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Consequences of the pandemic and new development opportunities for Polish cities in the (post-)COVID-19 era

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Relevance: The coronavirus pandemic has become the most unexpected global phenomenon in 2020, with a number of equally unexpected consequences. The explosive spread of Covid-19 is mostly perceived the negative light, especially in the context of the threat it posed to the health and lives of millions of people. However, it has been noticed that as a result of the pandemic and lockdown, some negative socio-economic processes have been slowed down. Thus, some of the consequences of the pandemic and lockdown can be perceived as new development opportunities. **Research objective.** This article aims to describe the new phenomena and processes caused by the pandemic in Polish cities which may have a positive impact on urban development. We also intend to indicate potential directions and development opportunities in cities as a result of the pandemic experience. **Data and methods.** Methodologically, the work combines two main research methods. First, we analysed the research literature and materials of selected Polish and foreign media dealing with the pandemic and its impact on cities, especially in the spatial and social dimensions. Then we considered the available quantitative data describing the current epidemiological situation in Polish regions. **Results and conclusions.** Research on the development of Covid-19 in Polish cities is difficult because the official data published daily are aggregated only on the regional level. We have found the following consequences of the pandemic that can be considered as positive: relief from overtourism and speculation on the housing rental market, revival of urban nature, revival of the importance of local and regional identity and goods and resurgence of human solidarity and support for entrepreneurs. The development potential of cities in the post-Covid-19 era should be considered in the context of the following dilemmas and concepts: densification vs. disaggregation, concept of a 15-minute city, city as a system and the need for a participatory urban policy.

KEYWORDS

coronavirus, COVID-19, development opportunities, city, urban space, Poland

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Последствия пандемии и новые возможности для развития польских городов в эпоху (после) COVID-19

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Актуальность. Пандемия коронавируса стала самым неожиданным глобальным явлением 2020 года с рядом столь же неожиданных последствий. Взрывное распространение Covid-19 в основном воспринимается в негативном свете, особенно в контексте угрозы, которую он представляет для здоровья и жизни миллионов людей. Однако было замечено, что в результате пандемии и изоляции некоторые негативные социально-экономические процессы замедлились. Таким образом, некоторые последствия пандемии и изоляции можно рассматривать как новые возможности для развития. **Цель исследования.** Эта статья направлена на описание новых явлений и процессов, вызванных пандемией в польских городах, которые могут оказать положительное влияние на городское развитие. Мы также намерены указать потенциальные направления и возможности развития в городах в результате пандемии. **Данные и методы.** Методологически работа сочетает в себе два основных метода исследования. Во-первых, мы проанализировали исследовательскую литературу и материалы избранных польских и зарубежных СМИ, посвященных пандемии и ее влиянию на города, особенно в пространственном и социальном измерениях. За-

КЛЮЧЕВЫЕ СЛОВА

коронавирус, COVID-19, возможности развития, город, городское пространство, Польша

тем мы рассмотрели имеющиеся количественные данные, описывающие текущую эпидемиологическую ситуацию в регионах Польши. **Результаты и выводы.** Исследование развития Covid-19 в польских городах затруднено, потому что официальные данные, публикуемые ежедневно, агрегируются только на региональном уровне. Мы обнаружили следующие последствия пандемии, которые можно рассматривать как положительные: избавление от чрезмерного туризма и спекуляций на рынке аренды жилья, возрождение городской природы, возрождение важности местной и региональной идентичности и товаров и возрождение человеческой солидарности и поддержки для предпринимателей. Потенциал развития городов в эпоху после Covid-19 следует рассматривать в контексте следующих дилемм и концепций: уплотнение или дезагрегация, концепция 15-минутного города, город как система и потребность в политике городского участия.

ДЛЯ ЦИТИРОВАНИЯ

Szmytkowska, M. (2020) Consequences of the pandemic and new development opportunities for Polish cities in the (post-)COVID-19 era. *R-economy*, 6(3), 196–207 doi: 10.15826/recon.2020.6.3.017

Introduction

Pandemics have always affected city life and Covid-19 is no exception, its effects ranging from increased surveillance and ‘de-densification’ to new community activism (Shenker, 2020). The global pandemic caused by coronavirus has been ravaging the entire globe since November 2019. The virus first appeared in Wuhan, China, in late 2019. The new type of coronavirus, which manifests itself through such symptoms as high fever, cough, breathing difficulty and subsequent pneumonia, has spread rapidly and affected the whole world (Musa, 2020).

We usually perceive this type of change as a difficult situation that significantly disrupts the current development path of cities. Although the phenomenon of a pandemic and the rapidly spreading wave of morbidity and deaths are tragic for the population of cities, regions and countries, it should be noted that this negative demographic and social shock may nevertheless have some positive effects on cities and their inhabitants. Depending on the size of the city and its geographical location, the pandemic may have been detrimental to some spheres of city life and beneficial to others.

It can be assumed that as a result of the coronavirus epidemic, neoliberal cities would choose a more pro-social and pro-ecological direction of development. As the mayor of Montréal Valérie Plante noticed, “we need more than ever to position our economic recovery in the context of our fight against climate change. It is also clear to me that our economic recovery must go hand in hand with our social recovery” (Taylor and Lavoie, 2020).

