhabitants struggling with unemployment and poverty. In addition, as noted by Prof. Węcławowicz, "mechanisms of natural (market) selection are active in the cities: in many districts the majority of inhabitants have a similar socio-economic status, incomes and education level" <sup>1</sup>. Hence Warsaw, from the perspective of the inhabitants of different districts, can be seen as a completely different city. To some it may seem a green city, with an absorptive labour market, to others — a place with many homeless people and communication problems.

The positive and negative opinions of the inhabitants and regular visitors of the district are the source of stereotypes – labels attached to particular districts. Hence, some districts are associated with endless traffic jams and uncomfortable commuting or large share of industrial areas, others are considered only dormitory towns for those working in the city centre. However, because of the dynamic development in the recent years, some of the common images may have little in common with the reality. Therefore, to respond to the stereotypical perception of Warsaw's districts, this ranking of their attractiveness according to living conditions has been prepared.

It has to be noted that the term *living* (welfare) conditions of the population is often used interchangeably with the term *level of life of the population*. The living conditions usually describe the whole set of factors determining the fulfilment of people's needs, influencing both the possibility of fulfilling these needs and the level of life; while the level of life refers only to the degree of fulfilment of the needs<sup>2</sup>. In the presented analysis living conditions have been defined as the level of equipment with infrastructure and the factors influencing the fulfilment of needs.

The variables used for the creation of the ranking and of the characteristic of each district were measurable, available and complete. In addition the degree of variation and correlation between data have been taken into account and the most correlated indicators have been eliminated.

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<sup>&</sup>lt;sup>1</sup> G. Węcławowicz, Segregacja w miastach Polski, in: Geografia społeczna miast, Warszawa 2003.

<sup>&</sup>lt;sup>2</sup> See A. Luszniewicz, *Statystyka poziomu życia ludności*, Warszawa 1972.

The choice of indicators is not easy not only due to the unavailability of certain data, but also due to the problem of covering all the factors important for various social groups. The attempt at evaluating the differentiation of attractiveness of living conditions in Warsaw produced a general ranking, including the indicators assumed as significant for all inhabitants. However, regarding the fact that the perceived attractiveness differs according to the expectations and preferences of particular social groups, also separate rankings reflecting the preferences of chosen groups of inhabitants have been prepared. In addition, the report includes a section on the differentiation of indicators in selected thematic on the district level as well as statistical portraits of districts, complementing the information included in the text.

The report has been divided in **four parts**:

- part I presents the differentiation of attractiveness of living conditions in Warsaw in form of a ranking of districts;
- in **part II** the districts have been ranked according to the preferences of three separate groups of inhabitants: families with children, persons in productive age living in single-person households and elderly inhabitants;
- part III presents the differentiation of districts according to the values of selected indicators grouped in five thematic blocks: demography, labour market, social infrastructure, education as well as spatial development and newly built dwellings offered;
- part IV contains statistical portraits of all districts of Warsaw presenting the most distinctive features.

The analysis employs statistical data for 2011 published in the *Panorama of Warsaw districts in 2011* <sup>3</sup> downloadable from the website of the Statistical Office in Warsaw and in the Bank of Local Data on the website of the Central Statistical Office. All the terms, definitions and indicators used in the report have been described in the *Methodological notes* of the publication.

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<sup>&</sup>lt;sup>3</sup> http://www.stat.gov.pl/warsz/69 1310 PLK HTML.htm

# PART I. DIFFERENTIATION OF ATTRACTIVENESS OF LIVING CONDITIONS IN WARSAW

The ranking of attractiveness of the living conditions has been prepared using typical and available indicators covering various domains of life. Considering the fact that the assessment of living conditions is usually subjective, depending on expectations and preferences of the inhabitants, the following analysis takes into account the features most often listed by persons looking for a flat to buy. According to research conducted by real estate agencies, the prospective buyers pay attention first of all to good communication, developed retail and services, and closeness of green areas<sup>4</sup>. In addition, families with children prefer locations with access to school and preschool education, while the elderly persons have expectations regarding i.a. access to medical infrastructure.

The choice of variables and the description of the phases of calculating the synthetic measure on which the ranking has been based, are presented in Annex 1 of the report.

The ranking of districts has been done by placing the districts according to their value of the synthetic measure in decreasing order. The values of the measure and the rank are presented in Table 1.

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<sup>&</sup>lt;sup>4</sup> Warszawskie dzielnice na "nie", czyli paradoks Białołęki, Ranking conducted by real estate agents Metrohouse & Partnerzy, 24 August 2011, downloaded on 12.03.2014 from:

http://metrohouse.pl/images/upload/File/Komunikaty/Kom\_Warszawskie-dzielnice-na-nie-24\_08\_11.doc

Table 1. Ranking of Warsaw's districts according to the attractiveness of living conditions.

Rank	District	Value of synthetic measure w₅
1	Śródmieście	0.842
2	Mokotów	0.678
3	Ochota	0.673
4	Wola	0.657
5	Żoliborz	0.602
6	Praga-Południe	0.563
7	Włochy	0.532
8	Ursynów	0.518
9	Praga-Północ	0.495
10	Targówek	0.495
11	Wesoła	0.459
12	Wilanów	0.401
13	Wawer	0.380
14	Bielany	0.359
15	Rembertów	0.354
16	Bemowo	0.326
17	Ursus	0.300
18	Białołęka	0.265

Map 1. Spatial distribution of the values of the synthetic measure  $(w_s)$ 



The highest level of attractiveness of living conditions was observed In 4 districts in group I: Śródmieście, Mokotów, Ochota and Wola. The top rank belongs to Śródmieście.

Śródmieście as the oldest and relatively small (in area) district, is densely built up, has highly developed infrastructure and communication network. Thanks to the convenient connections to other districts, Śródmieście is an attractive location for enterprises, public administration, culture and leisure centres, museums, galleries, cinemas and theatres.

# STRUCTURE OF THE SYNTHETIC MEASURE<sup>a</sup>

To determine the significance of each variable for the synthetic measure value for each district, the percentage share of each variable (measure) in the sum was calculated according to the formula:

$$w_{ss} = \frac{w_s}{\sum_{j=1}^{p} w_s} *100$$

where:

j - 1, 2, ..., p

p – number of variables,

 $w_s$  – synthetic measure.

a. See. Z. Zioło, *Zastosowanie miernika syntetycznego w badaniach układów przestrzennych w geografii przemysłu*. Seminarium SGP PTG, Łódź 1985, p.6.

The largest share in the creation of the value of the synthetic measure for Śródmieście belonged to 6 variables whose share was 11% each in the measure equal 100 (consisting of 11 variables). These were variables describing the infrastructure in: health care – the number of persons per 1 health care establishment and per one pharmacy, retail&services – number of persons per 1 shop, culture – access to libraries, education – number of children in preschools per 1000 children aged 3-6 and number of pupils per one computer with access to the Internet in the primary schools.

Thanks to the highly developed services, health care and education infrastructure as well as access to cultural establishments, Śródmieście has the most attractive living conditions in Warsaw. It is worth pointing out, that although the existing high-density housing limits the development of new residential buildings in the area of the district (Śródmieście has the lowest number of completed dwellings), the newly built apartments have the highest average floor space (almost 4 times higher than in Praga-Północ – the district with the smallest average floor space of a completed dwelling). Hence, the prices of dwellings in newly-constructed buildings are the highest in the whole capital city. According to the data of Domiporta.pl website the average price of 1 m² of a new flat was 14.3 thousand zlotys and was twice higher than the average price of 1 m² observed in Targówek, Rembertów, Wesoła or Białołęka (6,5 thousand zl/m²). The dwellings offered attract the richest inhabitants which further inflates the prestige of the district.

A high level of the measure of attractiveness of living conditions was observed also in 3 districts, neighbouring with Śródmieście: Mokotów, Ochota and Wola. In Mokotów the largest influence on the value of the synthetic measure was exerted by the length of cycling paths in the district's area – in the value of 100 it was almost 13%. In Ochota, an important feature was the access to cultural establishments: cinemas, theatres, museums (calculated together, as number of persons per one establishment), which contributed to almost 14% of the value of the measure. In Wola the biggest influence belonged to the percentage of area with dominating communication function, almost 15% of the measure value.

The group with the lowest level of attractiveness of living conditions consists of three districts: Bemowo, Ursus and Białołęka. The district with the lowest rank of all was Białołęka.

Białołęka as a relatively new district faces an investment boom, however the district's infrastructure is still disproportionate to the number of inhabitants who settle there. Hence the low value of the synthetic measure of attractiveness, drugged down mostly by poor access to health infrastructure (health care establishments) and cultural centres (cinemas, theatres, museums). The share of these variables in the value of the synthetic measure was 0%. A low level of attractiveness of living conditions was also observed in the districts of Ursus and Bemowo. The value of the synthetic

measure for Ursus was impacted negatively by poor access to libraries and a large number of pupils per 1 personal computer with Internet access in their primary schools – both variables accounted for 0% of the value of the synthetic measure. Similarly, in Bemowo, 0% of the value was contributed by access to pharmacies, which is very poor in the district.

Statistical portraits of all districts, elaborated on the basis of the most distinguished indicators, have been presented in part IV, in the order of their rank in the ranking presented above.

# PART II. ATTRACTIVENESS OF LIVING CONDITIONS FOR PARTICULAR GROUPS OF INHABITANTS

Evaluation of the attractiveness of living conditions depends on subjective expectations. Therefore one place can be described by some people as comfortable and very sought for while by others – as inconvenient and uncomfortable. That is because the person's expectations depend on many factors, i.a.: age, economic activity, having children, that is the situation of the person. The needs of a family with children differ from the expectations of a single person, or taking age into account, of an elderly person. For some (especially for families with children or young couples) it is important to live close to schools and preschools, for others parks and leisure areas are desirable, for yet other people what matters is the availability of entertainment 24/7.

Taking into account the above remarks, separate rankings of Warsaw districts according to the attractiveness of living conditions have been prepared considering the needs of 3 social groups:

- 1. families with children;
- 2. working age employed people in one-person households covered by the term singles;
- 3. elderly persons, in post-productive age further referred to as seniors.

Rankings have been prepared using the same number of variables, of which 2 are the same in each ranking while 3 rely on the preferences of particular groups. In addition, it was assumed that the variables do not have to come from different thematic blocks.

Variables regarded as core for all rankings, are the variables assumed as significant for all the groups. They regard the availability of parks, lawns and greenery (their share in the area of the district) and the beneficiaries of social assistance, whose number reflects the scale of social problems (unemployment, disability, long-term illness etc.) the inhabitants deal with.

#### 1. FAMILIES WITH CHILDREN

Families with children prefer places with high level of development of the infrastructure serving for education and childcare. Hence for the parents of small children it is important to live close to nurseries and pre-primary education facilities, while the parents of school-aged children prefer places located near or with convenient communication to primary schools. Since the introduction of school threshold areas<sup>5</sup>, according to which the primary and lower secondary schools accept children living in the given district, the number of schools should be adjusted to the number of pupils. However in some districts, due to the growing number of children and absence of the development of educational infrastructure, the schools are overcrowded. It not only affects the quality of teaching, but also results in planning of lessons according to shift system, which can be arduous for pupils and their parents. Hence the introduction to the set of variables of the data on the number of pupils per 1 personal computer with the access to the Internet in primary schools, which is indirect evidence of the quality and conditions of teaching.

From the point of view of the families with children another important feature is the availability of shops (number of inhabitants per 1 shop), both of those with a wide range of merchandise and of the shops selling mostly groceries and products of everyday need.

In the construction of the ranking of Warsaw districts according to attractiveness to families with children 5 variables were taken into account:

 $x_1$  – the number of beneficiaries of social assistance per 1 thousand population;

x<sub>2</sub> – the share of parks, lawns and residential estates' greenery in the total area (%);

 $x_5$  – number of children in nursery schools per 1 thousand children aged 3-6;

 $x_6$  – pupils per 1 personal computer with access to the Internet in primary schools;

 $x_{10}$  – number of people per 1 shop;

The calculations have been performed according to the synthetic measure method described in Annex 1. The ranking has been prepared according to the decreasing values of the synthetic measure.

<sup>&</sup>lt;sup>5</sup> Education System Act of 7 September 1991 (Journal of Laws of 2004, No. 256, item 2572 as amended).

Table 2. Ranking of living conditions attractiveness for families with children

Rank	District	Synthetic
Ralik	District	measure
		W <sub>s</sub>
1	Śródmieście	0.821
2	Ochota	0.712
3	Mokotów	0.637
4	Włochy	0.603
5	Żoliborz	0.595
6	Wola	0.565
7	7 Ursynów 0.542	
8	Targówek	0.528
9	Praga-Południe	0.523
10	Wesoła	0.491
11	Bemowo	0.484
12	Rembertów	0.416
13	Wilanów	0.393
14	Ursus	0.392
15	Bielany	0.381
16	Białołęka	0.368
17	Wawer	0.355
18	Praga-Północ	0.301

Map 2. Spatial distribution of the synthetic measure



Taking into account the indicators assumed as significant for families with children, to the group I, with the high level of attractiveness of living conditions, have been assigned 2 districts: Śródmieście and Ochota, the former with the top rank.

