

ISSN 2449-9781

NR 22
(2022)

BIBLIOTEKA REGIONALISTY REGIONAL JOURNAL

Dorota Rynio

Wroclaw University of Economics and Business

e-mail: dorota.rynio@ue.wroc.pl

ORCID: 0000-0003-4027-2476

Alicja Zakrzewska-Półtorak

Wroclaw University of Economics and Business

e-mail: alicja.zakrzewska-poltorak@ue.wroc.pl

ORCID: 0000-0002-5752-0002

Hanna Adamiczka

Wroclaw University of Economics and Business

e-mail: hanna.adamiczka@ue.wroc.pl

ORCID: 0000-0001-9906-962X

Agata Pluta

Wroclaw University of Economics and Business

e-mail: agata.pluta@ue.wroc.pl

ORCID: 0000-0001-6814-9010

Demographic Changes in the Cities of Lower Silesia in the Perspective of Sustainable Development

Zmiany demograficzne w miastach województwa dolnośląskiego w perspektywie zrównoważonego rozwoju

DOI: 10.15611/br.2022.1.09

JEL Classification: R10

© 2022 Dorota Rynio, Alicja Zakrzewska-Półtorak, Hanna Adamiczka, Agata Pluta

This work is licensed under the Creative Commons Attribution-ShareAlike 4.0 International License.

To view a copy of this license, visit <http://creativecommons.org/licenses/by-sa/4.0/>

Quote as: Rynio, D., Zakrzewska-Półtorak, A., Adamiczka, H., and Pluta, A. (2022). Demographic changes in the cities of Lower Silesia in the perspective of sustainable development. *Biblioteka Regionalisty. Regional Journal*, (22).

Abstract: The article discusses and evaluates, against the background of selected issues in the theory of urban demography concerning sustainable development, changes in the number of inhabitants in Lower Silesian cities, and to indicate possible development paths for individual categories of cities. All Lower Silesian cities are the subject of the study. The research covered the period 2000-2020. The cities are categorised into small, medium, and large, and their specific characteristics are primarily related to their location. The article uses a descriptive method, simple statistical methods, comparative analysis, and an expert method. The latter proposed the division of cities into categories in terms of demographic changes and sustainable development paths for individual city categories. The results show that Lower Silesian cities (as a group) are ageing, regardless of their size, yet a detailed case study indicated a relatively large group of cities (mainly small) with a growing population and growth potential.

Keywords: city, population, sustainable development, age structure.

Streszczenie: Celem artykułu jest omówienie i ocena, na tle wybranych zagadnień z teorii demografii miast wobec zrównoważonego rozwoju, zmian liczby ludności w dolnośląskich miastach oraz wskazanie możliwych ścieżek rozwoju dla poszczególnych kategorii miast. Przedmiotem badań są wszystkie dolnośląskie miasta. Okres badawczy to lata 2000-2020. Miasta są analizowane w podziale na małe, średnie i duże oraz pod względem wybranych ich specyficznych cech związanych w znacznym stopniu z lokalizacją. W artykule zastosowano metodę opisową, proste metody statystyczne, analizę porównawczą oraz metodę ekspercką. Ta ostatnia polegała na zaproponowaniu podziału miast na kategorie pod względem zmian demograficznych oraz zaproponowaniu ścieżek rozwoju zrównoważonego dla poszczególnych kategorii miast. Wyniki badania pokazują, że populacja dolnośląskich miast jako grupy się starzeje, niezależnie od ich wielkości. Natomiast szczegółowa analiza przypadków wykazała, że była dość liczna grupa miast (przede wszystkim małych), w których liczba ludności rosła i które mają potencjał wzrostowy.

Słowa kluczowe: miasto, liczba ludności, zrównoważony rozwój, struktura wiekowa.

1. Introduction

The development of modern cities depends to a large extent on the number and qualitative characteristics of their inhabitants (e.g. Obeng-Odoom, 2016; Okólski & Fihel 2012; Pacione, 2009). Cities want to be attractive to present and potential residents, because the population (its number, age structure, dynamics of change, gender structure, quality features related to education, skills, health, wealth, etc.) influences the pace and directions of development. This problem is significant in striving for sustainable development, the conditions of which should be adapted to the city's current population and forecast the age structure (Jabareen, 2008; Parris & Kates, 2003). This is particularly important in the context of the ageing of cities, observed in many more developed economies.