The shock caused by the rapid spread of the coronavirus and lockdown resulted in a significant inhibition of several processes that had a negative impact on the social space of cities.

Globally, there has been a breakdown in human mobility, which has resulted in the extinction of migratory streams and tourism. From the economic perspective, these facts are perceived mainly negatively, while in the socio-spatial and ecological context, one can speak of their positive effects, such as prevention of the speculative increase in prices on the real estate market, inhibiting overtourism and improving the quality of the urban environment.

The aim of this article is to indicate potential directions and development opportunities in cities resulting from the pandemic with particular emphasis on the positive aspects of current and future changes. We are going to pursue the following research tasks: provide an overview of relevant research literature; analyse quantitative data describing the spread of the pandemic in Polish regions; describe the effects of the pandemic and, finally, outline the potential development opportunities for cities in the (post) Covid-19 era.

Theoretical framework

Undoubtedly, we are currently experiencing one of the most disruptive pandemics in modern history. Between 2000 and 2019, six pandemics and major outbreaks swept across the planet: the Severe Acute Respiratory Syndrome (SARS) (2002–2004), H1N1 influenza (2009), Middle East respiratory syndrome (MERS) (2012–2020), the West-African Ebola virus epidemic (2013–2016), the Zika fever (2015–2016) and avian influenza (2008–2014). None of these, however, can be compared in scale and impact to the novel coronavirus (Cheval et al., 2020:2). The outbreak of COVID-19, first recorded in Wuhan (China), quickly spread across the globe. The recent data show that there are nearly 20 million confirmed cases and more than 730,000 deaths in the world.

As Varlik (2020:286) observed, “there is little in our recent memory against which we can compare this contagion, but rethinking past pandemics might offer clues about what COVID-19’s legacy could be. There are obvious parallels between the two diseases: the pandemic influenza of 1918–1920 and COVID-19 are both caused by airborne viruses (H1N1 and SARS-CoV-2, respectively), both are transmitted rapidly from person to person, and both generated global pandemics. The pandemic of the last century is perhaps not such a distant mirror for evaluating how we make sense of our own ongoing pandemic, since it allows us to reflect upon how such diseases can change societies globally”.

This retrospective view at global epidemics is also adopted by Heitman (2020:282), who pointed out that “although the social and scientific differences between early modern plague epidemics and 21st-century pandemics are deep and important, the novelty and complications of COVID-19 have reduced us to many of the conditions faced in earlier times. Even where a government can put its residents in full lockdown, it cannot manage their day-to-day lives. Even as people strive to avoid infection, they still literally need to put food on the table, meet their expenses, care for children and the elderly, maintain personal relationships and obligations, and protect their future livelihoods as best they can”.

It should be emphasized, however, that the Covid-19 pandemic is unfolding in a highly mobile modern world kept together by a dense network of global connections. These circumstances are incomparable to a situation 100 years ago. As Batty (2020:547) points out, “the fact that we are all connected so closely to everyone else due to global travel and global supply chains has spread the disease much faster than we were able to grasp”. The global expansion of the virus means that in almost no time it has managed to weaken or disrupt most social and communication networks. Batty (2020:548) underlines that “there are no examples in the literature of any cases where networks have been targeted in this way even in theoretical terms and thus we have little or no experience of knowing how such a network might recover”.

Data and methods

The research topic of this article is highly relevant and has a relatively short history. Therefore, this study combines two main approaches. First, we analysed the research literature and materials

of selected Polish and foreign media dealing with the pandemic and its impact on cities, especially in the spatial and social dimensions. Then we considered the available quantitative data describing the current epidemiological situation in Polish regions. The difficulty in measuring the impact of Covid-19 on cities is the lack of official statistical data describing the situation of cities. The Polish Ministry of Health systematically publishes information on coronavirus in Polish regions (*voivodeships*). The collected and analysed statistical data cover the period from March 4, 2020 (the first confirmed case of Covid-19 infection in Poland) to July 31, 2020. The quantitative data were obtained from the information provided by the Ministry of Health and presented on two spatial scales: national and regional. These data were supplemented by the information on the situation in cities during the Covid-19 pandemic found in print media.

Since 1999, there have been 16 *voivodeships* in Poland. Table 1 presents the most important data on Polish regions. The following regions have the most favorable demographic situation: Mazowieckie, Małopolskie and Pomorskie, with positive indicators characterizing population growth and net migration. The following *voivodeships* have the most favorable economic situation: Mazowieckie, Dolnośląskie and Wielkopolskie. These regions’ GDP exceeds national GDP by at least 10% and they have more than 120 companies per 1,000 inhabitants.

As shown in Table 1, the following *voivodeships* have the highest urbanization rate: Śląskie (77%), Dolnośląskie (69%) and Zachodniopomorskie (69%). Figure 1 shows the number of cities and the urban population by city size. Poland has a total of 930 cities, of which only one – the capital city of Warsaw – is a city with over 1 million inhabitants. Most cities have from 2,000 to 5,000 inhabitants (30% of the total city population), while most people (25% of the total city population) live in cities with 200,000-1 million inhabitants.