Śródmieście is a district with very well developed educational infrastructure. It has the highest number of children attending nursery schools, a relatively low number of pupils per one primary school and the lowest number of children per 1 personal computer with access to the Internet. In addition, the number of children using pre-primary education facilities exceeds the number of children of the relevant age (3-6) living in the district. Per 1 thousand children aged 3-6 there are 1042 children attending nursery schools which shows that the facilities located in Śródmieście are used also by the inhabitants of other districts. Highly developed educational infrastructure influences also the teaching conditions expressed by the access of pupils to the computers. In primary schools in Śródmieście there are 9 pupils per 1 computer with access to the Internet – which is the best score in the capital city.

Apart from that, Śródmieście has a well developed retail&services infrastructure, with the best in the whole city accessibility of shops. There are 161 inhabitants per 1 shop – 1 336 less than in Wilanów. The least attractive living conditions for families with small children have been noted in 3 districts of group IV: Praga-Północ, Wawer and Białołęka. Among these districts the lowest rank belongs to Praga-Północ. It is a district with underdeveloped educational infrastructure, where a small number

of children attend nursery schools (in proportion to 1 thousand children aged 3-6), and primary schools are overcrowded. Large number of pupils in primary schools affects negatively the conditions and quality of teaching. It is worth noting that the sixth-graders from Praga-Północ, as the only ones in the capital city, have got teaching results below the voivodship average. According to the data of the District Examination Board in Warsaw for 2011, in the test for the sixth grade of primary school assessed on 0 to 40 points scale, the pupils from Praga-Północ scored on average 24.82 points compared to the average of 25.96 points in the voivodship and 29.13 points average in Warsaw<sup>6</sup>.

# 2. WORKING AGE EMPLOYED PEOPLE IN ONE-PERSON HOUSEHOLDS (SINGLES)

The term singles refers to persons in working age, not in long-term relationship, therefore not having a partner (running a one-person household), childless. Singles participate actively in the consumption of cultural and material goods, hence in assessing the attractiveness of living conditions for them the availability of restaurants, clubs, shops and cultural institutions becomes significant. According to the Central Statistical Office's study Participation in culture in 2009 among the people attending opera or operetta once a month or more often and going to the cinema most often (more often than once a week), the highest share belongs to the age group 35-49<sup>7</sup>.

For singles, because of their high mobility, an important feature is the share of area with communication functions<sup>8</sup>. According to a PBS DGA report Monitoring of social attitudes to sustainable transport "89% of persons aged 25-39 declares their main means of transport is a private car"<sup>9</sup>. A higher share of communication areas allows for choosing alternative routes, shortening the time needed to reach the destination. Cycling paths, allowing not only for activity in leisure time, but also for using a bicycle as a means of transport, are of equal importance.

In the preparation of the ranking of Warsaw districts attractive for singles, 5 variables were included:

 $\mathbf{x_1}$  – the number of beneficiaries of social assistance per 1 thousand population;

 $x_2$  – the share of parks, lawns and residential estates' greenery in the total area (%);

 $x_3$  – share of communication function in total area (%);

 $x_4$  – number of people per 1 facility of any of the kind: cinemas, theatres, museums (sum);

 $x_{11}$  – length of cycling paths (in km);

The calculations have been performed according to the synthetic measure method described in Annex 1. The ranking has been prepared according to the decreasing values of the synthetic measure.

http://www.oke.waw.pl/new/download/files/File/raporty/2011/sp/Sprawozdanie 2011.pdf

<sup>&</sup>lt;sup>7</sup> Uczestnictwo ludności w kulturze w 2009 r., GUS, Warszawa 2012.

<sup>&</sup>lt;sup>8</sup> Areas covered by: roads, railway tracks and other communication areas i.e. tramways outside streets, parkings, bus stations.

Monitorowanie postaw społecznych w zakresie zrównoważonego transportu, PBS DGA S.A., Sopot 2010, p. 31.

Table 3. Ranking of attractiveness of living conditions for singles

	100113 101 3111610	
	1	Synthetic
Rank	District	measure
		W <sub>S</sub>
1	Mokotów	0.707
2	Śródmieście	0.653
3	Ochota	0.648
4	Żoliborz	0.633
5	Wola	0.623
6	Praga-Południe	0.570
7	Ursynów	0.498
8	Praga-Północ	0.476
9	Targówek	0.457
10	Bemowo	0.457
11	Włochy	0.457
12	Wilanów	0.408
13	Bielany	0.408
14	Ursus	0.379
15	Białołęka	0.321
16	Wesoła	0.258
17	Wawer	0.239
18	Rembertów	0.126

Map 3. Spatial distribution of the synthetic measure



The highest value of the synthetic measure of attractiveness of living conditions for singles was calculated for 5 districts (group I) located in the city centre: Mokotów, Śródmieście, Ochota, Żoliborz and Wola. The top rank belongs to Mokotów. It is a district well connected with Śródmieście and other districts. In its area there is a high share of parks, lawns and greenery. What's more, it stands out with the longest network of cycling paths, 13.0% of all the path length in the capital city. The cycling paths allow the inhabitants to spend their leisure time actively and improves their safety during the ride. In addition, Mokotów has a large number of cultural institutions (in sum 15 cinemas, theatres and museums) – second only to Śródmieście.

The lowest level of attractiveness of the living conditions (group IV of the ranking) was observed in 3 eastern districts: Wesoła, Wawer and Rembertów. These districts do not have any cultural institutions (cinemas, theatres or museums). Furthermore in their area the shares of both communication and green areas are low In addition, Rembertów lacks cycling paths.

#### 3. SENIORS

In this report elderly persons (seniors) are people past their working age (women aged 59 and more, men aged 65 and more).

Because of the increasing life expectancy, higher education level and change in the lifestyles of elderly people, there is a growing demand for new types of services in education, leisure and sports. Taking into account educational needs and patterns of spending leisure time, accessibility of libraries becomes a significant feature. Furthermore, in response to the expectations regarding leisure and recreation time services, it is important to spend free time in an active manner. Hence the inclusion of the areas with recreational function (parks, greenery) in the attractiveness ranking. In is even more important for persons with limited mobility who, because of their lower physical fitness, spend more time at home and its nearest surroundings.

The household budget studies from 2011<sup>10</sup> point that while the average disposable income per person is higher in old age pensioners' and disabled persons' households (1233.08 zl) than in the total of households (1226.95 zl), the structure of spending is different, which may affect the material situation of elderly persons. In old age pensioners and disabled persons' households significantly more means are spent for food and non-alcoholic beverages (27.9% against 25.0% average for all households), housing and utilities (24.9% against 20.7%) and health (8.0% against 5.0%).

Due to the lowering physical fitness and psychological endurance of elderly people as well as their limited spatial mobility, access to health care services is important for this group. According to the results of *The European Health Interview Survey* conducted in Poland by the Central Statistical Office in 2009<sup>11</sup>, the frequency of longstanding health problem or illness (lasting at least 6 months), increases with age. "While among the young people (up to 30 years of age) longstanding health problems occur rarely (one in 5 or 6 persons), among the elderly - these are very common. Occurrence of such problems was signalled by over 60% of fifty-year-olds, 79% of sixty-year-olds and over 90% of the oldest people." In 2011 the groups most often visiting family doctors were children up to 4 years of age and middle-aged or elderly persons (aged 50 and more).

Similarly, the structure of medicine takers indicates that the groups taking medicines more often than the others were children up to 9 years of age and persons aged 50 and more. The share of persons taking medicines was very high (78% to 95%) even among fifty-year-olds, while among the younger age groups it was 52% to 68%. Therefore one of the variables included for calculating this ranking was accessibility of pharmacies (number of people per 1 pharmacy).

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<sup>&</sup>lt;sup>10</sup> Budżety gospodarstw domowych w 2011 r., GUS, Warszawa 2012.

<sup>&</sup>lt;sup>11</sup> Zdrowie i ochrona zdrowia w 2010 r., GUS, Warszawa 2012, p.62.

In the construction of the ranking of districts attractive for seniors, the following 5 variables were taken into account:

- $x_1$  the number of beneficiaries of social assistance per 1 thousand population;
- $x_2$  the share of parks, lawns and residential estates' greenery in the total area (%);
- $x_7$  number of people per 1 health care establishment;
- x<sub>8</sub> number of people per 1 pharmacy;
- $x_9$  number of people per 1 library;

The calculations have been performed according to the synthetic measure method described in Annex 1. The ranking has been prepared according to the decreasing values of the synthetic measure.

Table 4. Ranking of attractiveness of living conditions for seniors

		Synthetic
Rank	District	measure
		Ws
1	Śródmieście	0.821
2	Ochota	0.694
3	Wesoła	0.634
4	Żoliborz	0.615
5	Mokotów	0.615
	Praga-	
6	Południe	0.603
7	Wola	0.563
8	Wilanów	0.530
9	Ursynów	0.522
10	Praga-Północ	0.462
11	Wawer	0.436
12	Targówek	0.430
13	Rembertów	0.422
14	Bielany	0.416
15	Włochy	0.368
16	Ursus	0.282
17	Bemowo	0.275
18	Białołeka	0.247

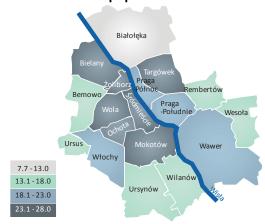
Map 4. Spatial distribution of the synthetic measure



The highest level of attractiveness of living conditions for seniors was observed in 2 districts: Śródmieście and Ochota. It is worth pointing out that these districts have the highest share of inhabitants past their working age – the share of this group in the structure of population according to the economic groups of age exceeds 25%.

As the land use structure of these district is dominated by build-up and urbanised areas, the land available for residential development is very limited. It limits the inflow of population and influences negatively the age structure of inhabitants, due to which these districts are considered areas with advanced process of ageing of the population.

Map 5. Share of people past working age in the total number of population



The districts in group I, with the highest level of attractiveness of living conditions, have a well developed health care infrastructure. Regarding the accessibility of health care establishments they are on top rank among all the districts – for 1 health care establishment there are 678 persons in Śródmieście and 1104 in Ochota. Also regarding the share of parks, lawns and residential estates' greenery in the total area the group I district rank high: Ochota ranks second, Śródmieście – third.

The least attractive living conditions for seniors were observed in three districts: Bialołęka, Bemowo and Ursus. They are districts where the infrastructure, despite the rapid development, is still disproportionate to the number of inhabitants. The low value of the synthetic measure of attractiveness in these districts was caused by the poor access to health services: a large number of population per 1 health care establishment and per 1 pharmacy. According to the values of these indicators, group IV districts ranked below tenth place among all the districts. Similarly, with respect to the access to libraries (number of inhabitants per 1 library) the districts Ursus, Bemowo and Białołęka ranked low, occupying 16<sup>th</sup>, 17<sup>th</sup> and 18<sup>th</sup> place, respectively.

#### PART III. DIFFERENTIATION OF DISTRICTS REGARDING SELECTED THEMES

Part III presents rankings of Warsaw districts in thematic blocks regarding different spheres of life. The section entitled *Demography* presents the demographic potential of the districts, *Labour market* – entrepreneurship, working and unemployed persons. The section Social infrastructure presents ranking according to the accessibility of health care establishments, libraries as well as the number of beneficiaries of social assistance. The next section contains the ranking according to indicators for infrastructure in *Education*. *Land use and residential infrastructure* presents the ranking of districts regarding the structure of land use as well as the number and size of new dwellings.

The method used for calculation is presented in Annex 2 towards the end of the report.

#### **DEMOGRAPHY**

The highest density of population is observed in the districts located in the city centre; population density decreases with distance from the centre. The highest density is observed in Ochota – 8774 persons/km² (5441 persons/km² more than the average for the capital city's area). High population density, over 7 thousand persons/km², is observed also in the districts: Praga-Południe, Śródmieście and Wola, and the lowest values - in Wilanów (652 persons/km²), Wawer (877 persons/km²) and Wesoła (994 persons/km²).

Regarding, the demographic structure along economic age groups, the situation is the least favourable in Żoliborz. This district has a low share of people under working age (13.1%), the lowest share of working age population (58.9%) and the highest percentage of inhabitants past working age (28.0%). As a result, the district has a high dependency ratio – for each 100 persons in working age there are 70 in non-working age (children and seniors).

Equally unfavourable population structure is observed in the central, left-bank districts: Śródmieście, Mokotów, Ochota and Wola. The proportion of population past working age in these districts exceeds 25.0% and the dependency ratio is higher than 60 persons in non-working age for 100 in working age. These are the visible signs of population ageing, one of the most important contemporary social challenges. Population ageing causes i.a. changes in the structure of consumption, decrease in economic activity and increase of demand for certain services – e.g. in health care and social assistance. The districts particularly affected by this phenomenon have high population density and their land is mostly built up and urbanised, which limits the area available for new residential investments. This in turn limits the inflow of population and impacts negatively the age structure of the districts' population.

In the demographically youngest district – Białołęka – the shares of the inhabitants below working age (24.1%) and in working age (68.2%) are the highest, while of the post-working age – the lowest (7.7%). It is worth noting that the percentage of inhabitants past working age in Białołęka is 20.3 percentage points lower than in Żoliborz, and that the former is the only district where this percentage is below 10%.

Districts with relatively young demographic structures also observe high positive natural increase. The districts with the highest natural increase rate are: Białołęka (13.7 per 1 thousand population), Wilanów (12.6 per 1 thousand population) and Ursynów (8.1 per 1 thousand population). It is worth pointing out that only 10 districts, all of them outside the city centre, have positive natural increase.