The article discusses and evaluates, against the background of selected issues in the theory of urban demography concerning sustainable development, changes in the

number of inhabitants in Lower Silesian cities, and indicates possible development paths for individual categories of cities. The research covered the period 2000-2020. Cities are categorised into small, medium, and large, and their specific characteristics are primarily related to their location.

2. Sustainable development in the face of demographic changes in the city

In the modern economy, rapid and intense changes occur, but the fundamental goal of cities' functioning remains unchanged – sustainable development. Sustainable development is implemented in various ways (Mierzejewska, 2015). It refers to carrying out activities in the field of social, economic, and environmental goals, which are achieved in a specific space while striving to implement the assumptions of spatial order. These goals are achieved to different extents, depending on the priorities of spatial units, their current state of development, and global trends. Cities also have unique resources that determine the intensity of actions taken in particular groups of goals and the hierarchy of their achievement. These resources may constitute the competitive advantage of a settlement unit, give it a specific character, distinguish it and influence the image of a given space. However, the lack of resources necessary for the city to function may lead to a reduction in development and, consequently, to its cessation (Grimaud, 2000).

A particular resource nowadays is human capital (Domański, 1993), which is present in different cities to a different degree, and its quality is also not uniform. In many cities there is an excess of population, supported by the global economy, which facilitates the movement of people and migrations to the most developing centres, whereas many others struggle with a shrinking population. As a result, there is an uneven population distribution and a 'drain' of young people from less attractive cities, leaving for centres of socio-economic development.

In terms of contemporary demographic processes, the absolute number of people and transformations in the structure of society itself are essential. In this context, the ageing of societies is becoming a significant challenge. This phenomenon results from a number of factors, including the level of awareness of the society, its education, changes in the family model, wealth, family development and procreation policy, professional activity of women, progress in medicine and health care, social welfare, and longer lifespan. Economic growth, progress in medical technologies, access to health care, increased activity of people, and caring for health have contributed to extending the lifespan, and at the same time, the problems related to civilization and chronic diseases are increasing. The number of senior citizens with disabilities is also growing.

Ageing is also a feature of Polish society, visible in recent decades (Warwas et al., 2017). In Poland, the number of people over 60 is growing systematically,

mainly due to a decrease in the birth rate, an increase in life expectancy, and the mass emigration of young people of working age (Rudnicka & Surdej, 2013). It is estimated that in Poland by 2035, there will be a rapid increase in the number of people over 65, i.e. approximately 8.4 million people, including almost 5 million women (Herudzińska & Błaszczak, 2016). Eurostat data show that “by 2070, around 30 percent of Europeans will exceed the age of 65” (*Silver tsunami...*, 2022), which determines the shrinkage of potential labour resources and their ageing.

The challenges related to demographic change are also found in cities, but they are not homogeneous in every city. They are associated with many factors and the need to focus on new areas of development. The increase in the number of older people in cities is related to the increase in the risk of social exclusion (for economic, social, and cultural reasons), the need to create a system of assistance and care for these people, costs of medical care and medicines, the need to spend their free time, etc. The developed strategies for the socio-economic development of cities must consider the process of demographic changes and develop activation paths for the elderly as part of participation in city management.

However, large and rapidly developing urban centres must consider accelerated population growth. Their attractiveness mainly draws young people of working age. These cities deal with a large influx of permanent residents and people coming for work, training, entertainment, cultural purposes, etc. The demographic structure of these urban units provides the basis for intensive development through the inflow of young people and families. Such urban centres must be ready for the challenges of meeting the needs of a rapidly growing population, effectively managing limited space, and focusing development on improving the quality of life.

In these conditions of demographic changes, cities continue to strive to achieve sustainable development, adopting various paths depending on the quality, quantity, and structure of human capital. Some cities face the challenge of an influx of new inhabitants, others struggle with the outflow of population and the process of shrinking numbers, and ageing of its inhabitants. A further case is constituted by cities whose location in the vicinity of a large centre allowing to attract new people due to the advantage of their location. Some cities have an individual development path enabling the retention of human capital based on unique endogenous values. In all these variants of sustainable development, the number of elderly people increases, but in centres with a characteristic outflow of working-age people, this may present a difficult challenge.

3. Direction of demographic changes in the cities of the Dolnośląskie Voivodeship

For the study, cities (understood as urban communes and urban areas in urban-rural communes) were divided into size categories, assigning them to specific groups according to the population status as of December 31, 2020. The following size ranges of cities were distinguished: large (over 100 thousand inhabitants), medium (20-100 thousand inhabitants), and small (under 20 thousand inhabitants); the small towns were divided into two categories – up to 5,000 residents, and above.