Table 2 contains the data on the urban network in Polish regions for different categories of cities. Most cities are located in the following regions: Wielkopolskie (12% of all Polish cities), Dolnośląskie (10%) and Mazowieckie (9%). Śląskie Voivodeship concentrates most large cities with a population of over 100,000 (32% of all cities of this size), which results from the industrial past of this area and the development of the urban conurbation system (Silesian metropolitan area).

Table 1

Socio-economic characteristics of Polish regions in 2018

	Region/voivodship	Total population (in 1000)	Urban population (%)	Natural increase (‰)	Net migration (‰)	Number of companies (per 1,000 inhabitants)	Unemployment rate (%)	GDP (Poland = 100)
1	Dolnośląskie	2901.2	69	-2.3	1.1	129	5.2	111
2	Kujawsko-pomorskie	2077.8	59	-2.4	-1.2	95	8.8	81
3	Lubelskie	2117.6	46	-0.9	-2.7	85	8.0	69
4	Lubuskie	1014.5	65	-1.7	-1.0	112	5.8	83
5	Łódzkie	2466.3	63	-4.1	-0.9	100	6.1	93
6	Małopolskie	3400.6	48	0.7	1.4	115	4.7	91
7	Mazowieckie	5403.4	64	0.6	2.7	151	4.9	161
8	Opolskie	986.5	53	-2.2	-0.7	102	6.3	79
9	Podkarpackie	2129.0	41	0.8	-1.5	82	8.7	70
10	Podlaskie	1181.5	61	1.0	-1.9	87	7.7	72
11	Pomorskie	2333.5	64	0.1	2.1	127	4.9	97
12	Śląskie	4533.6	77	-2.5	-0.9	104	4.3	104
13	Świętokrzyskie	1241.5	45	-3.5	-2.1	92	8.3	71
14	Warmińsko-mazurskie	1429.0	59	-0.6	-2.4	89	10.4	70
15	Wielkopolskie	3494.0	54	-0.1	0.3	123	3.2	110
16	Zachodniopomorskie	1701.0	69	-2.5	-0.6	132	7.4	83

Source: the authors' own evaluations based on the statistical data published by the Central Statistical Office (www.stat.gov.pl; accessed data: August 2, 2020)

Table 2

Number of towns and cities in Polish regions in 2018

	Total	below 2 000	2 000–4 999	5 000–9 999	10 000–19 999	20 000–49 999	50 000–99 999	100 000–199 999	200 000–999 999	1 000 000 and more
Dolnośląskie	91	2	24	29	17	12	5	1	1	–
Kujawsko-pomorskie	52	5	15	11	14	2	2	1	2	–
Lubelskie	48	5	17	6	10	6	3	–	1	–
Lubuskie	43	2	17	7	11	4	–	2	–	–
Łódzkie	44	1	12	8	8	9	5	–	1	–
Małopolskie	61	2	17	14	15	10	1	1	1	–
Mazowieckie	87	5	23	12	22	18	4	1	1	1
Opolskie	36	2	9	13	6	4	1	1	–	–
Podkarpackie	51	6	14	14	7	6	3	1	–	–
Podlaskie	40	7	14	5	6	5	2	–	1	–
Pomorskie	42	1	7	13	6	11	2	–	2	–
Śląskie	71	2	10	12	10	15	10	9	3	–
Świętokrzyskie	36	7	12	6	6	3	1	1	–	–
Warmińsko-mazurskie	49	2	17	6	13	8	1	2	–	–
Wielkopolskie	113	12	42	21	18	13	5	1	1	–
Zachodniopomorskie	66	6	27	8	14	8	1	1	1	–
Poland	930	67	277	185	183	134	46	22	15	1

Source: the authors' own evaluations based on the statistical data published by the Central Statistical Office (www.stat.gov.pl; accessed data: August 2, 2020)