With respect to net migration for permanent residence, the top district in Wilanów, with net migration rate of 80 persons per 1 thousand population. Next places belong to Białołeka (net

migration rate of 29 persons per 1 thousand population) and two south-eastern districts, Wawer and Wesoła, both with net migration rate equal 15 thousand per 1 thousand population. The two districts with the highest net migration rate, Wilanów and Białołęka are also the ones with the largest number of dwellings completed in 2011, which together amounted to 25% of all new dwellings in Warsaw.

Analysing the sex balance of population it can be observed that in all districts women outnumber men. The highest femininity ratio (125 women per 100 men) is observed in Śródmieście and Żoliborz, two districts which also have the least favourable structure of population according to economic age groups. The lowest value of femininity ratio is observed in Wesoła – 107 women per 100 men and in Rembertów – 109 women per 100 men.

Table 5 presents the results of the ranking of districts according to demographic indicators. The dependency ratio is a variable the high values of which have negative impact, therefore rank 1 means the lowest value of this indicator. The other variables are stimulants, thus rank 1 means the highest value of the variable.

Table 5. Ranking of Warsaw districts according to demographic indicators

	Popu-	Percenta	ge of popu	lation		Natural	Net migration rate per 1 thousand population	
District	lation density per 1 km2	below working age	working age	past working age	Dependency ratio	increase rate per 1 thousand population		Femininity ratio
Bemowo	10	9	3	13	3	5	6	5.5
Białołęka	14	1	1	18	1	1	2	3
Bielany	11	12	14.5	6	14.5	12	14	12
Mokotów	5	14.5	17	3	17	14	12	14.5
Ochota	1	14.5	14.5	4	14.5	15	16	14.5
Praga- Południe	2	13	8	8	8	11	15	13
Praga-Północ	6	11	5	10	5	13	18	10.5
Rembertów	15	6	4	14	4	7	8	2
Śródmieście	3	18	13	2	14.5	18	17	17.5
Targówek	9	10	16	7	14.5	9	13	10.5
Ursus	7	4	9	12	9.5	4	5	8
Ursynów	12	7	2	15	2	3	11	8
Wawer	17	5	11	11	11.5	8	3	4
Wesoła	16	3	6	17	6	6	4	1
Wilanów	18	2	7	16	7	2	1	5.5
Włochy	13	8	10	9	9.5	10	7	8
Wola	4	17	12	5	11.5	16	9	16
Żoliborz	8	16	18	1	18	17	10	17.5

#### **LABOUR MARKET**

The highest number of economic entities and employed persons are registered in left-bank part of the capital city. Due to the convenient communication connections, economic activity has concentrated in Śródmieście. High level of entrepreneurship was observed also in the southern districts of Włochy and Wilanów.

High number of economic entities registered in the National Official Business Register REGON is evidence for i.a. energy of the inhabitants, income level, demand for services and above all about favourable conditions for business in the district. Only 8 districts recorded higher level of entrepreneurship than the city's average (200 entities per 1 thousand population). Differences in the number of entrepreneurs between left-bank and right-bank are evident. Only one of the right-bank districts – Wawer, was among the districts with above average entrepreneurship ratio. It is not surprising that the districts with the highest level of entrepreneurship have received the highest revenue from tax – in Śródmieście the budget revenue was 4061 zl per 1 inhabitant. In comparison, Ursus, with the lowest level of inhabitants' entrepreneurship received only 521 zl per capita.

With respect to the number of employed<sup>12</sup> persons the top three ranks belong to Śródmieście, Włochy and Ochota; only two right-bank districts (Praga-Północ and Praga-Południe) entered the top ten.

When analysing the level of unemployment, among the districts with the highest level of entrepreneurship only Wilanów registered the lowest number of unemployed (12 unemployed persons per 1 thousand inhabitants). Śródmieście, Włochy and Wola were below the top 10. It is Worth noticing that the level of unemployment differed significantly between districts. In Wilanów there were 12 unemployed per 1 thousand inhabitants, while in Praga-Północ the proportion was three times higher – 37 unemployed per 1 thousand population. There are also visible disproportions in the structure of the unemployed according to level of education, age and length of unemployment.

Regarding the level of education of the unemployed, it was more difficult to find work for the people with higher education in Wilanów, Ursynów and Białołęka (where their share among the unemployed was 45.5%, 40.1% and 34.0%, respectively), and for the people with lower secondary or less education – in Praga-Północ (where such persons were 36.0% of the unemployed), Włochy and Wola (29.6% of the unemployed in both of the districts).

The age structure of the unemployed shows that the problem of unemployment affected primarily the young people, aged 25-34 living in Wilanów, Ursynów and Bemowo (with the share of the young of 35.8%, 35.5% and 34.7%, respectively, of the total number of the unemployed). On the other

<sup>&</sup>lt;sup>12</sup> According to the place of work and kind of activity; without economic entities with 9 or less employed persons; excluding private farms in agriculture.

hand, the unemployed aged 55 and more lived most often in Ursynów, Śródmieście and Bemowo (constituting 23.8%, 21.0% and 20.7%, respectively, of all the unemployed).

With respect to the length of remaining unemployed, the long-term unemployed dominated in Bielany, Żoliborz and Śródmieście, where they constituted 48.1%, 47.2% and 47.0% of the total number of the unemployed.

Table 6 presents the results of the ranking of districts according to the labour market indicators. Two variables referring to the unemployment, because of their negative effect, were reversed, so that rank 1 is the district with the lowest value.

Table 6. Ranking of Warsaw districts regarding labour market situation

District	Number of economic entities per 1 thousand population	Number of employed per 1 thousand population	Number of unemployed per 1 thousand population	Share of long-term* unemployed
Bemowo	13	15	5,5	9
Białołęka	17	12	3	1
Bielany	12	16	16	18
Mokotów	5	4	9	14
Ochota	7.5	3	5.5	12
Praga-Południe	9	10	15	6.5
Praga-Północ	15	8 18		5
Rembertów	14	14	9	2
Śródmieście	1	1	13.5	16
Targówek	16	13	13.5	3
Ursus	18	17	9	8
Ursynów	10.5	9	3	10
Wawer	7.5	11	9	6.5
Wesoła	10.5	18	3	4
Wilanów	3	7	1	15
Włochy	2	2	12	13
Wola	4	5	17	11
Żoliborz	6	6	9	17

<sup>\*</sup> unemployed for 12 months and longer.

#### **SOCIAL INFRASTRUCTURE**

Availability of social infrastructure is an important factor for determining the attractiveness of living conditions. Social infrastructure includes facilities fulfilling the needs of the population in the domains of childcare, education, social assistance, health care, arts and culture. Currently many developers attract buyers by creating housing estates with so-called small infrastructure. On the estate, apart from dwellings, they locate nurseries, preschools, clinics, private parks and gardens, playing fields and even streets and railway stations.

Regarding the youngest inhabitants, the best offer of childcare for children up to 3 years of age was available in Mokotów. This district concentrated 13.1% of all Warsaw facilities providing day care to children up to 3 years of age<sup>13</sup>. However, because of the large number of children in Mokotów, these facilities were overcrowded: for each facility there were 48 children (by 37 more than in Wesoła). Finding a place in a facility for children aged up to 3 posed the most difficulty in Włochy and Ochota, where all places were taken and there were 70 and 664, respectively, children per 1 facility. The largest number of places (62) remained available in facilities located in Praga-Południe.

Inhabitants in difficult life situation can rely on help from the Social Assistance Centre. Since the modifications in legal regulations introduced in 2004, the benefits come from two separate and complementary systems: the social assistance system and the family benefits system. Social assistance is targeted at persons and families with the lowest income, while the family benefits system uses a slightly higher income criterion as this system aims to support the upbringing of children in difficult situation and families with disabled or seriously ill members.

Granting a family benefit depends on the income, with the limit of 504 zl per family member or 583, if there is a disabled child. In 2011 the largest number of family benefits (35 542) were paid in Praga-Północ, with the total amount of 3 million zlotys. In the total number of benefits 64.7% were benefits for children aged 5-18. The least family benefits were paid in Wilanów, 0.5% of the total number of such benefits paid in Warsaw.

The largest number of persons relying on social assistance was observed in Praga-Północ, Żoliborz and Wola, where the number of clients per 1 thousand population amounted to 49, 37 and 34, respectively. The causes of granting social assistance was most often serious or long-lasting illness – in Praga-Południe one in four families used social assistance because of illness (26.1%). Poverty, in turn, affected the most the inhabitants of Praga-Północ, where 35.0% of families received social assistance for this reason. It is worth noticing that families receiving benefits because of poverty living in Praga-Północ made 15.9% of all impoverished families in the capital city.

Considering the access to health care services, the highest number of health care establishments were located in the city centre: Śródmieście, Wola and Mokotów, which resulted in better availability of health services in these districts: there were 678, 1375 and 1379, respectively, persons per 1 health care establishment. The least favourable conditions occurred in: Białołęka, where there were 3 715 persons per 1 establishment, Bemowo (3 621) and Rembertów (2 910). With respect to pharmacies the ranking was similar. Availability was the best in Śródmieście and Wesoła, where there were, respectively, 1 496 and 2 074 persons for 1 pharmacy. The worst situation characterised the western districts: Bemowo and Ursus, with more than 3 800 people per 1 pharmacy.

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<sup>&</sup>lt;sup>13</sup> Law on childcare for children younger than 3 years frames conditions for organizing and functioning of various forms of childcare. Care can be organized in nurseries and kids clubs or provided by a day carer.

Table 7 presents the results of the ranking of the districts according to the indicators of social infrastructure. All variables have negative impact on attractiveness, therefore rank 1 is the lowest value.

Table 7. Ranking of Warsaw districts according to their social infrastructure.

District	Number of people per 1 health care establish ment	Number of people per 1 phar- macy	Number of children up to 3 years of age in day care facilities	Number of social assistance clients per 1 thousand population	Number of family benefits paid per 1 thousand population	Share of benefits for children in families with multiple children in the number of supplements to the family benefit	Number of people per 1 library
Bemowo	17	18	6	2	3	1	17
Białołęka	18	14	4,5	4	5	13	16
Bielany	14	16	12	8.5	10	7	4
Mokotów	4	8	10	10.5	6	12	3
Ochota	2	11	15	7	4	11	6
Praga- Południe	10	7	13	8.5	12	5	9
Praga- Północ	5	10	17	18	18	14	2
Rembertów	16	4	2	14	17	10	8
Śródmieście	1	1	14	15	7	8	1
Targówek	15	15	8	12	14	2	7
Ursus	13	17	11	6	9	6	18
Ursynów	8	9	7	4	2	4	14
Wawer	12	6	4.5	13	16	9	11
Wesoła	9	2	1	4	11	17	5
Wilanów	6	12	3	1	1	18	12
Włochy	11	13	18	10.5	15	16	15
Wola	3	5	16	16	13	15	10
Żoliborz	7	3	9	17	8	3	13

#### **EDUCATION**

The quality of education services matters<sup>14</sup> from the initial phase – the one of pre-primary education. The nursery schools in Warsaw are distributed unequally. In the analysed year the highest number of such facilities functioned in Mokotów, amounting to 12.3% of all nursery schools in Warsaw. The lowest number of such facilities functioned in Rembertów, only 1.4% of the total. What's more, the differences in age structure between the populations of Warsaw districts cause that in some areas the number of places offered does not satisfy the demand. The problem of the lack of places in nursery schools occurs in most districts, but it is the most pronounced in Białołęka, where for 1 thousand children in the age group 3-6 only 600 children attended nursery schools. By contrast, in some districts, with older populations, the children in nursery schools outnumber the children in relevant age group living in the district. Such is the situation in Śródmieście, where for 1 thousand children between 3 and 6 years old, there were 1 042 children attending nursery schools.

In Warsaw there are also districts with a small number of nursery schools, where there is no unmet demand for such services. One example is Wesoła where the lowest number of children attend nursery schools per 1 thousand children between 3 and 6 years old (493), the number of children per 1 facility is the lowest (55) and there are many free places (133).

There are also differences in conditions of learning in primary schools, measured by the number of pupils per 1 school. The most unfavourable situation occurred in Bemowo and Ursus, where per 1 primary school there were 526 and 461, respectively, pupils (compared to 291 Warsaw average). In these districts there were 15 (Bemowo) and 18 (Ursus) pupils per 1 school computer with access to the Internet (Warsaw average: 13).

In the case of lower secondary schools, the most students per 1 school were enrolled in Białołęka and Targówek (340 and 320, respectively, compared to 167 on average in Warsaw). The smallest lower secondary schools were located in Wawer and Mokotów, with 105 students per 1 school in the former and 119 – in the latter.

Table 8 presents the results of the ranking of districts according to the conditions offered in education establishments. The number of children in nursery schools per 1 thousand children in age group 3-6 was treated as a stimulant. For the other variables the ranking was done in a reverse order, i.e. rank 1 means the smallest value.

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<sup>&</sup>lt;sup>14</sup> Proactive innovation and education policy is one of the priorities of activities towards sustainable development of cities, as indicated by the *Leipzig Charter*. According to this EU document cities are places where knowledge is created and imparted, hence sustainable urban development should incorporate constant improvement of education level.