The study took into account the territory of the Dolnośląskie Voivodeship. A total of 91 areas were analysed (i.e. 35 urban communes and 56 cities in urban-rural communes), namely 2 large cities, 17 medium-sized cities, and 72 small cities (including 27 cities with up to 5,000 inhabitants). The adopted division of cities and their spatial distribution are presented in Figure 1.



Fig. 1. Territorial differentiation of cities by size groups in the Dolnośląskie Voivodeship (as of December 31, 2020)

Source: own study based on data (Local Data Bank of the Statistics Poland, n.d.).

In the analysed groups of cities, the average population was as follows: in small cities up to 5,000 inhabitants – 3,356 (8.6% less than in 2000), in small cities with more than 5,000 inhabitants – 9,352 (5.8% less); in medium-sized cities 41,641 (8.0% less); in large cities – 375,950 (2.7% less).

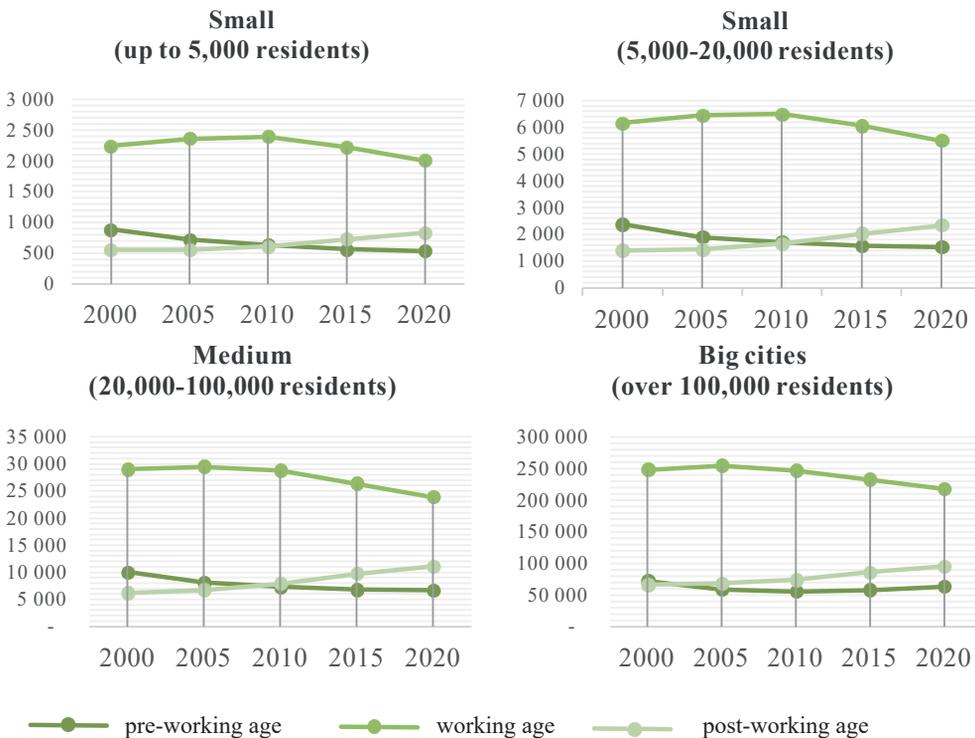


Fig. 2. Changes in the pre-working, working and post-working age population in the studied groups of cities from 2000 to 2020

Source: own study based on data (Local Data Bank of the Statistics Poland, n.d.).

Figure 2 shows the average number of people in pre-working, productive and post-productive age in Lower Silesia for small (up to 5,000 and 5,000-20,000 inhabitants), medium, and large cities in the selected period 2000-2020. Each chart shows a decrease in the number of working age inhabitants since 2010 and a gradual increase in people of post-working age. The pre-working age population for each type of city decreased between 2000 and 2020, but large cities saw a rebound and increase between 2005 and 2020 (this was the case for Wrocław, as Wałbrzych recorded a significant decrease in the population, i.e. at the end of 2020 by 13% compared to 2005).

By studying the age and gender structure in individual groups of cities in 2020 (Figure 3), the low share of children and adolescents of up to 15 years of age and the progressive ageing of the population can be observed. Every fifth city resident was over 65 years old in the analysed region, moreover, in all the groups of cities, there was a surplus in the number of women compared to men.



Fig. 3. Age and gender structure in the studied groups of cities in the Dolnośląskie Voivodeship in 2020

Source: own study based on data (Local Data Bank of the Statistics Poland, n.d.).