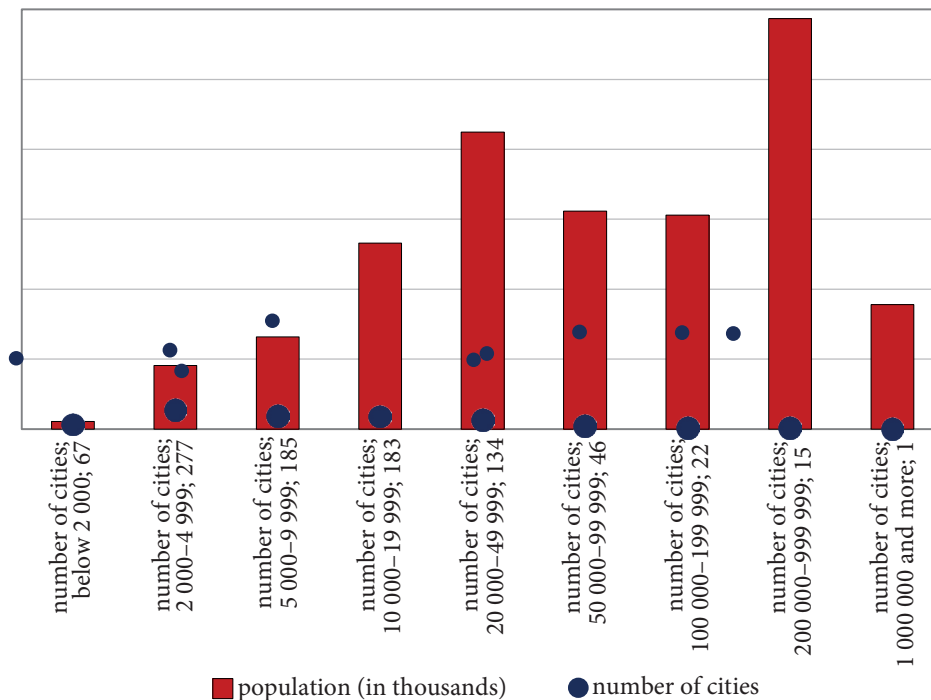


Figure 1. Number and population of towns and cities in Poland in 2018

Source: the authors' own evaluations based on the statistical data published by the Central Statistical Office (www.stat.gov.pl); accessed data: August 2, 2020)

For the purpose of this article, which aims to outline the potential effects of the pandemic in cities, the knowledge of current trends in other countries and the available data describing the pandemic in Poland seems to be sufficient.

Results and discussion

COVID-19 in Poland in statistical terms

The first case of the coronavirus in Poland was detected on 4th March, 2020. The infected person was a man who returned home (Lubuskie region) after his stay in Germany. He was cured within two weeks. The first death caused by coronavirus was recorded in Poland on 12th March, 2020.

Figure 2 illustrates the increase in the number of new cases and deaths in Poland until July 31, 2020. It should be noted that Poland is one of the countries where the incidence of Covid-19 is moderate compared to other countries. In particular, it should be emphasized that the ratio of deaths to confirmed cases is lower – less than 4%. Polish experts note, however, that the number of new cases is not declining, unlike countries where the level of infections and deaths was very high (for example Italy, Spain, UK). Moreover, as the restrictions are lifted, there may be a rise in the number of new cases.

Table 3 shows the cumulative number of new cases and deaths in Polish regions from March 4 to July 31, 2020. The level of the above-mentioned indicators by regions shows significant differences. The greatest number of new cases was recorded in Śląskie Voivodeship as a result of the spread of the coronavirus in mines – the coal mining industry did not stop working during the pandemic. Moreover, more cases occurred in *voivodeships* with the largest Polish cities (Mazowieckie – Warsaw, Małopolskie – Kraków, Łódzkie – Łódź, Wielkopolskie – Poznań, Dolnośląskie – Wrocław). In smaller towns, Covid-19 outbreaks usually appear in nursing homes as well as industrial and craft plants. Recently, disease outbreaks have also occurred in tourist sites and churches and were provoked by weddings and other family celebrations. This is a direct result of the gradual easing of restrictions and the lack of compliance with sanitary standards.

The following regions have the highest share of coronavirus-induced deaths: Kujawsko-pomorskie – 5.6%, Mazowieckie – 5.4% and Łódzkie – 5.0%). The lowest mortality due to Covid-19 is recorded in the following *voivodeships*: Warmińsko-Mazurskie – 0.4%, Małopolskie – 1.7% and Lubelskie – 1.9%.

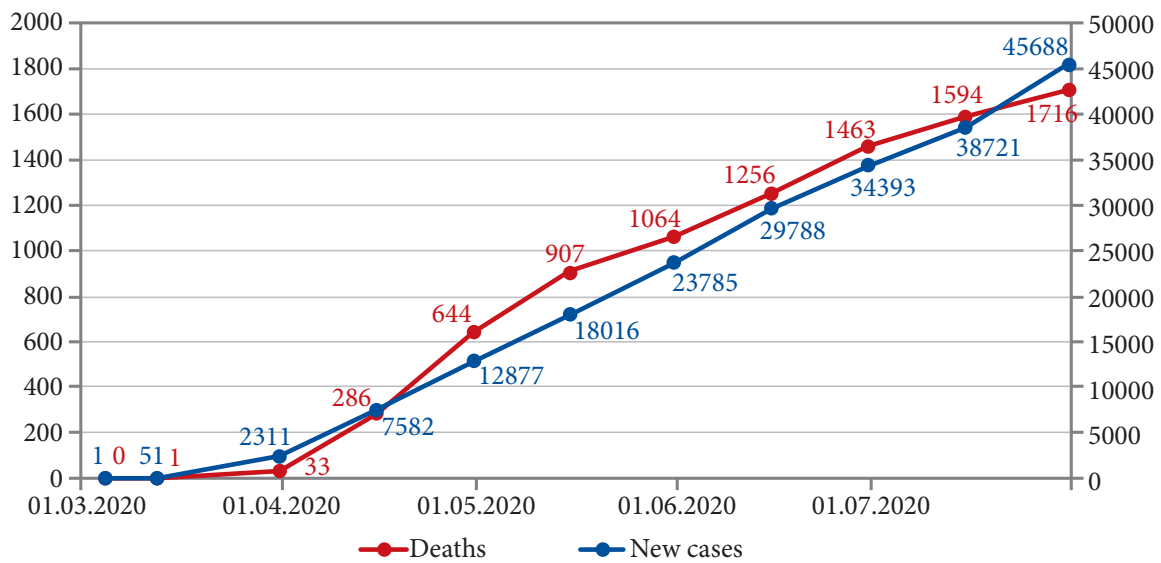


Figure 2. Total number of new cases of Covid-19 and deaths in Poland (from 4.03.2020 to 31.07.2020)

