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The socio-spatial features of the COVID-19 pandemic: the formation of new disability issues (global and Hungarian trends)

Abstract

In the period of the first wave of the COVID-19 pandemic, the scientific community had only little knowledge about the nature of this virus. The regional appearance of the infection was particularly undiscovered, and we knew very little about the social and residential situation of those affected by the disease. Only a few international studies were published on this topic. It soon became evident that it was necessary to explore the social and regional background of the problem caused by the pandemic, which spread very fast in the world, especially in the large cities. In addition, the COVID pandemic produced several new manifestation forms of disability issues, which created the social disability concept. That is why some researchers have decided to explore the social background of the problem. This study focuses on four main objectives. The first one is to reveal the global and European trends of the socio-spatial characteristics of the pandemic. The second objective is analyzing the socio-spatial distribution of COVID-19 infections in Hungary based on the results of an empirical survey (based on a sample of 1000 people) carried out by the Centre for Social Sciences Institute for Sociology in 2021. The third aim is to present and to compare the Hungarian mitigation measures (restrictions, regulations) on both national and local (municipal) level. Finally, the study would like to conclude the similarities and the differences between the global and the Hungarian situation.

Keywords: social background of the COVID-19 pandemic, socio-spatial disparities, new disability forms, Hungarian mitigation measures

A COVID-19 világjárvány társadalmi-térbeli jellemzői: új fogyatékosági problémák kialakulása (globális és magyarországi trendek)

Absztrakt

A COVID-19 világjárvány első hullámának idején a tudományos közösségnek csak kevés ismerete volt a vírus természetéről. Különösen a fertőzés regionális megjelenése volt feltáratlan, és nagyon keveset tudtunk a betegségben érintettek szociális és lakóhelyi helyzetéről. Csak néhány nemzetközi tanulmány jelent meg a témában. Hamarosan nyilvánvalóvá vált, hogy fel kell tárni a világban, különösen a nagyvárosokban nagyon gyorsan terjedő járvány okozta probléma társadalmi és regionális hátterét. Emellett a COVID-járvány a fogyatékosági problémák számos új megjelenési formáját hozta létre, ami megteremtette a társadalmi fogyatékoság fogalmát. Ezért néhány kutató úgy döntött, hogy feltárja a probléma társadalmi hátterét. A tanulmány négy fő célkitűzésre összpontosít. Az első a világjárvány társadalmi-térbeli jellemzőinek globális és európai tendenciáinak feltárása. A második cél a Társadalomtudományi Kutatóközpont Szociológiai Intézete által 2021-ben végzett empirikus felmérés (1000 fős minta) eredményei alapján a COVID-19 által okozott fertőzések magyarországi társadalmi-térbeli eloszlásának elemzésére irányul. A harmadik cél a magyarországi kárenyhítő intézkedések (korlátozások, szabályozások) bemutatása és összehasonlítása mind országos, mind helyi (települési) szinten. Végül a tanulmány következtetéseket von le a globális és a magyar helyzet közötti hasonlóságokról és különbségekről.

Kulcsszavak: a COVID-19 világjárvány társadalmi háttere, társadalmi-térbeli egyenlőtlenségek, új fogyatékosági formák, magyarországi enyhítő intézkedések

The socio-spatial features of the COVID-19 pandemic: the formation of new disability issues (global and Hungarian trends)

Introduction

In the period of the first wave of the COVID-19 pandemic, the scientific community had only little knowledge about the nature of this virus. The regional appearance of the infection was particularly undiscovered, and we knew very little about the social and residential situation of those affected by the disease. Only a few international studies were published on this topic. It soon became evident that it was necessary to explore the social and regional background of the problem caused by the pandemic, which spread very fast in the world, especially in the large cities. That is why some researchers have decided to explore the social background of the problem. The analyses were especially important, because the COVID-19 pandemic caused certain new disability issues: social disabilities and special forms of territorial poverty.