A detailed analysis of the age pyramid showed that in small cities, the largest share was constituted by women aged 15-19 (which accounted for 4.9% of the total population), followed by women aged 65-69 and 60-64 (an average of around 4.4%) and men aged 35-39 (4.5%). In medium cities, the dominant group was women aged 65-69, 15-19, 60-64 (from 4.3% to 4.7%), and men aged 40-44 and 35-39 (on average around 4.2%). As can be seen, the age pyramid in both groups of cities was similar. On the other hand, in the case of those large ones, both genders aged 35-39 had a predominant share (on average around 5.2%). Women aged 65-69 and 60-64 also had a large share (4.2% and 3.8%, respectively).

It can be noted, based on the general decline in the population in the analysed cities and the decrease in the share of people of working age, that cities in Lower Silesia are facing the challenge of an ageing population. The age pyramids also

illustrate the above conclusion. Such a long-standing trend may not only lead to age-related problems but also to shrinking of cities.

It should be added that cities lose part of their population due to changing the place of residence to the neighbouring rural area, which means that such people remain active city users (they work, learn, use services, etc. in the city). This applies not only to large cities (especially Wrocław in this group) but also to medium ones, such as Lubin, Oleśnica, and Świdnica. However, this does not change the fact that these people are no longer city residents, in particular, they do not pay taxes and fees to the city.

4. Proposals of development paths for individual city categories

Analysing individual cities in more detail regarding population changes makes it possible to create specific categories of cities and propose appropriate sustainable development paths. The categories of these cities are presented in Table 1.

Table 1. The number of cities in a given category

City by population	Significant population decline (greater than or equal to 10%)	Average population decline <10%> 3%	A slight decrease of 3% or less or a small or medium increase <10%	A significant increase of 10% or more	Total a slight decrease or increase
<5 thous. Residents	13	9	4	1	5
>5 thous. < 20 thous.	15	21	7	3	10
>20 thous. <100 thous.	5	8	3	-	3
>100 thous.	1	-	1	-	1
Total	34	38	15	4	19

Percentage change in the number of people as of the end of 2020 compared to the end of 2000.

Source: own study based on data (Local Data Bank of the Statistics Poland).

Table 2 includes cities with a relatively high potential – a high share of people of pre-working age. These people can become an essential catalyst for sustainable development in the future, provided that they stay in the city when they reach their productive age. In this case, the most significant potential is shown by small centres located in the vicinity of Wrocław, namely Siechnice, Kały Wrocławskie, Jelcz-Laskowice, and medium ones, such as Polkowice, Oława, and Oleśnica.

Table 2. Number of cities with the share of the pre-working age population in 2020 amounting to 18% or more

City by population	Average population decline <10%> 3%	A slight decrease of 3% or less or a small or medium increase <10%	A significant increase of 10% or more
<5 thous. residents	2	3	1
>5 thous. < 20 thous.	-	-	3
>20 thous. <100 thous.	-	3	-
>100 thous.	-	-	-
Total	2	6	4

Source: own study based on data (Local Data Bank of the Statistics Poland).

Table 3 presents the proposed development paths for individual city categories.

Table 3. Sustainable development paths for cities in the context of demographic changes taking place in them

City by population	Significant or average population decline	A slight decrease or decrease	A high proportion of the pre-working-age population
Small	Development of education, primarily at the basic level, attracting external entities, increasing tourist attractiveness, building an image of a city favourable to families, building a public child care system at the nursery and kindergarten level.	Attention to maintaining the existing advantage in terms of attractiveness for living and developing additional modern advantages, e.g. related to the quality of the environment, including air.	Actions to improve the attractiveness of living, in particular for young people, care for the high quality of life in the city, attracting external entities and trying to settle in them.
Medium	Development of education at the primary and secondary level, creating conditions and incentives for living and creating business development (such as environmental, residential, and business spaces, spatial order, common spaces integrating residents, service and business zones, etc.).	Activities in the field of improving the quality of life, using the existing advantages, and in the event of their obsolescence – searching for solutions based on elements of the concept of smart city development.	

Large	Creating, using endogenous and exogenous resources, a unique environment for business, developing education at the basic up to a higher level, introducing new investments, focusing on the use of unique advantages.	Incentives to stay in the city (development of the cultural facilities, educational conditions, quality of communication and transport infrastructure, quality of the environment) indicates it is a place for paying taxes and other charges, etc.	No such cases in this analysis.
-------	---	---	---------------------------------

Source: own study.