Source: the authors' own evaluations based on the statistical data published by the Central Statistical Office (www.gov.pl; accessed data: August 2, 2020)

Table 3
Total number of new Covid-19 cases and deaths by regions of Poland (as of July 31, 2020)

	Region	New cases	Deaths	Share of deaths among the infected (%)
1	Dolnośląskie	3501	158	4.5
2	Kujawsko-pomorskie	887	50	5.6
3	Lubelskie	1130	21	1.9
4	Lubuskie	550	12	2.2
5	Łódzkie	4300	215	5.0
6	Małopolskie	4693	81	1.7
7	Mazowieckie	7247	389	5.4
8	Opolskie	1323	58	4.4
9	Podkarpackie	1644	71	4.3
10	Podlaskie	1071	23	2.1
11	Pomorskie	1208	39	3.2
12	Śląskie	17943	415	2.3
13	Świętokrzyskie	1087	46	4.2
14	Warmińsko-mazurskie	496	2	0.4
15	Wielkopolskie	4457	206	4.6
16	Zachodniopomorskie	873	23	2.6

Source: the authors' own evaluations based on the statistical data published by the Central Statistical Office (www.gov.pl; accessed data: August 2, 2020)

As Polish regions are highly diverse in terms of population, Figure 3 shows the cumulative number of new cases and deaths per 100,000 in-

habitants (from March 4 to July 31, 2020). However, these indicators also show that the highest level of infections and deaths is found in Śląskie region and in voivodeships with large cities. As mentioned above, the latest data on new disease outbreaks and their various causes may bring significant changes in the overall picture of epidemic development in Poland. Apart from the fact that it is difficult to analyse such dynamic, little is known about the process of disease development.

As can be seen from the above data, Poland is one of the countries with moderate spread of the virus and a low level of mortality. According to the data published daily by the portal www.worldometer.info, Poland ranks 45th in the world in terms of the number of new cases. This is only 0.3% of the global number of cases. Moreover, the rate of the total number of cases per 100,000 people in Poland is 119 and is definitely lower than for the whole world (382).

As was already mentioned in the methodological part of this article, research on the development of Covid-19 in Polish cities is difficult because official data published daily are aggregated only on the regional level. Nevertheless, based on the knowledge about the settlement patterns of individual provinces and due to the fact that both lockdown and the easing of restrictions have similar effects, such data provide a sufficient background for the general analysis of international research literature and media materials.