Table 8. Ranking of Warsaw districts according to the conditions in their education establishments

Districts	Children in nur- sery schools per 1 thousand children aged 3-6	Number of children in nur sery schools per 1 facility	Average number of children in primary school	Average number of children in lower secondary school	Number of pupils per 1 computer* in primary school
Bemowo	14	17.5	18	8.5	13
Białołęka	17	5	16	18	15.5
Bielany	6	15	12	8.5	15.5
Mokotów	8	6	6	2	6
Ochota	4	14	7	16	6
Praga-Południe	7	12.5	11	14	15.5
Praga-Północ	15	16	15	13	15.5
Rembertów	3	9.5	10	3	11.5
Śródmieście	1	4	2	7	1
Targówek	11	17.5	14	17	6
Ursus	16	9.5	17	10	18
Ursynów	10	11	13	15	6
Wawer	13	3	3.5	1	9.5
Wesoła	18	1	3.5	12	2.5
Wilanów	12	2	1	5	9.5
Włochy	2	7	9	11	6
Wola	9	12.5	5	6	2.5
Żoliborz	5	8	8	4	11.5

<sup>\*</sup> a personal computer with access to the Internet.

# LAND USE AND RESIDENTIAL INFRASTRUCTURE

Structure of land use is an important factor in the evaluation of attractiveness of living conditions. An unfavourable land use structure can make life more tiresome for the inhabitants, decrease the area's attractiveness for investors and rapidly deteriorate the perception of the district.

Most of the geodesic area of all districts is built-up and urbanised land, dominated by residential and communication functions. The share of residential areas was the highest in Ursus, where they occupied 33.2% of all built-up and urbanised land. Next, the largest share of communication area was found in Wola, where it covered 33.1% of built-up and urbanised land.

Warsaw, in spite of its metropolitan character, boasts city greenery that enriches the modern architectural space of the city. An important role of parks, lawns and greenery in residential estates, apart from their aesthetic and recreational function, is to protect from exhaust fumes, reduce the noise and create natural barriers which improve traffic security. The share of such areas was the highest in Żoliborz (24.3%), the lowest – in Wawer (0.2%). It is worth pointing that Warsaw has also a rich natural environment, comprising of nature reserves, landscape parks and natural and scenic complexes. The largest legally protected area of outstanding natural value belongs to the district of Wawer, which holds 25% of such land in the capital city.

Another attractive feature of a district are cycling paths. The longest systems of cycling paths, exceeding 30 km, can be found in Mokotów, Bielany and Ursynów.

Considering residential development, five districts deserve the most attention are: Białołęka, Wilanów, Praga-Południe, Wola and Ursus. In their area is located over half (54.7%) of Warsaw's new dwellings completed in 2011. The most new dwellings per 1 thousand inhabitants were completed in Wilanów (51), the least – in Śródmieście (0.2). Yet the new dwellings in Śródmieście had the largest usable floor space – on average 238.1 m² (189.8 m² more than in Praga-Północ).

Among all new dwellings in Warsaw, the vast majority were built for sale or rent (78% of the total number). The largest share of such dwellings were completed in Wilanów – 14.9% of all such dwellings in Warsaw. The largest share of co-operative construction dwellings were completed in Praga-Południe (41.2%) and Wola (27.2%). Finally, municipal housing, financed only from the gmina's budget, was completed only in 3 districts: Białołęka, Targówek and Żoliborz; majority (55.0%) in Targówek.

Table 9. presents the results of the ranking of districts according to land use structure and new dwellings offered. All variables were considered stimulants with respect to districts' attractiveness therefore rank 1 means the highest value of each variable.

Table 9. Ranking of Warsaw districts according to selected indicators of land use structure and newly completed dwellings

Districts	Proportion of residential areas in total area	Proportion of communication areas in total area	Share of parks, lawns and greenery in total area	Length of cycling paths	Average usable floor space of a completed dwelling	Number of dwellings completed per 1 thousand population
Bemowo	6.5	11	9	11	15	14.5
Białołęka	15	16	16	5	7	3.5
Bielany	10	13	6	2	9	11
Mokotów	5	9	4	1	10	12.5
Ochota	2	7	2	14	11	8
Praga-Południe	3	3	5	7	14	9.5
Praga-Północ	17	2	8	13	18	17
Rembertów	13	14	17	brak	4	12.5
Śródmieście	12	5	3	6	1	18
Targówek	6.5	8	10	9	16	14.5
Ursus	1	10	11	16	13	2
Ursynów	8	12	12	3	3	16
Wawer	9	17	18	4	2	9.5
Wesoła	14	15	14	10	5	3.5
Wilanów	18	18	13	15	8	1
Włochy	16	4	15	17	6	6
Wola	11	1	7	8	17	7
Żoliborz	4	6	1	12	12	5

#### PART IV. STATISTICAL PORTRAITS OF WARSAW'S DISTRICTS

# ŚRÓDMIEŚCIE

Śródmieście is often called the heart of Warsaw, as it concentrates majority of national and local authorities, as well as museums, galleries, theatres and cinemas. In Śródmieście, as the cultural and recreational centre of the capital city, take place cultural and sports events on local, national and international level<sup>15</sup>.

Furthermore, Śródmieście is the oldest district of Warsaw, where have been located the oldest urban parts of left-bank Warsaw, now the Old Town and its Market. The structure of its land use is dominated by built-up and urbanised areas, which makes the area available for investment very scarce. This limitation hinders the inflow of population, which affects negatively the age structure and contributes to the ageing of the population.

In comparison to the other Warsaw districts Śródmieście has the most unfavourable population structure according to the economic groups of age.



Unfavourable demographic structure contributes to a high value of dependency ratio. For 100 working-age persons there are 64 in non working-age groups. In addition, the district registers the lowest negative natural increase, negative net migration and high femininity ratio.



Thanks to the convenient communication to other districts, Śródmieście concentrates economic activity of the city. The district is also an attractive location for public administration, which is illustrated by the high share of inhabitants employed in this section.



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<sup>&</sup>lt;sup>15</sup> See <a href="http://www.infowarszawa.pl">http://www.srodmiescie.it.pl</a>

However, in spite of high entrepreneurship index, the district has a problem with unemployment.

A large number of the unemployed by 14 persons more than in Wilanów

A large share of long-term 47.0% of the unemployed

Nevertheless, of all the districts, Śródmieście has the lowest percentage of the unemployed belonging to two age groups: 25-34 and 34-44. The respective shares of these groups among the unemployed is 26.5% (9.3 percentage point less than in Wilanów) and 17.4% (8.1 percentage points less than in Białołęka).

Statistical portrait of an unemployed:



Śródmieście boasts the best access to health care infrastructure. Considering the number of appointments with specialists, the district recorded the highest percentage of consultations in ophthalmology clinics (21.6%) as well as of dentistry consultations – 20.4% of all appointments with dentists in Warsaw.



Well developed education infrastructure offers to the inhabitants a large number of nursery and primary schools, thanks to which there is no problem with lack of places in nursery schools and primary schools are not overcrowded, which helps the quality of teaching.





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In addition, the district has the highest number of basic vocational and post-secondary schools, 22.2% and 35.0%, respectively, of all schools of such type for children and youth in Warsaw. Furthermore, in this district the largest number of libraries, 15.5% of libraries in Warsaw are located. Libraries in Śródmieście have registered the largest number of borrowers – 13.0% of all borrowers using Warsaw libraries. Śródmieście also has the highest shops to inhabitants ratio.





Śródmieście has a relatively high number of social assistance clients – 32 persons per 1 thousand inhabitants.

Statistical portrait of a social assistance beneficiary:



Reason for granting the benefit: long-lasting or serious illness Type of family: single person, pensioner

Considering the development of residential construction, Śródmieście has the lowest number of completed dwellings, only 0.3% of all new dwellings in Warsaw. However, dwellings constructed here have the largest usable floor space.



Furthermore, the most collective accommodation facilities are located in Śródmieście, and the number of 5\* hotels in this district amounts to 80% of all such facilities in the capital city.



The largest number of collective accommodation facilities

which amounts to 35.1% of all such facilities in Warsaw

#### MOKOTÓW

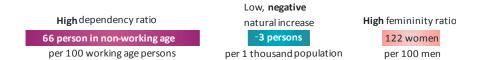
Mokotów is a district associated with dynamic development, good communication, modern architecture and greenery. In Mokotów there are several green areas, parks and water reservoirs – with the largest of them, Lake Czerniakowskie, included among the city's nature reserves. Although Mokotów is a principally

residential district, in its area there are embassies, diplomatic residences, foreign agencies, renown companies, national administration offices and public radio and television<sup>16</sup>.

According to the size of the population, Mokotów is the most populous district in Warsaw (12.9%). Nevertheless, the structure of its population according to the economic groups of age is relatively unfavourable.



A large percentage of persons past working age, negative natural increase, low net migration and domination of women in the population structure are factors negatively affecting demography of the district.



Thanks to its convenient location near the centre, Mokotów is an attractive place for business development. The large number of entities of the national economy registered in the district contributes to a high number of employed persons.



At the same time, Mokotów registered the highest number of unemployed persons. However, as it also has the largest population, the number of unemployed per 1 thousand population is the median among all districts' unemployment rates.



<sup>&</sup>lt;sup>16</sup> http://www.infowarszawa.pl/dzielnice.html

# Statistical portrait of an unemployed:



Sex: male Age: 25-34 Education completed: higher Length of unemployment: over 24 months

In addition the district has the largest number of social assistance beneficiaries – their number amounts to 12.9% of all social assistance clients in the capital city.

#### Statistical portrait of a social assistance beneficiary:



Reason for granting the benefit: long-lasting or serious illness Type of family: single person, pensioner

Mokotów has a well developed educational infrastructure. The district has the highest number of facilities offering care for children up to 3 years of age<sup>17</sup>, 13.1% of all such facilities in Warsaw. There are on average 48 children per 1 facility and in total 34 free places left.

The district also has the largest number of pre-primary education, of which 70.2% are nursery schools. 787 children attend nursery schools per 1 thousand children in the age group 3-6. Also the number of primary, lower secondary and general secondary schools is the highest in Warsaw. They amount to 14.9%, 14.5% and 18.6%, respectively, of such schools in the capital city.



The largest number of pre-primary education facilities





Low number of students per 1 lowe secondary school

 by 221 pupils less than in Białołęka

Primary and lower secondary schools are not overcrowded. Mokotów has one of the lowest numbers of students per 1 lower secondary school and a relatively low number of pupils per 1 primary school. In addition, primary schools are well equipped with computers – there are on average 12 pupils per 1 PC with access to the Internet. This ratio is lower only in Śródmieście, Wola and Wesoła.

Last but not least, Mokotów has the longest network of cycling paths of all Warsaw's districts.



The longest cycling paths

4 39.6 km which is 13.0% of all cycling paths in Warsaw

<sup>&</sup>lt;sup>17</sup> Law on childcare for children younger than 3 years frames conditions for organizing and functioning of various forms of childcare. Care can be organized in nurseries and kids clubs or provided by a day carer or a nanny.

#### **OCHOTA**

Ochota has all the features of an ideal district. It is quiet, historical yet fashionable and located near the centre. It has well developed communication and vast recreational areas. In recent years it has become the vogue among Warsaw's districts. In its area have emerged numerous cafes, populated all the time by young people with laptops, children or dogs. In addition, the proximity of historical Lindley's Filters, Szczęśliwicki Park, Pole Mokotowskie and city centre, make Ochota the most liked among Warsaw's districts<sup>18</sup>. Therefore it is not surprising that it is also the most densely populated one.

Ochota has the largest share of built-up and urbanised areas – 96.9% of the area of the district. Large percentage of such areas limits the availability of land for new residential developments, which hinders the inflow of population.







In addition, negative natural increase and net migration negatively affect the structure of the population according to economic age groups and result in high dependency ratio. Per 100 persons in working age there are 64 persons in non-working age groups.



Due to the proximity of Śródmieście, Ochota is an attractive location for business development. Thanks to the favourable situation in its labour market and convenient communication, the district registers a large number of employed persons.



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<sup>&</sup>lt;sup>18</sup> <u>http://mieszkam.gratka.pl/artykul/4007-1-warto-zamieszkac-na-ochocie.html</u>

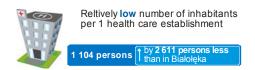
The level of unemployment among the inhabitants of Ochota is relatively low. The structure of the unemployed is dominated (28.35) by persons between 25 and 34 years old. At the same time Ochota has the highest among all districts share of people aged 45-54 among the unemployed, 12.7 percentage points higher than in Ursynów (district with the lowest share of this age group among the unemployed).



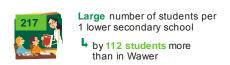
# Statistical portrait of an unemployed:



The district has a relatively well developed offer of health care services.



Ochota has a large number of care and education centre for children and young people, with the highest number of volunteers. Volunteers from facilities in Ochota amount to 27.1% of all volunteers active in such facilities in Warsaw. At the same time the district has a relatively low number of facilities providing care for children up to 3 years old. There are 64 children per 1 such facility and they are 100% full. Similar congestion characterises local lower secondary schools. According to the number of students per 1 such school Ochota ranks 16<sup>th</sup>; worse conditions occur only in Białołęka and Targówek.



Considering the social assistance system Ochota has a low number of beneficiaries: 21 persons per 1 thousand inhabitants.

In the structure of land use there is a high share of built-up and urbanised areas – 96.9% of the area – and among them residential areas covering 27.4% of total area. However, despite having such high building density, Ochota stands out as a district with a lot of green areas. The share of parks, lawns and greenery in residential estates is 18.8% of district's area.