In our article we intend to use the new form of the disability approach. This new form is the social disability concept, which is related to the notion of disability, but

from a special point of view. This new form is a completely new phenomenon created by the COVID pandemic. The COVID pandemic produced several new manifestation forms of disability issues, namely serious illnesses, mental problems, post-COVID impacts and territorial poverties, including the exclusions, as post-COVID impacts isolate the affected people from the labour market and from human relations. So, the social disability concept incorporates a complex, cumulative set of social diseases, namely the poverty, the poor living conditions, and social exclusion phenomena resulting from the virus infections.

In order to highlight our concept in this study it is necessary to present the social and territorial difficulties which are able to produce certain forms of social disability. Based on our empirical research results, we can describe these difficulties as follows: the lack of information about the pandemic or about the defence methods and the dangers of anti-vaccination. In addition, it is necessary to underline the determining factors of these difficulties, as well: the members of the social groups who suffer from some chronic or inherited health or mental problems related to their COVID-19 infection are low educated and unqualified people living in underdeveloped urban residential areas. These phenomena are not only local or national, but they are global manifestations as well. At the same time, the listed facts correspond to the international scientific experiences.

This study focuses on four main objectives. The first is to reveal the global and European trends of the socio-spatial characteristics of the pandemic, including the new disability problems. The second objective is analyzing the socio-spatial distribution of COVID- 19 infections in Hungary based on the results of an empirical survey (based on a sample of 1000 people) carried out by the Centre for Social Sciences Institute for Sociology in 2021. The third aim is to present and to compare the Hungarian mitigation measures (restrictions, regulations) on national and local (municipal) level as well. Finally, the study would like to conclude the similarities and the differences between the global and the Hungarian situation.

1. The global and European trends of the socio-spatial characteristics of the pandemic, including the new disability problems

The COVID-19 pandemic and its adverse health consequences, the mass diseases resulting from the viral infection appeared in the large metropolitan areas and spread from there to cities of different sizes and other types of settlements, causing various short- and long-term economic and social problems.

The starting point of the pandemic was a large Chinese metropolis with a population of 11 million people, where in the first wave 66,337 cases were identified between the end of December 2019 and February 28, 2020. After that the virus appeared in several cities or regions, for example in Milan, in Parma, in Roma, in Torino, or in the Lombardy region. The Tyrol region was also one important target point. Bordeaux and especially the region of Eastern France and the Île-de-France region were also significantly infected. Madrid and the big German cities, namely

Berlin, Munich, Hamburg were badly hit by the pandemic as well. The large American metropolitan areas were also affected (Szirmai, 2021).

If we want to make a list about the affected areas, we can mention, on the one hand, that the main target points were the “superstar” global cities, such as New York, London, Paris, where the population is high and diverse due to multiculturalism, the residential areas are densely built, many people use the city areas, and the effects of tourism are significant. On the other hand, we can see that certain groups of people using the ski slopes of global tourist centres were among the infected, which was the case in Italian, Austrian, Swiss, or French mountain areas. The third type of target were global industrial centres, industrial cities that are connected to each other through supply chains. The Eastern and Central European capitals and large cities, among them Budapest, were not left out of the areas affected by the virus either. But the pandemic arrived here later and with less intensity. In the fourth wave, the situation changed very significantly: in this period the infection data were already higher in Central and Eastern Europe than in Western Europe, probably due to the differentiations of social structural features between the two geographical regions.

In order to explain those social features, we need to highlight those researches which not only analyzed the issues more deeply, but also investigated them from a sociological point of view. These studies verified that some cities are more vulnerable to the devastating spread of the virus, that is, different cities are not equally vulnerable. According to them, the vulnerability of cities depends on the spatial size of cities, the density and size of the population, as well as the nature of the residential units of the metropolitan areas.