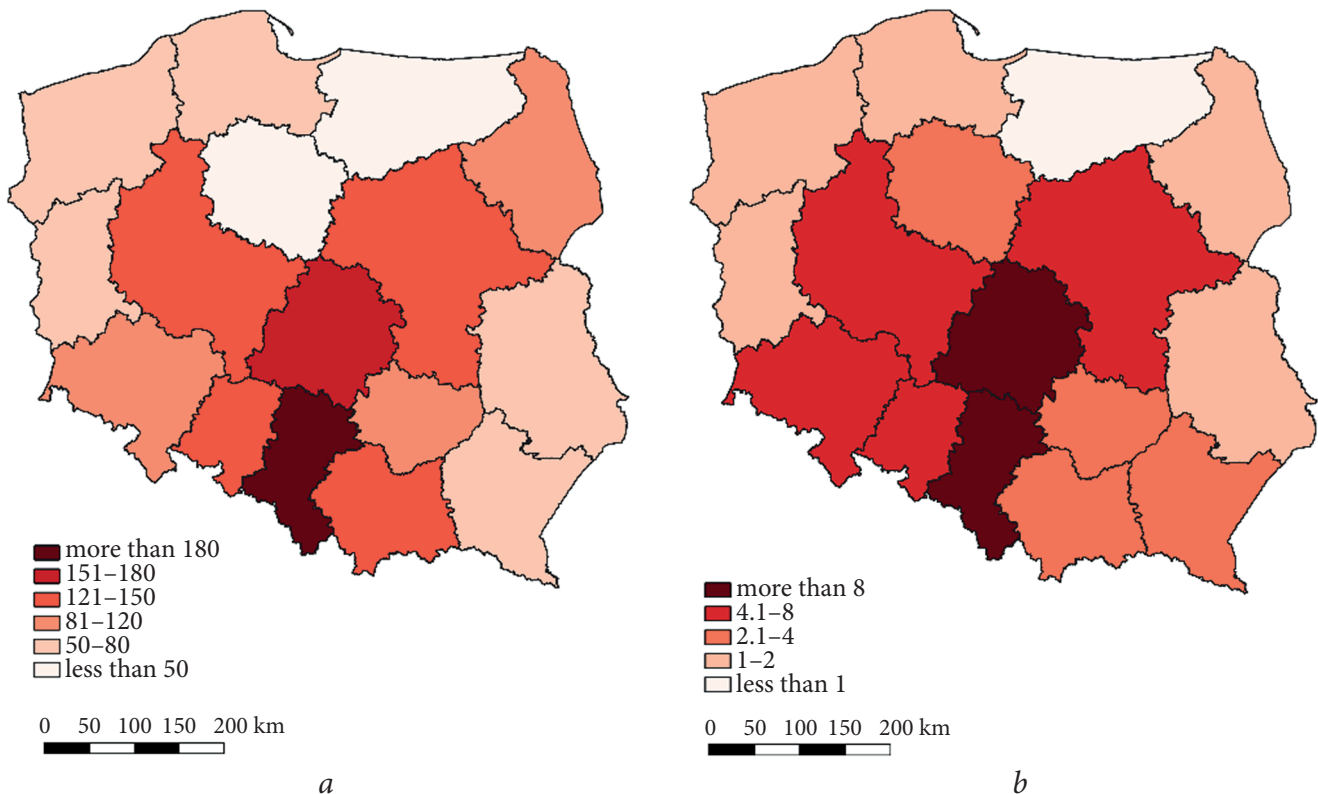


Figure 3. New cases of Covid-19 (a) and deaths (b) per 100,000 residents in Poland by voivodeships (as of July 31, 2020)

Source: the authors' own evaluations based on the statistical data published by the Central Statistical Office (www.gov.pl; accessed data: August 2, 2020)

Socio-economic changes caused by the pandemic – universal dimension

Undoubtedly, many of the effects of the coronavirus pandemic are universal and comparable in all countries and cities. Musa (2020) has identified the main effects of the pandemic: among the negative impacts of Covid-19, he distinguished such socio-economic processes as high mortality, economic losses, social and religious disruption, domestic violence and anomalies, fear and trauma.

Mortality is increasing on a global scale. By the end of July 2020, 680,000 people had died from the coronavirus (www.worldometer.info). Nowadays, a second wave of new cases is being observed in some countries and it is really difficult to forecast how the situation is going to develop in the future.

COVID-19 has had a significant impact on the world economy in recent weeks, affecting especially vulnerable industries such as manufacturing, transportation, tourism and hospitality. The economic effect of the pandemic is stronger for low- or no-income city dwellers, especially those

employed in the informal sector. Analysts are already referring to COVID-19 as the 2020 global recession (Musa, 2020). Due to social distancing and lockdown in cities, many people are being separated from their friends and their social lives are being disrupted. The downside of self-isolation or social lockdown is traumatic stress, confusion and anger, all of which are exacerbated by the fear of infection, since people may have limited access to supplies of necessities, inadequate information or experience economic loss or stigma. This stress and anxiety can lead to increased alcohol consumption as well as an increase in domestic and family violence. Fear of infection and mental trauma faced by almost everyone also affect people's wellbeing. They may suffer after losing close friends or family members; feel lonely and increasingly anxious about the impending uncertainties (Musa, 2020).

Among the positive impacts of Covid-19, Musa (2020) mentions the altruistic social relationship and a fall in air pollution. Social distancing and lockdowns have prompted altruistic behaviours, in part because of the sense that “we’re

all in this together”. By not going out and socializing, people have found more time for family, neighbours and even old friends with whom they connect via phone or social media.

The improvement in environmental quality is mainly related to the decrease in air pollution and is temporary. After the restrictions are lifted, the yo-yo effect will be observed. As Cohan notes (2020) the air is getting cleaner, but it isn't getting cooler. The build-up of greenhouse gas pollution continues, and global temperatures are still rising. It can be assumed that it is very difficult to extrapolate the short-term trends observed during the 3-month period of the mass lockdown.

Certainly, Musa's list of pandemic effects is not complete and exhaustive. Therefore, further we are going to identify urban processes that were suddenly stopped as a result of the pandemic and lockdown. Particular attention will be paid to those aspects that can have a positive impact on cities and their inhabitants.

The potential impact of the pandemic on Polish cities

As Cheval et al (2020:17) underline, it is the first time in history that the metabolism of all the urban agglomerations with more than 1 million inhabitants from Europe was virtually stopped regarding movement, traffic and economic exchanges. Now, the question is how cities will handle this disruption in the planning of their further development. Table 4 summarizes the effect of the lockdown on some Polish cities and its potential consequences, including positive ones.

Table 4

Lockdown effects on Polish cities and their positive consequences

Lockdown effects	Positive consequences
Collapse of tourism	Relief from the burden of over-tourism, especially touristification due to short-term rental trends
Decline in rental housing	less speculation on the housing rental market
Decrease in mobility and transport traffic	revival of urban nature; improved quality of the city's natural environment (air, water, etc)
Limiting global impacts	revival of the importance of local and regional identity and goods
Detrimental to the development of SMEs	resurgence of human solidarity and support for entrepreneurs

Source: the authors' own evaluations based on the media materials

It seems paradoxical, but the decline in tourist traffic caused by the coronavirus epidemic also provided a temporary relief – from the perspective of city dwellers – for certain problems related to urban tourism, such as overtourism and touristification. The concept of overtourism has been discussed in recent years as one of the most debatable issues related to tourism in the media and in academia (Koens et al., 2018). Overtourism affects destinations or places where local people believe that there are too many visitors and suffer from the deteriorating quality of life in the region (Perkumienė and Pranskūnienė, 2019). Touristification implies processes of gentrification and short-term rental of private apartments for tourists in the central districts of the city. The development of the pandemic stopped this process almost completely, not only in Polish cities, but also in other European tourist cities such as Venice, Barcelona or Prague. This phenomenon should be perceived positively in the context of the quality of life of local residents. As Burgen and Giuffrida (2020) observe, “the collapse of the travel industry caused by the virus offers a unique opportunity for cities plagued by mass tourism to rethink their business model and strive for a sustainable tourism model, that doesn't harm the liveability of cities”. Fletcher et al (2020) explain how local communities could benefit from this opportunity: “we need to use this moment to proactively plan for voluntary tourism downsizing beyond the current crisis as part of an overarching society-wide degrowth programme in pursuit of post-capitalism”. In Poland, the slowdown in (over)tourism due to the coronavirus pandemic can be observed in Kraków and Gdańsk as well as in some smaller and popular coastal and mountain cities¹.