#### **WOLA**

Wola is a highly urbanised Warsaw district, attractive because of its closeness to the city centre. Currently the district undergoes its renaissance. From an industrial centre often called "an industrial suburb of Warsaw", it turns into a significant centre of business, trade and services. The largest firms, banks and insurance companies locate their offices in Wola. Many areas have been set aside for investment in residential buildings. All these facts underline the importance of the district in future city development <sup>19</sup>.

In comparison to other districts Wola has a relatively unfavourable structure of the population according to economic age groups — it has a relatively high percentage of persons past their productive age.



In addition the district observes unfavourable values of demographic indicators of natural increase and gender imbalance in favour of women. However, positive net migration is a chance for its future demographic development.

Negative<br/>natural increasePositive<br/>net migrationHigh<br/>femininity ratio-5 persons4 persons123 womenna 1 tys. ludnościna 1 tys. ludnościper 100 men

In comparison to other districts Wola has a high level of entrepreneurship among inhabitants and a large number of employed persons.



In spite of a favourable situation in the labour market the inhabitants of Wola face the problem of unemployment. With regard to the number of the unemployed per 1 thousand population, Wola ranks 17<sup>th</sup>; worse situation occurs only in Praga-Północ.



#### Statistical portrait of an unemployed:



Wola has a well developed education and health care infrastructure. Local primary and lower secondary schools are not overcrowded. There are 219 pupils per 1 primary school and 154 students – per 1 lower secondary school. It affects the quality of teaching expressed by a small number of students per 1 computer with access to the Internet – a lower value of the indicator was observed only in Śródmieście.



Wola has the largest number of volunteers in 24-hour care and education centres for children and young people; 35.9% of all volunteers active in such centres in Warsaw.

This district has also the largest number of persons in residential care homes and social welfare facilities, 21.3% of all residents of such facilities in the capital city. There are on average 85 residents per 1 facility, but with 93% occupancy, there are still free places offered.

at the same time Wola has a large number of clients of social assistance system. There are 34 beneficiaries of such aid per 1 thousand inhabitants.

Statistical portrait of a social assistance beneficiary:



Reason for granting the benefit: long-lasting or serious illness Type of family: single person, pensioner

In comparison to the other districts, Wola stands out with a large number of shops and the largest number of gyms. There are 1 099 less persons per 1 shop than in Wilanów (district with the lowest availability of shops).



Small number of people per 1 shop



The largest number of gyms

17.6% of such sports facilities in Warsaw

Wola has the largest share of communication areas, covering 33.1% of the district's territory. Thanks to good communication and location near the centre, there is a growing interest in Wola as an investment site for residential construction. In 2011 there were 920 new dwellings completed in Wola, of which 81.6% were set for sale or rent. New dwellings had a small average useful floor area – 54.9 m². However, as proved by Home Broker data, dwellings of such size were the most sought after by the buyers: "the average sought size is a little more than 50 m²"<sup>20</sup>.



Large number of completed dwellings

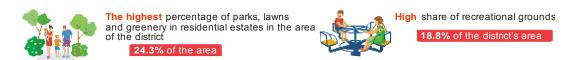
by 898 more than in Praga-Północ

# **ŻOLIBORZ**

Zoliborz with its wonderful natural environment has a residential-recreational character. A large part of the district consists of green areas, giving it a unique image standing out from other districts<sup>21</sup>. Zoliborz is the smallest among Warsaw's districts. Its area is only 1.6% of all Warsaw's territory. The average area per 1 inhabitant is  $175 \text{ m}^2 - \text{by } 965 \text{ m}^2 \text{ less than in Wawer.}$  At the same time the district has the largest percentage of parks, lawns and green areas in residential estates and a relatively high share of recreational areas.

<sup>&</sup>lt;sup>20</sup> http://www.egospo<u>darka.pl/74380,Poszukiwany-metraz-mieszkania-X-2011,1,39,1.html</u>

See http://www.zoliborz.org.pl/dzielnica-zoliborz/o-dzielnicy-zoliborz/134.html



Taking into account its inhabitants, Żoliborz has the least favourable population structure according to economic groups of age: it has the highest share of people past their working age, the lowest share of working age population and relatively low share of the group below working age.

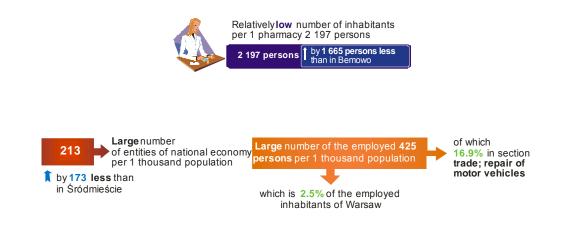


The unfavourable demographic structure results in the highest in the capital city value of the dependency ratio; it is also reflected in the unfavourable values of other indicators, such as natural increase and femininity ratio.



"Old" demographic structure influences i.a. the data on health care. The district registers the highest number of medical appointments<sup>22</sup> for elderly persons (aged 65 and more), which amount to 46.9% of all appointments with family doctors in the district. In addition, the district has a large number of pharmacies, which makes them easily available to the inhabitants.

Central location within the city and convenient communication with other districts contribute to the favourable labour market situation.



 $<sup>^{\</sup>rm 22}$  Including appointments financed by the patients themselves (non-public means).

34

With respect to the level of unemployment among inhabitants, Żoliborz ranks in the middle. However, the district registers a high percentage of long-term unemployed, which gives it one but last place in the ranking of the districts.

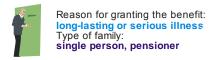


Statistical portrait of an unemployed:



A large number of inhabitants of Żoliborz rely on social assistance. There are 37 beneficiaries per 1 thousand inhabitants – the ratio is higher only in Praga-Północ.

Statistical portrait of a social assistance beneficiary:



In this district the number of volumes borrowed from library collections per 1 borrower is the highest.



# PRAGA-POŁUDNIE

Praga-Południe is a district full of green. Conveniently located Skaryszewski Park with Kamionkowskie Lake can be regarded as the right-bank version of Saski Garden. Thanks to investments in communication and dynamic development of residential buildings Praga-Południe turns into an important and vibrant district of Warsaw<sup>23</sup>.

 $<sup>\</sup>frac{23}{\text{http://www.infowarszawa.pl/index.php?option=com}} \\ \frac{\text{content\&view=article\&id=130\&ltemid=43}}{\text{content\&view=article\&id=130\&ltemid=43}} \\ \frac{\text{content\&view=article\&id=130\&ltemid=430\&ltemi$ 

Praga-Południe has a relatively unfavourable structure of the population according to economic groups of age. There are 58 persons in non-working age per 100 in working age.



In addition, Praga-Południe has one of the highest population density values in the capital city. There are 7 983 persons per 1 km<sup>2</sup> - 7 331 persons more than in Wilanów. In spite of dynamic development, Praga-Południe, as one of five districts (along with Praga-Północ, Śródmieście, Ochota and Bielany) experiences negative net migration.



Regarding the labour market situation, Praga-Południeranks in the middle according to the number of entities of national economy and number of the employed per 1 thousand population.



Relatively high level of employment among the inhabitants is one of the district's problems.



Statistical portrait of an unemployed:



Taking into account services for the youngest inhabitants, the Praga-Południe has the largest number of free places in facilities providing care for children up to 3 years old – in total 62 free places. However in primary and lower secondary schools in the district the number of students per 1 school is relatively high. In the case of lower secondary schools there are 186 students per 1 school – by 81 students per 1 school more than in Wawer. In primary schools there are 294 pupils per 1 school and 16 pupils per 1 computer with access to the Internet – 7 more than in Śródmieście.

24 persons per 1 thousand inhabitants use social assistance.

Reason for granting the benefit: long-lasting or serious illness Type of family: single person, pensioner

In land use structure there is a large percentage of communication areas, covering 30.4% of the area, and a high percentage of residential areas – 25.9% of the area. At the same time, the district offers many sites where people can relax and undertake free time activities. Recreation areas form 8.6% of the district's area.

In comparison to the other districts Praga-Południe has the largest number of new dwellings in cooperative construction, 41.2% of all dwellings completed by housing co-operatives in Warsaw.



The largest number of dwellings completed by co-operatives

which amounts 41.2% of such dwellings in Warsaw

The district stands out with its large number of registered passenger cars, 11.7% of all such cars registered in the capital city.



Large number of registered passenger

by 102.7 thousand more than in Wesoła

# **WŁOCHY**

Włochy is a district in the outskirts of the capital, located far enough from the hustle and bustle of city life, but at the same time so close that the communication with Śródmieście is not a problem<sup>24</sup>. Convenient communication and availability of area for investment favour the development of residential housing in the district. Predominance of small buildings is an additional advantage. However, the height of the buildings is limited not for aesthetic reasons, but because of the proximity of the airport<sup>25</sup>.

With respect to the dependency ratio Włochy ranks in the middle. There are 59 persons in non-working age per 100 in working age – as in the neighbouring district Ursus. The demographic structure according to the economic age groups is the following:

http://www.infowarszawa.pl/index.php?option=com\_content&view=article&id=140&Itemid=43

<sup>25</sup> See http://www.ud-wlochy.waw.pl/page/140,dzielnica-w-liczbach.html



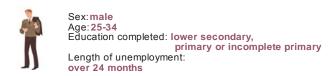
The district offers favourable conditions for business development. With respect to the number of enitities of national economy and employed persons, Włochy ranks 2<sup>nd</sup> among all districts, just behind Śródmieście.



Favourable data on the level of entrepreneurship and the number of the employed do not exclude the problem of unemployment. There are many unemployed registered in Włochy.

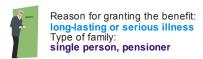


# Statistical portrait of an unemployed:



A large number of the inhabitants of Włochy rely on social assistance. The family benefits system paid 242 family benefits per 1 thousand inhabitants, while the social assistance system supported 26 persons per 1 thousand population.

Statistical portrait of a social assistance beneficiary:



Considering the facilities caring for the youngest inhabitants – up to 3 years old, Włochy has the most overcrowded facilities in the capital city. A similarly large number of children use nursery schools. 967 children per 1 thousand in the age group 3-6 attend nursery school; there are on average 85 children per 1 facility – 24 children less than in Bemowo or Targówek.





Large number of children in nursery schools per 1 thousand children aged 3-6 by 474 children more

than in Wesoła

Włochy is the top car-owning district of Warsaw. It also has a large number of chops comparing to the size of the population.



The largest number of registered passenger cars per 1 thousand population 820 vehicles per 1 thousand population



Small number of people per 1 shop

323 persons

htere is less only in Śródmieście

In the structure of land use there is a small share of residential areas. They are 13.5% of the district's area – by 19.7 percentage points less than in the neighbouring Ursus. At the same time Włochy has a large share of communication areas - 29.3%. It is by 23.0 percentage point higher than in Wilanów (the district with the lowest share of such areas).

# URSYNÓW

Ursynów, until recently called the largest dormitory of Warsaw, is changing its profile. In the district very quickly emerge not only new residential buildings, but also companies, supermarkets, higher education institutions. In addition the district is known for the natural richness of the forests in Mazowiecki Landscape Park, next to which are located only investments not harmful to the environment, such as: sports and recreation centres, little guesthouses and medical centres<sup>26</sup>.

Ursynów has a relatively favourable structure of the population according to economic age groups.



Thanks to a high share of people in working age and younger, the district has favourable values of demographic indicators.

> High, **positive** natural increase Low dependency ratio 49 persons in non-working age 8 persons per 100 persons in working age per 1 thousand population

 $<sup>{\</sup>color{red}^{26} See} \ \underline{\text{http://www.infowarszawa.pl/index.php?option=com}} \ \ \underline{\text{content\&view=article\&id=136\&ltemid=43}} \\$ 

Regarding the number of entities of national economy and the number of the employed per 1 thousand population, Ursynów ranks in the middle among Warsaw districts.



With respect to the level of unemployment among inhabitants, Ursynów ranks near the top with one of the lowest unemployment rates – per 1 thousand inhabitants 18 were looking for work. Among the unemployed, the largest proportion are the young people, aged 25-34, entering the labour market. In comparison to the other districts Ursynów has the largest share of the unemployed aged 55 and more but the lowest share of the age group 45-54 among the unemployed.



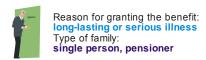
Analysing the structure of the unemployed with respect to education, Ursynów registers a relatively high percentage of the unemployed with higher education, who form 40.1% of all the unemployed. A higher (by 5.4 percentage points) share of this group is registered only in Wilanów. Regarding the sex balance among the unemployed, Ursynów as one of only two districts has a larger share of unemployed women than men.

Statistical portrait of an unemployed:

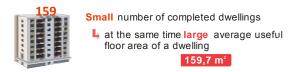


In this district a relatively small number of inhabitants use social assistance. From the family benefits system 79 benefits were paid per 1 thousand population. The social assistance system was used by 15 out of every 1 thousand inhabitants.

Statistical portrait of a social assistance beneficiary:



Ursynów has a small number of completed dwellings, which form only 1.7% of all new dwellings in the capital city. However, the completed dwellings have relatively large average useful floor area.



In the district there are many recreation sites and sport facilities.



#### PRAGA-PÓŁNOC

Praga-Północ is one of the oldest districts and as one of only a few has maintained its historical character. A large part of its buildings date back to the end of 19<sup>th</sup> and beginning of the 20<sup>th</sup> century or the interwar period. Relics of the Warsaw folklore can still be noticed in people's outfits and interior design; some of the elderly inhabitants still use the Warsaw dialect. In recent years the district has become fashionable. Galeries, art centres, artists' ateliers as well as en vogue dining and entertainment places emerge in old tenement houses and left over factory buildings<sup>27</sup>.