Florida proved, for example, that certain urban units are more sensitive than others: large metropolises are at the top of the sensitivity list, followed by urban suburbs. Although the death rates of densely populated suburbs are lower than those of the metropolises, they are higher than those of the low-density suburbs. The figures for medium-sized and small towns are even lower, with the lowest number of cases found in rural areas outside the metropolises (Florida, 2020).

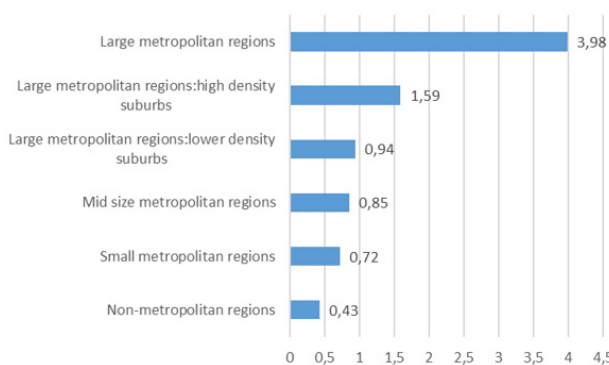


FIGURE 1. URBAN REGIONS HAVE THE HIGHEST COVID-19 DEATH RATE IN THE UNITED STATES: COVID-19 DEATH PER 100,000 PEOPLE, UP TO APRIL 2, 2020
(SOURCE: NEW YORK TIMES, CENSUS. NOTE: URBAN REGIONS RATE IS 2,16 EXCLUDING NEW YORK CITY)

It also turned out that the real culprit is not the population density, but rather the character of human relationships behind the population density (of a hierarchical nature, of different importance), and mainly their intensity. The intensity of human relations is influenced by the territorial extent of the city and the system of spatial relationships: according to this, the more extensive a city is, the more dynamic the urban sprawl (the spatial distance between the place of work and residence, the resulting commuting), the greater the level of infection is. In larger and denser cities, the effects of these factors can be experienced through the higher number of cases. Therefore, the conclusion of the given research is that it is not population density that is the “culprit” for the greater contamination of the big city, but rather the nature of human relationships, especially their intensity (Angel, 2020).

Further analysis revealed other determining factors, namely the consequences of globalization, the influences of the relationships existing among the large cities, the effects of global networks (Stier et al., 2020). Based on other studies it became more clear for researchers that the African-American population, the Latino population, and the South Asian communities were more affected by the virus than the average. It also became evident that the causes of COVID-19 infections and deaths are related to income conditions, but in addition to income distributions, other structural factors also have a significant impact on whether an individual living in an area is infected or dies of COVID-19. It was an important realization that marginalized areas inhabited by disadvantaged minority populations, where governments have not implemented regional level developments for a long time, are the most severely affected by the COVID-19 virus infection (Adhikari & Pantaleo, 2020). To summarize the determining factors of the virus infections it is necessary to underline that the main influencing factors are the social-spatial inequalities, which are manifested in special forms and measures in the cases of different groups, among them in diverse forms of social disabilities as well.

2. The socio-spatial distribution of the infections by COVID-19 and the determining factors of the new disability issues

In this chapter, the study reveals the social spatial conditions of the COVID-19 pandemic based on the results of an empirical research. The results try to highlight those social spatial groups who were more vulnerable to the effects of the pandemic. In order to understand the structural features of the affected people, we analysed the social structural conditions of the people, among them the educational level and geographical positions (regional, residential areas, types of settlements). Another significant aspect became clear, namely that structural factors can also affect the abilities of people to protect themselves against COVID-19 infection.

In the study, we primarily explored the territorial and social conditions of three groups of respondents. First, people who were confirmed to be infected with COVID-19 (they were tested, N=154) second, people who had the disease based on their symptoms, or were infected but not tested (N=111), and the third group

consisted of people who did not contract COVID-19 (N=562). The remaining 173 people didn't know if they contracted it or not, or denied to reply (see figure 2.) This distinction, more exactly, the background or the relationship to the vaccination and the viral disease, is important regarding the concept of social disabilities as well.