The lockdown and closure of all companies, service centers and universities inhibited transactions on the housing rental market due to the lack of customers, especially in big Polish

¹ Krupa-Dąbrowska R. 17.03.2020. *Koronawirus: Minister zdrowia zakazał najmu krótkoterminowego aż do odwołania*. <https://www.rp.pl/Nieruchomosci/303179861-Koronawirus-Minister-zdrowia-zakazał-najmu-krotkotermi-nowego-az-do-odwolania.html>; Dobiegała, A. 29.07.2020. *Epidemia koronawirusa. Zagraniczni turyści nie chcą przyjeżdżać do Gdańska*. <https://trojmiasto.wyborcza.pl/trojmiasto/7,35612,26165976,epidemia-koronawirusa-zagraniczni-turysci-nie-chca-pryjezdzac.html>

cities². People who previously rented flats from private owners began to give up these flats and return to their hometowns. In addition, there were few new clients interested in renting a flat on the transaction market, which triggered a fall in apartment rental prices. This is a negative phenomenon from the perspective of apartment owners, but at the same time it would slow down speculations on the rental market, which have been galloping in recent years. As a result, it is now possible to rent apartments at affordable prices, depending on the real qualities of the property, such as location, availability of equipment, etc. In this context, it should be noted that the coronavirus pandemic can and should be used to start a broader discussion about this basic human need – the right to housing and the verification of the neoliberal housing policy.

The next effect of the lockdown is the decrease in mobility and transport traffic, which contributed to the revival of urban nature and improved air quality³. It is probably a temporary phenomenon, resulting directly from restrictions on mobility. Since this is a beneficial process for green areas and public spaces in modern cities, measures should be taken to maintain this trend in the long term.

In the socio-cultural dimension, it should be emphasized that lockdown significantly limited the global flow of people and goods. Forced to stay at home in the first stage of lockdown, city dwellers focused on the local environment (home and estate) and the daily rituals related to basic existence. With time, as the restrictions were being gradually lifted, the inhabitants became interested in the wider (regional) environment due to the need to relax after a mentally difficult time of closure. It can be concluded that this unexpected time of domestic isolation made people reflect on important social issues. The isolation forced

by the pandemic resulted in a greater interest in the neighborhood and its values, which were previously ignored due to the rush and functioning in the global circulation⁴. It can therefore be concluded that the consequence of the pandemic is revival of the importance of local and regional identity and goods.

The last significant – and positive – consequence of the pandemic is the revival of human solidarity and the need to help others by the inhabitants of Polish cities⁵. On the one hand, many elderly and quarantined people had to stay at home. At that time, many local initiatives appeared, led mainly by children and young people, who helped these people mainly by shopping and bringing them home. On the other hand, as a result of the lockdown, many small and medium-sized companies – forced to close their business or operate to a very limited extent – lost their revenues. Again, the social response was significant. Many people ordered products and services on-line and gave entrepreneurs a chance to recover at least some of their revenues.

Development potential of cities in the post-Covid-19 era

As can be seen from above, the pandemic and its tragic consequences can also be seen as a shock that may have a beneficial effect on urban development. As Rashid (2020:17) puts it, “the COVID-19 pandemic is a wake-up call and maybe also an opportunity to build better and more sustainable societies and cities. Currently it may give us time to reflect and think about long-term solutions while tackling the short-term problem”.

Our analysis of press reports and scientific studies on the impact of the pandemic on cities has shown that from the perspective of local authorities, the following measures should be taken for further development of cities:

- intensification of the digital infrastructure in cities;
- programs for making housing more energy efficient;
- mass tree planting;
- investment in solar and wind power;

⁴ Tabaka, M. 06.05.2020. Polacy rzucili się na ogródki działkowe przez koronawirusa. Ceny wystrzeliły. <https://spiderweb.pl/bizblog/ogrodki-dzialkowe-cena-koronawirus/>

⁵ Jemielniak, D. 06.06.2020. Narodziny społeczeństwa współpracy. <https://www.forbes.pl/opinie/epidemia-covid-19-uruchomila-w-polsce-spoeczna-solidarnosc-i-pomoc/y310d1q>; Szymański, A. 16.09.2020. Wirus, rozsądek i społeczna solidarność. <https://ekai.pl/wirus-rozsadek-i-spoeczna-solidarnosc-2/>