Compared to the other districts, Praga-Północ has a relatively favourable structure of the populatino according to economic age groups.



A high share of persons in working age contribute to a low dependency ratio. However other demographic indicators signal processes that can affect negatively the demographic potential of Praga-Północ in future. The district has the lowest, negative net migration: -7 persons per 1 thousand inhabitants, compared to the leader – Wilanów with +80 persons per 1 thousand population. In addition Praga-Północ is among 8 districts of Warsaw with negative natural increase, which is -2 persons per 1 thousand population.

<sup>&</sup>lt;sup>27</sup> See http://en.praga-pn.waw.pl/page/index.php

Low value of dependency ratio
54 persons in non-working age

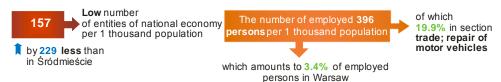
The lowest, negative net migration

-7 persons

per 1 thousand population

per 100 in working age

Also the labour market situation is unfavourable. The district has a small number of entities of national economy per 1 thousand inhabitants. With respect to the number of employed persons per 1 thousand inhabitants, Praga-Północ ranks in the middle.

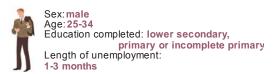


In addition the district registers the largest number of unemployed per 1 thousand population.

The structure of the unemployed population is dominated by persons with lower secondary, primary or less education. Onj the other hand Praga-Północ stands out with the lowest percentage of the unemployed with higher (12.6%), post-secondary and vocational secondary (21.3%), and general secondary education (9.5%). Considering the age of the unemployed, in this district the share of the youngest ones – 24 years or younger – is the largest. This group forms 10.7% of the unemployed persons registered in the employment offices in the district.



### Statistical portrait of an unemployed:



Praga-Północ has also relatively unfavourable data in the field of facilities of the youngest inhabitants. There are 69 children up to 3 years old per one facility providing care for them — worse result is found only in Włochy. In a similar vein, there are 108 children per 1 nursery school and the number of children in the age group 3-6 attending such facilities is relatively small.



Situtation in primary schools is similar.



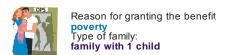
In Praga-Północ the number of day-support care and education centres for children and young people is the largest and they account for 14.6% of such facilities in Warsaw. One facility supports on average 28 children. In addition, Praga-Północ can boast the largest number of volunteers in such facilities of all Warsaw districts.



Inhabitants of Praga-Północ rely on social benefits to the largest degree of all Warsaw districts' populations. In 2011 the system of family benefits paid 509 family benefits per 1 thousand inhabitants. It is worth reminding, that the aim of this system is to support badly off families in children upbringing and to support families with disabled or seriously ill members<sup>28</sup>.

Praga-Północ has also the largest number of persons relying on social assistance system. This type of support is targeted at persons and families with the lowest income. Among the inhabitants of Praga-Północ 49 out of every 1 thousand people are beneficiaries of social assistance.

Statistical portrait of a social assistance beneficiary:



Considering land use structure, Praga-Północ has one of the lowest percentages of residential areas: 12.1% - by 21.1 percentage point less than in Ursus (which has the largest share of residential areas). In addition, Praga-Północ is the district with the smallest number of completed new dwellings — and with the smallest average useful floor area. All of the new investments were meant for sale of rent.



# **TARGÓWEK**

Targówek has a modern network of roads, allowing to move quickly in the district and guaranteeing good communication with the centre of the capital city. In the recent years modern residential estates have been built, changing Targówek's landscape. Apart from infrastructure, the district strives to develop recreational and sports facilities to serve all the inhabitants. Targówek's strong

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<sup>&</sup>lt;sup>28</sup> The income threshold for granting family benefit is 504 zl per capita or 583 zl per capita if the family raises a disabled child.

side is its location – a short distance from the centre and at the same time closeness to main roads leading out of the  $city^{29}$ .

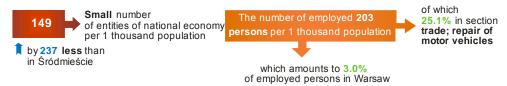
The district hase a relatively unfavourable structure of population according to economic age groups, which results in a high value of dependency ratio. There are 64 persons in non-working age groups per 100 working age population. A higher value of dependency ratio is observed only in Żoliborz and Mokotów.



The district registers the largest number of divorces.



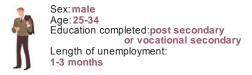
Also data on labour market are unfavourable. In the district there is a small number of entities of national economy per 1 thousand population — a smaller one is registered only in Ursus and Białołęka. Also the number of employed persons is one of the lowest in the capital city.



Furthermore, Targówek is one of the districts with high level of unemployment among inhabitants.



Statistical portrait of an unemployed:



Taking into account the accessibility of health care infrastructure – health care establishments and pharmacies – Targówek ranks 15<sup>th</sup> among 18 districts.



In Targówek 27 persons per 1 thousand inhabitants rely on social benefits.

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<sup>&</sup>lt;sup>29</sup> See <a href="http://www.targowek.waw.pl/page/">http://www.targowek.waw.pl/page/</a>

Statistical portrait of a social assistance beneficiary:



Reason for granting the benefit: poverty
Type of family:
family with 1 child

Compared to other districts Targówek has the largest number of children per 1 nursery school. Furthermore there are many students per 1 primary and lower secondary school.



The largest number of children attending nursery schools per 1 facility

by 54 children more than in Wesoła



Large number of studentsper 1 primary schoolby 174 pupils more than in Wilanów



Large number of students per 1 lower secondary school 

▶ by 215 pupils more than in Wawer

Regarding residential construction, Targówek has the largest number of completed dwellings owned by the gmina, with the average useful floor area of  $44.9 \text{ m}^2$ .



The largest number of dwellings completed owned by the gmina

which amounts to 55.0% of such dwelling in Warsaw

# WESOŁA

Wesoła is the youngest district of Warsaw, incorporated to the city in 2002. Over the half of the district's area is covered by green areas, mostly forests, which predominantly belong to the Mazovian Landscape Park. Immersed in lush greenery, Wesoła provides humans with a health and friendly climate<sup>30</sup>. It is a dream place for sports, active recreation and leisure. The buildings are predominantly detached houses and only some low-rise blocks of flats.

Wesoła has a low population density, only 994 persons per 1 km², and a favourable demographic structure according to economic groups of age.



 $<sup>^{30}\,</sup> See \, \underline{http://www.infowarszawa.pl/index.php?option=com \,\, content \&view=article \&id=138 \&ltemid=43}$ 

In addition, high and positive net migration and the lowest in the capital city femininity ratio are evidence of a high demographic potential for future. Furthermore, Wesoła registers positive natural increase, 6 persons per 1 thousand population.



Relatively small number of entities of national economy registered in the area of the district generate little work places. Hence Wesoła has the smallest in the capital city number of employed persons per 1 thousand inhabitants.



However, in spite of the low number of entities of national economy, the district stands out with its low level of unemployment among inhabitants.



#### Statistical portrait of an unemployed:



Regarding the accessibility of health care establishments Wesoła ranks in the middle. There are 1 901 persons per 1 health care establishment – by 1 223 persons more than in Śródmieście and by 1 814 less than in Białołęka. In addition, the district has a relatively large number of pharmacies in proportion to the number of inhabitants. A smaller number of inhabitants per 1 pharmacy is observed only in Śródmieście.



The district also registers a small number of clients of the social assistance system – 15 beneficiaries per 1 thousand inhabitants.

Statistical portrait of a social assistance beneficiary:



Reason for granting the benefit: long-lasting or serious illness Type of family: family with 1 child

Considering the youngest inhabitants, the district stands out with the smallest number of children per 1 facility providing care to children up to 3 years old. Also the local nursery schools are attended by the smallest among all the districts number of children per 1 establishment. At the same time Wesoła has the smallest number of children attending nursery schools per 1 thousand children aged 3-6: only 493.



The smallest number of children in facilities providing care to children below 3





The smallest number of children in nursery schools per 1 facility

by 54 pupils less than in Bemowo or Targówek

The situation is similar in primary schools of the district. There are 216 pupils attending 1 primary school – there is less only in Wilanów and Środmieście. Furthermore, in such schools there are 11 pupils per 1 computer with Internet access – there is less only in Śródmieście.

#### **WILANÓW**

Large undeveloped areas, beautiful surroundings, garden town – all of these features contribute to the unique climate of Wilanów. Each of the inhabitants can find something for oneself among such activities as sightseeing, bicycle rides, golf, kayaking, angling ore walks along the Vistula river. Wilanów is home to many celebrities, artists, politicians, diplomats and businessmen<sup>31</sup>.

<sup>31</sup> See <a href="http://www.wilanow.pl/">http://www.wilanow.pl/</a>

Wilanów is a demographically young district. It has one of the highest percentages of people below working age (only Białołęka has a higher one) and one of the lowest shares of people past their working age (a lower one is observed only in Białołęka and Wesoła).



Thanks to the favourable demographic structure there is 57 persons in non-workign age per 100 people in working age. Furthermore, the district registers a high natural increase rate and the highest net migration rate. Development of residential construction attracts new inhabitants but the district still has a low population density.



Wilanów creates favourable climate for entrepreneurial development. A larger number of entities of national economy per 1 thousand population is registered only in two district: Śródmiescie and Włochy. In addition Wilanów registers the highest share of employed in construction.



A favourable indicator of the local labour market situation is also the smallest of all Warsaw's districts, number of unemployed per 1 thousand population. The structure of the unemployed population is dominated by people with higher education. At the same time the district has the lowest share of the unemployed with basic vocational education (5.7%) as well as lower secondary, primary or less education (13.4%). According to age, mostly the young people aged 25-34, entering the labour market, have a problem with finding work. Their share in the total number of the unemployed is the biggest in the capital city. It is worth pointing out that women dominate among the unemployed.



Statistical portrait of an unemployed:



Ponadto Wilanów notuje najmniejszą liczbę korzystających ze wsparcia pomocy społecznej. Z systemu świadczeń rodzinnych wypłacono 69 zasiłków rodzinnych w przeliczeniu na 1 tys. mieszkańców – o 440 mniej niż w dzielnicy Praga-Północ, natomiast ze świadczeń pomocy społecznej skorzystało 7 na 1 tys. mieszkańców – o 42 beneficjentów mniej niż na Pradze-Północ.

Statistical portrait of a social assistance beneficiary:



Reason for granting the benefit: helplessness in caring and upbringing tasks and in running a household Type of family: single-person, pensioner

Educational establishments located in Wilanów are not overcrowded.



Small number of children in facilities providing care to children below 3



**Small** number of children in nursery schools per 1 facility

by 39 children less than in Bemowo or Targówek



The smallest number of pupils per 1 primary school

by 326 pupils less than in Bemowo

by 49 less than in Włochy



**Small** number of students in lower secondary school

by 201 students less than in Białołęka

In the land use structure Wilanów stands out because of the lowest share of residential and communication areas, which cover 8.8% and 6.3%,respectively, of the area. Therefore Wilanów is an attractive site for new investment.

Furthermore, the district has a large number of new dwellings, 12.4% of all dwellings completed in Warsaw. More (but only by 12 dwellings) have been completed only in Białołęka. The average useful floor area of a new dwelling was 83.0 m<sup>2</sup>. Almost all new dwellings (93.9%) have been built for rent or sale.



Large number of dwellings completed

which amounts to 12.4% new dwellings in Warsaw

Despite fast development, Wilanów doesn't have a well developed commercial infrastructure yet.



The largest number of people per 1 shop

1 498 persons

# WAWER

Wawer is a district with a large share of green areas – first of all forests. Hence, many sports and leisure centres, small guesthouses and medical centres are located in this area. Compared to other districts Wawer has the largest geodesic area –  $79.7 \text{ km}^2$ , which equates to 15.4% of Warsaw's area. At the same time it has low population density: 877 people per  $1 \text{ km}^2$  – it is lower only in Wilanów.

Wawer has a relatively favourable structure of population according to economic age groups.



The district has positive net migration per 1 thousand population and a low femininity ratio. A higher net migration per 1 thousand population is observed only in two districts: Wilanów and Białołęka.



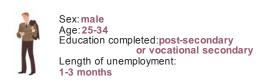
Considering the labour market situation Wawer registers a relatively large number of entities of national economy in proportion to the number of inhabitants, which is the highest among right-bank districts of Warsaw. Among the employed persons, the highest percentage work in health care and social assistance.



With respect to the level of unemployment among inhabitants, Wawer ranks in the middle – 9th among 18 districts.



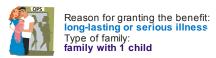
Statistical portrait of an unemployed:



The district has the highest number of stationary social welfare facilities, which amount to 19.2% of such facilities in Warsaw. There are on average 41 inhabitants per 1 facility – by 139 less than in Bemowo.

In Wawer 29 persons rely on social assistance per 1 thousand inhabitants.

Statistical portrait of a social assistance beneficiary:



In Wawer has the smallest number of students enrolled per 1 lower secondary school and a small number of pupils per 1 primary school. The level of equipment of schools with computers is slightly less favourable. There are 13 students per 1 computer with access to the Internet, by 4 more than in Śródmieście.