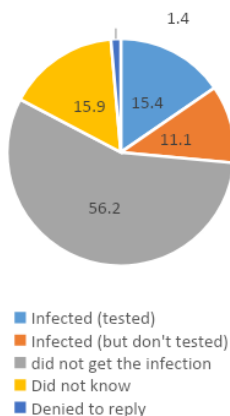


FIGURE 2. DID YOU GET THE COVID-19? DISTRIBUTION OF THE SAMPLE OF 1000 PEOPLE
(SOURCE: EDITED BY THE AUTHORS BASED ON TK SZKI DATA)

In Hungary, growing regional inequalities are present, especially between the Northeast and Central Hungarian and Western Regions regarding economic and social development, living conditions or the income level. There is also a huge gap in life expectancy, as well as between the developed and underdeveloped areas, the urban and rural regions. There are many authors who found a correlation between life expectancy and socio-spatial and economic development, as well as access to the health care system, or even geographic inequalities in health behaviour. Bíró et al. also found that there is a correlation between income level and health behaviour (the higher income level groups consume more vegetables, fruit, fish and meat, while the lower income groups consume more unhealthy products like salty snacks, sugary drinks). The lower social groups have weaker access to healthy lifestyle (Bíró et al., 2020).

In our research, we also found correlation between the social spatial features and the number of COVID-19 infections. According to the results, 15, 5% of the (tested) respondents confirmed to have become infected by the virus, 11% of the respondents thought they were infected but were not tested, and 16% claimed that they did not know whether they had caught it or not. More than half of the respondents (56,2%) claimed they weren't infected at all. The proportion of infected people showed significant regional differences. Figure 3. shows that the residents who live in urbanized and most populated regions (Central Hungarian Regions) had higher risk of infection.

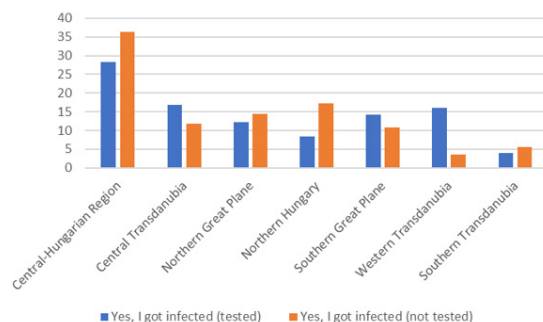


FIGURE 3. REGIONAL DISTRIBUTION OF RESPONDENTS WHO HAVE BEEN INFECTED BY COVID-19, 2021 (%) N=154, N=111 (SOURCE: EDITED BY THE AUTHORS BASED ON TK SZKI DATA)

It was also clear that more people became infected in larger cities and towns, than in the rural areas. More than half of the respondents (70%) who live in cities became infected by the virus, only 30% of respondents lived in rural areas. This can be explained by the fact that they live in more crowded urban areas, and by the unhealthy living conditions as well. Based on our results we also found that there are significant differences between the number of infections in different urban zones. While in the city centre, 24.3% of the respondents caught the infection, this average in the outskirt areas is higher, 39.6%. That can be explained by the different social status of residents in different urban zones. Besides geographical location, education level also influences the risk of infection. Confirmed (tested) infection with the virus was more than three times higher than the average of the sample (15.4%) among those with a low level of education (46.6%), and twice as much (34.3%) among secondary school graduates (see figure 4.).