The paths of sustainable development of cities should be consistent with the diagnosed level and potential of demographic growth and development because people are the driving force of cities. The city's sustainable development strategy should be adjusted to the quantity and quality of human resources and forecasts of their changes. Among the factors that may contribute to the increase in the number of the population, the authors indicate the impact on the education system and quality of life, primarily including the quality of the environment, as well as attracting and maintaining (rooting) valuable external entities supporting the local labour market and local entrepreneurs (through collaboration, subcontracting, joint R&D, etc.). Importantly, such advantages are only provided once and only for some cases, therefore cities characterised by a low decline or increase in the number of people in the analysed period, in addition to supporting the existing advantages, should monitor the situation on an ongoing basis and follow forecasts. These cities should also work on creating advantages that may be important in the future, such as those based on the quality of the environment, including air, efficient public transport, or the creation of centres of modern technological solutions. Other approaches should also be applied to cities, taking into consideration their size (belonging to the categories distinguished above), as indicated in Table 3.

5. Conclusion

The article divides cities into categories in terms of demographic changes and proposes sustainable development paths for each city category. The research results show that Lower Silesian cities are ageing, regardless of their size. Yet, the detailed case study revealed that there was a relatively large group of cities (mainly small, over 5,000 inhabitants), the population of which was growing as well as their potential for growth, especially those with a high proportion of pre-working age residents. However, the main threat to their development is the outflow of the population in the following years in search of more attractive places to study, work, and, consequently, live. Thus, a feedback loop arises, which makes it difficult to break out of the cycle

of developmental retardation. In order to counteract this trend and also stimulate sustainable development, actions should be taken to increase the attractiveness of these cities, using endogenous resources and attracting exogenous resources, and encouraging them to settle in a given place. A practical method of 'planting' is to have high-quality human resources.

Undoubtedly, cities located in the vicinity of a large agglomeration, such as Wrocław, were in a more favourable situation. Moreover, it should be remembered that some of the cities whose population was declining benefited from the population growth near these cities, namely in rural areas. However, as city users, they do not pay taxes and fees related to their place of residence, which causes specific financial difficulties. Finally, it is worth noting that the actual population does not always coincide with the available statistical data, which can be applied to Wrocław (it was estimated that in 2020 the actual population of this city was approximately 150-300 thousand larger, and increased even more as a result of the influx of refugees from Ukraine in 2022).

References

- Domański, R. S. (1993). *Kapitał ludzki i wzrost gospodarczy*. PWN.
- Grimaud, A. (2000). Ressources naturelles et croissance endogène dans un modèle à biens horizontalement différenciés, *Économie et Prévision*, n°143-144, 2000-2-3. *Economie de l'environnement et des ressources naturelles*, 213-226.
- Herudzińska, M. H., & Błaszczak, I. (Eds.). (2016). *Znane i nieznanne oblicza starości jako obszar wyzwań dla społeczeństw XXI wieku*. Wydawnictwo SGGW.
- Jabareen, Y. (2008). A new conceptual framework for sustainable development. *Environment, Development and Sustainability*, 10(2), 179-192.
- Local Data Bank of the Statistics Poland. (n.d.). <https://bdl.stat.gov.pl>
- Mierzejewska, L. (2015). Rozwój zrównoważony w planowaniu i zagospodarowaniu przestrzennym w Polsce. *Biuletyn KPZK*, (257-258), 97-100.
- Obeng-Odoom, F. (2016). *Reconstructing urban economics: towards a political economy of the built environment*. Zed Books.
- Okólski, M., & Fihel, A. (2012). *Demografia. Współczesne zjawiska i teorie*. Wydawnictwo Naukowe Scholar.
- Pacione, M. (2009). *Urban geography: a global perspective*. Routledge.
- Parris, T. M., & Kates, R. W. (2003). Characterizing and measuring sustainable development. *Annual Review of Environment and Resources*, 28(1), 559-586.
- Rudnicka, M., & Surdej, A. (2013). *Gospodarka senioralna. Nowy sektor gospodarki narodowej w Polsce*. Raport Centrum im. Adama Smitha.
- Silver tsunami już nadciąga. Technologia pomoże?* (2022). <https://biznes.wprost.pl/technologie/10811611/silver-tsunami-juz-nadciaga-technologie-pomoze.html>
- Warwas, I., Wiktorowicz, J., & Woszczyk, P. (Ed.). (2017). *Kompendium wiedzy dla pracodawców MŚP z zakresu utrzymania aktywności zawodowej osób w wieku 50+*. Wydawnictwo Uniwersytetu Łódzkiego.