Small number of pupils per 1 primary school

by 310 pupils less than Bemowo

In addition the largest number of new dwellings built by private investors are constructed in Wawer, with the average useful floor area of a dwelling equal to 193.3 m<sup>2</sup>.



The largest number of individual dwellings completed

which amounts to 24.9% of such dwellings in Warsaw

Considering land use structure, Wawer has the smallest percentage of parks, lawns and estate greenery, only 0.2% of the area. However, forest areas together with trees and shrubs outside the forest cover as much as 36.6% of the area. Furthermore, compared to other districts, Wawer has a low share of communication areas – 7.9%.

#### **BIELANY**

Bielany are one of the greenest Warsaw districts. They are situated in the neighbourhood of Kampinos National Park, which is a unique in Europe forest complex. The situation of the park is important for the whole city as with the winds blowing from the west the city receives fresh air blown from Kampinos Forest – for that reason called the 'green lungs of Warsaw'. A large part of the district's land are green areas, with Bielany Forest, Młociny Park and Forest and Bemowo Forest. In the district there are numerous research and higher education institutions. In addition the district has good communication with the city centre<sup>32</sup>.

<sup>&</sup>lt;sup>32</sup> See <a href="http://www.citymedia.waw.pl/bielany,informacje.html">http://www.citymedia.waw.pl/bielany,informacje.html</a>

Bielany has a relatively unfavourable population structure according to economic groups of age, which contributes to a high value of dependency ratio. There are 64 persons in non-working age per 100 persons in working age. A higher value of dependency ratio is observed only in Żoliborz and Mokotów.



Also the situation in the labour market is unfavourable. The district registers a small number of entities of national economy per 1 thousand inhabitants. In the ranking according to the number of employed persons per 1 thousand inhabitants Bielany ranks low – on 16<sup>th</sup> place.



Furthermore, the district registers a high level of unemployment among inhabitants. In comparison with other districts Bielany has the lowest unemployment among women, 46.2% of all unemployed. However regarding the length of unemployment, Bielany has the highest share of long-term (over 12 months) unemployed.



### Statistical portrait of an unemployed:



The district offers poor access to health care infrastructure. There are 2 602 inhabitants per 1 health care establishment, by 1 924 more than in Śródmieście. The accessibility of pharmacies is even worse. Only Ursus and Bemowo are worse in this field.



In the district there are 39 nursery schools, however this number does not meet the inhabitants' demand. The number of children per 1 facility is large – a larger value is observed only in Praga-Północ, Bemowo and Targówek. 818 children attend nursery schools per 1 thousand children in relevant age (3-6). In a similar vein the number of pupils per 1 primary school is large. In addition, the primary schools are not well equipped with computers. There are 16 pupils per 1 computer with access to the Internet – there's more only in Ursus.



Large number of children in nursery schools per 1 facility

by 50 children more than in Wesoła



With respect to the number of clients of social welfare, Bielany ranks in the middle. 24 persons per 1 thousand inhabitants benefit from social assistance.

Statistical portrait of a social assistance beneficiary:



Reason for granting the benefit: disability
Type of family: single-person, pensioner

In addition, in the district a large number of people per 1 shop is observed. On the other hand, considering sports facilities, in Bielany there is the largest number of basketball fields



Large number of people per 1 s hop

1 427 persons



The largest number of basketball fields

▶ which amounts to 15.9% of such facilities in Warsaw

#### **REMBERTÓW**

Rembertów is one of the greenest districts of the capital city. In its area there is Rembertów Forest with a forest reserve Kawęczyn. Rembertów has a lot of free space and forest areas which surround it from almost all sides. Small population density and sparse buildings provide conditions for the development of low-rise buildings and sports and leisure facilities.<sup>33</sup>.

In comparison with other districts Rembertów has a favourable population structure according to economic groups of age.

Share of population:

17.9%
66.1%
16.0%
in total population
pre-working age
working age
post-working age

Favourable demographic structure contributes to a low dependency ratio. In addition, the district has low femininity ratio and as one of 10 districts – a positive natural increase, on the level of 3 persons per 1 thousand inhabitants.

Low dependency ratio
51 persons in non-workin age
per 100 persons in working age

Low femininity ratio 109 women per 100 men

<sup>&</sup>lt;sup>33</sup> See <u>www.rembertow.waw.pl</u>

Furthermore, the district has the largest number of marriages contracted per 1 thousand population.



Regarding the labour market situation, Rembertów has a relatively small number of entities of national economy and a small number of employed, among whom majority work in the section education.



With respect to the level of unemployment among inhabitants, Rembertów ranks in the middle among all the districts. At the same time the district registers the lowest percentage of the unemployed with higher education, who amount to 12.6% of the unemployed and one of the lowest shares of long-term unemployed (without a job for over 12 months).



# Statistical portrait of an unemployed:

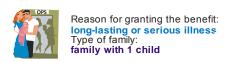


The district offers poor access to health care establishments and good access to pharmacies.



Relatively large number of inhabitants of Rembertów rely on social welfare. The system of family benefits paid 281 family benefits per 1 thousand inhabitants – by 212 benefits per 1 thousand population more than in Wilanów. Furthermore 30 persons per 1 thousand inhabitants used social assistance benefits.

Statistical portrait of a social assistance beneficiary:



Rembertów has a well developed infrastructure in the field of childcare provision. Facilities offering care for children up to 3 years old located in this district have one of the smallest numbers of children per 1 facility. Only Wesoła has a smaller value of this indicator. Among a slightly older age group (3-6 years old) 910 children per 1 thousand attend nursery schools. A higher number is observed only in 2 other districts: Śródmieście and Włochy.





**Large** number of children in nursery schools per 1 thousand children aged 3-6

by 417 children more

The district also has a small number of students in lower secondary schools: 124 students per 1 school.

#### **BEMOWO**

Young demographic structure, lots of greenery, perfect communication with the city centre make Bemowo a friendly place to live. In addition the district has a collection of historical forts: Babice, Bema, Blizne and Chrzanów Forts. Each year Bemowo gains new residential buildings and improves the transport infrastructure. Hence the district becomes a more and more popular area to move in to<sup>34</sup>.

W dzielnicy Bemowo występuje stosunkowo korzystna struktura demograficzna pod względem ekonomicznych grup wieku – dzielnica ta notuje wysoki odsetek osób w wieku produkcyjnym.



Thanks to the favourable demographic structure Bemowo has low dependency ratio. In addition the district has natural increase and low but positive net migration – 5 persons per 1 thousand inhabitants.



The young demographic structure is proved also by the highest in the capital city share of appointments<sup>35</sup> with family doctors provided to patients up to 18 years old. This group received 43.5% of medical appointments.

<sup>34</sup> See http://www.bemowo.waw.pl/bemowo/ciekawe miejsca/o bemowie/

<sup>&</sup>lt;sup>35</sup> Including appointments financed by the patients themselves (non-public means).

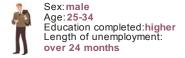
Considering the labour market situation, Bemowo registers a small number of entities of national economy and a small number of employed people.



However, the level of unemployment among the inhabitants of the district is relatively low. The structure of the unemployed by education is dominated by persons with higher education. At the same time in comparisons with other districts Bemowo registers the highest share of the unemployed with post-secondary, vocational secondary and general secondary education.



Statistical portrait of an unemployed:



Bemowo's low position in the ranking of attractiveness of living conditions is a result of an underdeveloped social infrastructure. Its current level does not match the ever growing number of inhabitants.

In comparison with other districts Bemowo stands out with poor availability of pharmacies and health care establishments.



In addition Bemowo has the largest number of children per 1 nursery school and the largest number of pupils per 1 primary school. Because of the poor availability of nursery schools, only 664 per 1 thousand children aged 3-6 attend such facilities. Overcrowded primary schools offer unfavourable teaching conditions. There are 15 students per 1 computer with access to the internet.



The largest number of children in nursery schools per 1 nursery school

by 54 children more than in Wesoła



The district hosts the largest number of inhabitants in residential care homes and social welfare facilities per one establishment. The places offered by social welfare facilities in Bemowo are 100% occupied.



The largest number of inhabitants in social welfare facilities per 1 establishment

180

In comparison with other districts Bemowo stands out with a small number of users of social welfare. The family benefits system paid 103 family benefits per 1 thousand inhabitants – by 406 less than in Praga-Północ, while the social assistance system was used by 10 persons per 1 thousand inhabitants by 39 beneficiaries less than in Praga-Północ.

Statistical portrait of a social assistance beneficiary:



Reason for granting the benefit: long-lasting or serious illness Type of family family with 1 child

# **URSUS**

Ursus is one of the smallest among Warsaw districts. Associated mostly with URSUS machine factory, nowadays it is getting increasingly popular. Attractive location of the district results from a short distance to the city centre and convenient communication routes and from the still existing reserve of investment land<sup>36</sup>.

Due to the dynamic development of residential buildings, the district attracts new inhabitants, thanks to which it observes favourable values of demographic indicators, affecting positively its future potential.

> **Positive** natural increase 8 persons

**Positive** net migration 10 persons

per 1 thousand population per 1 thousand population

Furthermore, the district has a favourable demographic structure according to economic groups of age. Regarding dependency ratio, Ursus ranks in the middle among Warsaw districts. There are 59 persons in non-working age per 100 persons in working age.

> Share of population: 19.8% 62.8% 17.4% in total population pre-working age working age post-working age

<sup>&</sup>lt;sup>36</sup> See <a href="http://www.citymedia.waw.pl/ursus,informacje.html">http://www.citymedia.waw.pl/ursus,informacje.html</a>

However, Ursus has unfavourable data regarding labour market. The district has the smallest number of entities of national economy per 1 thousand inhabitants and a small number of employed persons per 1 thousand inhabitants. With respect to the number of employed persons only Wesoła recorded a worse result – by 39 employed persons per 1 thousand less than in Ursus.



Regarding the unemployment level expressed by the number of the unemployed per 1 thousand inhabitants, Ursus ranks in the middle in the Warsaw districts ranking. The structure of the unemployed population is dominated by people aged 25-34. Furthermore the district has the lowest in the capital city percentage of the unemployed aged 55 years and more.



Statistical portrait of an unemployed:



Sex: male Age: 25-34 Education completed: higher Length of unemployment: over 24 months

Relatively small number of inhabitants of the district use social welfare. 19 persons per 1 thousand population receive social benefits.

Stosonkowo niska liczba mieszkańców dzielnicy korzysta ze świadczeń pomocy społecznej. Wśród mieszkańców 19 na 1 tys. osób jest świadczeniobiorcami pomocy społecznej.

Statistical portrait of a social assistance beneficiary:



Reasons for granting the benefit long-lasting or serious illness Type of family: single person, pensioner

Out of every 1 thousand children in the age group 3-6 years old, 614 attend nursery schools. There are 91 children per 1 nursery school – by 36 children more than in Wesoła and by 18 less than in Bemowo or Targówek. The situation of school aged children is worse: there are 461 pupils per 1 primary school. Overcrowding of schools affects the access to ITC equipment.



Large number of pupils per 1 primary school
by 261 pupils more than Wilanów



The largest number of pupils per 1 computer with access to the Internet in primary schools

The district has relatively poor services availability also in the field of health care. There are 2 443 persons per 1 health care establishment – by 1 765 more than in Śródmieście. Regarding the number of people per 1 pharmacy Ursus ranks 17<sup>th</sup> – only Bemowo has a worse result.



Ursus registers poor access to libraries and the lowers level of readership – 11 volumes per 1 borrower.



The number of the completed dwellings per 1 thousand inhabitants was large. More new dwellings per 1 thousand population were completed only in Wilanów. Furthermore, thanks to the dynamic development of housing construction, Ursus has the largest among all districts percentage of residential areas: 33.2% of the district's territory.



# **BIAŁOŁĘKA**

Białołęka is the fastest developing area of Warsaw with respect to housing construction. Hence it has become a popular place to live for many people working in Warsaw and gained the image of Warsaw's dormitory.

In addition it features modern architecture, a lot of greenery and a calm atmosphere, with no exhaust fumes, not many cars and no noisy places. Despite still existing unconveniences, it develops into a modern, dynamic and lively district with a young and active society. In the near future it will become an important arena for business activities. Already, thanks to the low costs of running a business, the abandoned areas in the industrial part of Białołęka attract large and well known companies<sup>37</sup>.

The inhabitants of Białołęka are the youngest community in Warsaw.

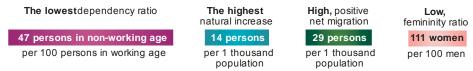
Share of population :

24.1% 68.2% 7.7% in total population pre-working age post-working age

Thanks to the favourable demographic structure Białołęka has the lowest value of dependency ratio. In addition, thanks to the dynamic developmend of housing construction the district attracts new inhabitants. In consequence it registers favourable values of other indicators: high net migration, the

<sup>&</sup>lt;sup>37</sup> See <a href="http://www.ebialoleka.pl/10powodow">http://www.ebialoleka.pl/10powodow</a>

highest natural increase and low femininity ratio. These indicators affect positively the future demographic potential.



The district registers the lowest number of divorces per 1 thousand population.



The data on the number of entities of national economy and employed persons are less favourable. Regarding the number of entities per 1 thousand inhabitants Białołęka ranks 17<sup>th</sup>, only Ursus had a worse value.