² Janoś, K. 11.07.2020. Koronawirus dał po kieszeni właścicielom mieszkań. Najemcy znikają, trudno znaleźć nowych, ceny spadły. <https://www.money.pl/gospodarka/koronawirus-dal-po-kieszeni-wlascicielom-mieszkan-najemcy-znikaja-trudno-znalezc-nowych-ceny-spadly-6529152459003521a.html>; Zańko, P. 10.04.2020. Czynsze najmu spadają przez koronawirusa. Inwestujących w mieszkania na wynajem czekają trudne czasy. <https://gs24.pl/czynsze-najmu-spada-ja-przez-koronawirusa-inwestujacych-w-mieszkania-na-wynajem-czekaja-trudne-czasy/ar/c9-14912352>

³ Kokoszkiwicz, M. 25 maja 2020. Rowerem i na piechotę. Koronawirus zmienia “samochodowe” miasta na lepsze. <https://wroclaw.wyborcza.pl/wroclaw/7,35771,25964423,koronawirus-zmienia-miasta-na-lepsze.html>

- bicycle infrastructure;
- pedestrian infrastructure (widening of pavements);
- enlarging public squares;
- banning traffic in central urban areas;
- programs for making neighbourhoods more self-sufficient (shopping, leisure and work facilities within 20 minutes of residents' homes);
- providing opportunities for daily physical activity;
- sufficient number of safe public spaces (parks, beaches and other outdoor spaces) where people can meet and exercise without running a high risk of contagion (Taylor & Laville 2020, Safi 2020, Rashid 2020).

In the context of the discussion on the development of a post-pandemic city, some interesting threads stand out. One of the most pressing questions that urban planners will face is the apparent tension between densification – the push towards cities becoming more concentrated, which is seen as essential to improving environmental sustainability – and disaggregation, the separating out of populations, which is one of the key tools currently being used to hold back infection transmission (Shenker, 2020). The dilemma of densification *vs.* disaggregation is especially important in the context of Polish cities with intense and uncontrolled suburbanization processes. The Covid-19 pandemic may change the priorities of urban authorities in favour of public health and make them revise or cancel the plans which may lead to suburban sprawl.

Another important development is the 15-minute city concept (*ville du quart d'heure*), proposed by the Mayor of Paris (Willsher, 2020). According to this concept, people should be offered an opportunity to find what they need on or near their doorstep to ensure an “ecological transformation” of the capital into a collection of neighbourhoods. This would reduce pollution and stress, creating socially and economically mixed districts to improve overall quality of life for residents and visitors. The quarter-hour city concept is based on Moreno's idea of chrono-urbanism (Moreno 2020a). The Covid-19 crisis has shown the strength of cities, because it is a systemic urban crisis of a sanitary nature. The fact of having to silence the city to avoid the spread of the virus shows the need to rethink our cities' urban planning to, above all, favour the creation of economic, ecological and social value in the proximity (Moreno 2020b).

An important part of the discussion on the future of the city after the crisis is the need to look at it as a system of many interconnections. Social, economic and environmental resilience are all closely linked as three interconnected subsystems with significant dependencies on each other. Hence, we are now facing the domino effect of concurrent failures. Cities function as systems, and this pandemic has created a major opportunity to build back better, more inclusively and with greater resilience to future shocks. We should focus on giving cities the technical support and data to create integrated social, economic and infrastructural strategies at the local level (Dasgupta, 2020).

Finally, it is necessary to point out the importance of urban policy, which should be based on a dialogue with and genuine participation of various stakeholder groups for the benefit of the city. In Polish cities governed by neoliberal rules, residents were usually left out of the city management process. The pandemic has shown that cities must be planned for residents and by residents. Moreover, the crisis resulted in a huge social mobilization to undertake joint action for the benefit of the city and the local community. This social force was described by professor Roger Keil, who, in an interview to the Guardian, said that ‘a virus is a biological phenomenon, but it is being governed by social and political processes. The solidarity being forged by communities banding together to feed vulnerable people in neighbourhoods, or to organise rent strikes, could prove just as crucial in shaping the future of the world's great cities as the forces of government policy or capital’ (Safi, 2020).

Conclusions

The COVID-19 pandemic has exposed the inadequacies and pitfalls in global social systems and provided an opportunity to ensure a faster, more coordinated and coherent global response for strengthening cities' resilience and sustainability (Musa, 2020). Although, as professor Roger Keil emphasizes, “there is no one path for all great cities to follow” (Sati, 2020), the urban crisis caused by the coronavirus pandemic gives us a chance to introduce some universal solutions that may improve the level of security and the quality of life of urban dwellers. There is a consensus on the need to increase the space and functionality of green areas and public spaces, the need to re-

organize public transport by increasing cycling and walking and the rationalization of the public transport system.

In Polish cities, there are several social, economic and spatial phenomena and processes that may become weaker as a result of the pandemic (e.g. overtourism and touristification, price speculations on the long-term rental housing market) or, on the contrary, gain strength (environmental quality, development of alternative and environmentally friendly forms of urban transport, local

and regional identity, human solidarity and mutual support).

For many years, slogans about the development of sustainable, intelligent, pro-social, etc. cities have mostly remained a part of media and academic discussions or urban development strategies. Only the shock caused by the Covid-19 pandemic has led local authorities to take some real action and start planning more long-term changes of the urban space for the benefit of local communities.

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