At the same time the level of unemployment among Białołeka inhabitants is low. A lower number of unemployed persons per 1 thousand inhabitants is observed only in Wilanów. In addition, in comparison with other districts Białołęka has the lowest percentage of long-term unemployed and the highest percentage of unemployed women – 53.3% of the unemployed. With regard to age, persons between 35 and 44 years old have the biggest problems with finding a job. Share of this group among the unemployed is the highest in Warsaw.



Statistical portrait of an unemployed:



Białołęka's last place in the ranking of the attractiveness of living conditions is a result of the underdeveloped social infrastructure. The existing infrastructure is not adequate for the demands of the ever growing population.

The district has an underdeveloped network of education facilities. Out of every 1 thousand of children between 3 and 6 years old only 600 attend nursery schools. Furthermore, the district enrolls a large number of children per 1 primary school and the largest among all districts number of students in lower secondary schools. Overcrowding of the facilities diminishes the quality of teaching conditions. There

are 16 pupils per 1 computer with access to the Internet in primary schools, a larger number was observed only in Ursus.



Large number of pupils per 1 primary schoolby 260 pupils more than in Wilanów



The largest number of students per 1 lower secondary school

by 235 students more than in Wawer

Białołęka offers poor access to health care establishments and pharmacies.



The largest number of inhabitants per 1 health care establishment

3 715 persons by 3 037 persons more than in Śródmieście



**Large** number of inhabitants per 1 pharmacy

3 331 persons by 1 835 persons more than in Śródmieście

The level of car ownership among the inhabitants is low.



The smallest number of registered passenger cars per 1 thousand population

371 vehicles per 1 thousand population

In Białołęka there is the highest number of 24-hour care and education centres for children and young people, which hosts 19.8% inhabitants of such facilities in Warsaw. Regarding caring facilities for the elderly, the district offers the largest number of free places in residential care homes and social welfare facilities (in total 61).

With respect to the number of clients of social assistance, Białołęka is among districts with the lowest number of beneficiaries. Only 15 persons per 1 thousand use social assistance. There are less beneficiaries only in Wilanów and Bemowo.

Statistical portrait of a social assistance beneficiary:



Reason for granting the benefit: poverty Type of family: family with 1 child

In addition, the district has the largest number of new dwellings, with an average useful floor area of 84.9 m<sup>2</sup>. New dwellings are in majority (74.3%) built for sale or rent. Moreover, Białołęka has a large share of new dwellings built by private investors. Such dwellings account for 21.4% of all dwellings completed in the district and their average useful floor area per 1 dwelling is 151.2 m<sup>2</sup>.



The largest number of completed dwellings
 which amounts to 12.5% of new dwellings in Warsaw

#### **CONCLUSIONS**

Summing up the results of the ranking it can be said that the stereotypical images of Warsaw districts have less and less in common with the reality. Districts perceived traditionally as industrial, through dynamic development of housing construction, change their character into residential areas. At the same time districts with a high level of development of infrastructure and high level of entrepreneurship have to deal with the unemployment and unfavourable demographic structure.

Analysing the ranking of districts according to selected indicators it can be seen that the old districts of Warsaw, located near the centre, provide the highest levels of services social infrastructure development. However, they have unfavourable demographic structure of population. First of all a percentage of people past their working age, which contributes to high dependency ratio. There is also observed natural decrease of population and low net migration. Dominance of built up and urbanised areas in land use structure slow down the development of housing construction, limiting the inflow of population.

In comparison, the outermost districts, despite their development, feature insufficient infrastructure. This is observed in the fields of education, health care, services and culture. However, the peripheral districts observe more favourable values of demographic indicators. These districts have young demographic structure, with positive net migration and natural increase. Their favourable demographic situation results from the housing construction development in their areas as well as low prices of dwellings, attracting new inhabitants. As the districts far from the city centre have low share of built up and urbanised area they remain open for new investments.

Analysing the results of the ranking one can notice the differences between right bank and left bank parts of Warsaw. They are especially acute in the level of entrepreneurship, which is much higher among the inhabitants of the left bank districts of the capital city.

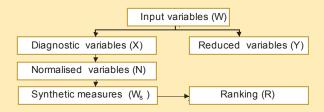
To conclude, taking into account the development of districts in the recent years, it is worth to verify the stereotypical images, as the statistical data often can change radically the perception of these areas. In the light of the constructed rankings many districts show their different, often more positive sides. However, on the map of Warsaw there are also areas which regardless the adopted methodology, rank in the top as well as other areas which always rank near the bottom. The leaders are first of all old districts in the city centre, i.a. Śródmieście, Mokotów and Ochota. Thanks to the high level of development of services, health care and education infrastructure, and absorbent labour markets, these districts offer the most attractive living conditions in Warsaw. Aside from them there are districts from the last places of the rankings, i.a. Białołęka, Ursus and Bemowo – located in peripheries of the city. These districts have underdeveloped infrastructure in relation to the ever growing number of inhabitants. However, their growing demographic potential contributes to the

improvement of the social infrastructure and labour market situation. Thanks to it they gain the image of modern, dynamic and vibrant districts with young and active populations, which in future can be reflected also in the attractiveness of living conditions.

#### CHOICE OF VARIABLES AND DESCRIPTION OF RESEARCH METHOD

Ranking has been prepared according to the scheme presented in Graph 1.

Graph 1. Scheme for building the ranking used in the study (own elaboration based on K.Kukuła<sup>38</sup>)



The first step was the selection of an input set of explanatory variables (W), consisting of the available variables assumed to be significant for the measurement of the living conditions. The input set consisted of **11 variables**:

 $x_1$  – the number of beneficiaries of social assistance per 1 thousand population;

 $x_2$  – the share of parks, lawns and green belts in residential estates in the total area (%);

 $x_3$  – share of communication function in total area (%);

 $x_4$  – number of people per 1 facility of any of the kind: cinemas, theatres, museums (sum);

 $x_5$  – number of children in nursery schools per 1 thousand children aged 3-6;

 $x_6$  – pupils per 1 personal computer with access to the Internet in primary schools;

 $x_7$  – number of people per 1 health care establishment;

x<sub>8</sub> – number of people per 1 pharmacy;

x<sub>9</sub> – number of people per 1 library;

 $x_{10}$  – number of people per 1 shop;

 $x_{11}$  – length of cycling paths (in km);

In the initial analysis the variation of each variable was examined using the coefficient of variation, the value of which is the ratio of the standard deviation to the arithmetic mean, according to the formula:

$$V_j = \frac{S_j}{\overline{X_i}}$$

where:

 $V_i$  – coefficient of variation of variable j;

 $S(x_i)$  – standard deviation of variable j, according to the formula:

$$S_{j} = \sqrt{n^{-1} \sum_{i=1}^{n} (x_{ij} - \overline{x_{j}})^{2}}$$

 $\overline{x_j}$  – arithmetic mean of variable *j*, according to the formula:

$$\overline{x_j} = n^{-1} \sum_{i=1}^n x_{ij}, (i = 1, ..., n)$$

It has been assumed that that variables satisfying the condition  $\left|V_{j}\right| \leq V^{*}$  , where  $V^{*}$  is the critical value of

the coefficient of variation, will be eliminated from the set.  $V^* = 0.10$  has been assumed as critical value as usually below that level variables are treated as quasi constant<sup>39</sup>. As all variables featured relatively high variation, none variable has been eliminated in this step.

In the next step, by examining the strength of the relationship with other variables using the *Pearson's coefficient of linear correlation*, diagnostic variables have been identified. The following formula was

<sup>39</sup> M. Sobczyk, Analiza porównawcza produkcji rolniczej w woj. lubelskim, Wiadomości statystyczne, Nr 12/1983.

<sup>&</sup>lt;sup>38</sup> K. Kukuła, *Metoda unitaryzacji zerowej*, Warszawa 2000.

used:

$$r_{xy} = \frac{\sum_{i=1}^{n} (x_i - \overline{x})(y_i - \overline{y})}{\sqrt{\sum_{i=1}^{n} (x_i - \overline{x})^2 \sum_{i=1}^{n} (y_i - \overline{y})^2}}$$

where:

 $r_{xy}$  – Pearson's coefficient of linear correlation,

x, y – measurable statistical characteristics, x = (1,2, ..., n), y = (1,2, ..., n),

 $\overline{x}$ ,  $\overline{y}$  – arithmetic mean of variables x and y, respectively.

A matrix of correlation has been constructed for all the variables. The value of the correlation coefficient  $r^*=|0,75|$  has been assumed as the critical value. The variables proved not to be strongly interrelated and have all been accepted for the next step of the procedure.

Eventually, all the variables (11 input variables) have been used for the evaluation of the attractiveness of living conditions in Warsaw's districts.

As the variables had different scales and units of measurement, before comparing they had to be standardised along the following formula:

$$z_{ij} = \frac{\left(x_{ij} - \overline{x_j}\right)}{s_j}, (j = 1, 2, ..., n)$$

where:

z<sub>ii</sub> – standardised value of variable x<sub>ii</sub>.

As a result, a matrix of the values of z has been obtained. Subsequently, in order to eliminate negative values from the diagnostic variables set, differential transformation has been conducted along the formula:

$$z_{ij} = \begin{cases} z_{ij}, & \text{if } \min\{z_{ij}\} > 0\\ z_{ij} + \varepsilon, & \text{if } \min\{z_{ij}\} \le 0 \end{cases}$$

where:

$$\varepsilon = -\min\{z_{ij}\} + \frac{1}{5}S(z),$$

S(z) – standard deviation of all the elements of the matrix of the normalised values of the input variables.

Particular elements of the correcting factor  $\mathcal{E}_{\text{have}}$  allowed to eliminate the negative values of diagnostic variables. As a result the values of the variable for all the objects have moved forward on the scale, without losing information on the relations between the objects and links to the other variables.

The next step has been normalisation conducted using the method of zero unitarisation, based on the examination of the mean and range of the variable, treated as reference points, according to the equation:

a) for stimulants:

$$z_{ij} = \frac{x_{ij} - \min_{i} x_{ij}}{\max_{i} x_{ij} - \min_{i} x_{ij}}$$

b) for de-stimulants:

$$z_{ij} = \frac{\max_{i} x_{ij} - x_{ij}}{\max_{i} x_{ij} - \min_{i} x_{ij}}$$

where:

z<sub>ii</sub>- normalised value of variable x<sub>ii</sub>;

 $min x_{ij}$ ,  $max x_{ij}$  – minimum and maximum values of a diagnostic variable.

<sup>&</sup>lt;sup>40</sup> See K.Kukuła, *Metoda unitaryzacji zerowej*, Warszawa 2000.

<sup>&</sup>lt;sup>41</sup> See J. Parysek, L. Wojtasiewicz, *Metody analizy regionalnej i metody planowania regionalnego*, Studia KPZK PAN, T.69, p. 26.

Zero unitarisation is a universal method which aims to unify the character of the variables, i.a. transform them to the form allowing for comparisons<sup>40</sup>.

As a result of the normalisation, we have obtained a set of normalised variables (N), which subsequently have been agregated in order to obtain Perkal's synthetic measure  $(w_s)^{41}$ , which is the mean of the sum of the normalised values of variables, according to the formula:

$$w_s = \frac{1}{p} \sum_{i=1}^p z_{ij}$$

where:

j - 1, 2, ..., p

p – number of examined variables,

 $w_s$  – synthetic measure,

 $z_{ii}$  – standardised value of variable *j* for object *i*.

The higher the value of the synthetic measure the higher the level of development of the phenomenon in particular objects, in this case the attractiveness of living conditions in particular districts of Warsaw.

For the classification of the districts according to the attractiveness of living conditions, two measures have been used: arithmetic mean and standard deviation. On the basis of their values we have distinguished **4 groups**:

- group I with a **high** level of attractiveness of living conditions, to this group belong the districts, whose value of the synthetic measure is higher than the sum of the mean and of the standard deviation:  $w_s \ge \overline{x_{w_*}} + s_{w_*}$ ;
- group II with a moderate level of attractiveness of living conditions, this group consists of districts with the value of the synthetic measure within the range:  $\overline{x_{w_e}} + s_{w_e} > w_s \ge \overline{x_{w_e}}$ ;
- group III with a low level of attractiveness of living conditions, this group consists of districts with the value of the synthetic measure within the range:  $\overline{x_{w_s}} > w_s \ge \overline{x_{w_s}} s_{w_s}$ ;
- **group IV** with a **very low** level of attractiveness of living conditions, to this group belong the districts, whose value of the synthetic measure is not more that the difference between the mean and the standard deviation:  $w_s \leq \overline{x_{w_s}} s_{w_s}$ .

where:

 $w_s$  – synthetic measure,

 $x_{w_s}$  – arithmetic mean of the  $w_s$  (of the synthetic measure),

 $S_{w}$  – standard deviation of the  $W_{s}$ .

#### Annex 2

# **DESCRIPTION OF THE RESEARCH METHOD**

Variables have been chosen, and ranked, which allowed to put them in ascending order. The set of chosen variables consisted of both stimulants and de-stimulants<sup>42</sup>. Rank 1 has been assigned to the highest value of the stimulants and to the lowest values of the de-stimulants<sup>43</sup>.

<sup>&</sup>lt;sup>42</sup> Stimulant is a variable, whose high values are favourable, while de-stimulant – the opposite.

<sup>&</sup>lt;sup>43</sup> See T. Grabiński, S. Wydmus, A. Zeliaś, *Metody aksonometrii numerycznej w modelowaniu zjawisk społecznogospodarczych*, Warszawa 1989.