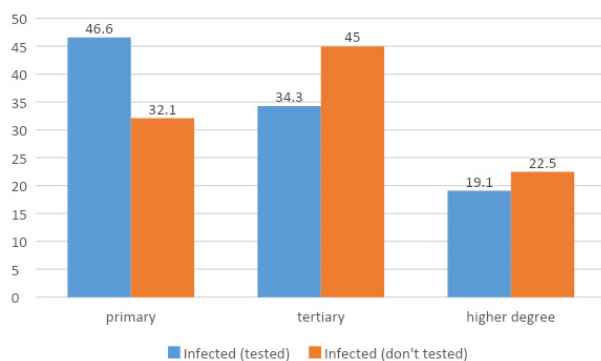


FIGURE 4. THE DISTRIBUTION OF INFECTED PEOPLE ACCORDING TO EDUCATION LEVEL (%) N=154, N=111 (SOURCE: EDITED BY THE AUTHORS BASED ON TK SZKI DATA)

To conclude the socio-spatial distribution of infection by COVID-19, we have to confirm that, based on our results, the socio-spatial situation plays a significant role in whether someone became infected or not. The lower social status group with low education level, with a peripheral place of residency has weaker means (financial means, knowledge and information) to protect themselves from the disease.

3. The Hungarian mitigation measures (restrictions, regulations) on national and local (municipal) levels (results of the comparison)

Governments had to design new, innovative instruments to counter the health impacts of the COVID-19 pandemic in the last more than two years (WHO, 2020). Their efforts to make an effective approach against the multidimensional health consequences of this pandemic depended on the quality and speed of policy responses at the initial and later phases (during epidemic waves) (OECD, 2020). One of these important elements was how national governments could manage the issue of disability related to the pandemic, as well as health inequality during the pandemic (Kovács & Uzzoli, 2020). The basic aim of this chapter is to present and compare the Hungarian mitigation measures (restrictions, regulations) on national and local (municipal) levels during the first five epidemic waves between March 2020 and May 2022. During the sixth wave in the summer of 2022, no new restrictions were introduced in Hungary. We are looking for the answers to the following questions: Which was the relevant spatial scale in restrictions and measures in Hungary? Was there a balance between nationally and locally introduced measures? How could local competency appear in the restrictive and mitigating measures? Did municipalities have a role in policy responses to the challenges of the pandemic in Hungary? How could restrictions affect social disability and its conditions?

In response to the emerging COVID-19 pandemic, the Hungarian government declared a state of emergency twice: first during the first epidemic wave between March 11 and June 18, 2020, and then between November 2, 2020 and May 31, 2022 during the further waves. The latter state of emergency has been continuously extended during 2021 and 2022 (koronavirus.gov.hu). The state of emergency restrictive and mitigating measures were continuously tightening and easing according to the different epidemic waves. The primary objective was to slow the spread of the coronavirus, reduce the number of diseases and death cases, as well as to relieve the burden on the healthcare system (Váradi, 2020). The cyclicity of measures resulted that both of tightening and easing phases of emergency interventions were based on multi-stage regulation (Szerencsés et al., 2021). This cyclicity means that when the relaxation of restrictions produced a growing number of social interactions, and thus a higher number of infections, it led to the enforcement of tighter restrictions nationally and regionally (e.g., specific counties). This foreshadowed the sustained presence of tightening and easing policies along with their cyclical nature and spatially heterogeneous distribution in the country over the years of 2020 and 2021. However, the big question during every wave of the pandemic was how much these measures contributed to the increase of social disabilities in connection with the pandemic.

The restrictions under the state of epidemiological emergencies had similarities and differences during the epidemic waves in Hungary, according to the primary objectives of prevention (Table 1.). These policy responses were specially introduced on national level (Koós et al., 2020). The national-level restrictions in Hungary

implemented by policymakers were connected to the dynamics of each epidemic wave (Kovács et al., 2020). On the one hand, during the first three waves, restrictions were based on multistage regulations related to the actual number of daily new confirmed cases. On the other hand, beginning from the third wave, the Hungarian anti-epidemic approach became vaccine-based. During the fourth and fifth waves, vaccination was the most important means of protection to reduce the number of new COVID-19 cases and deaths.

TABLE 1. HUNGARIAN ANTI-EPIDEMIC MEASURES DURING THE COVID-19 EPIDEMIC WAVES AND THEIR SPATIAL RELEVANCE BETWEEN MARCH 2020 AND JUNE 2022 (SOURCE: AUTHORS)

	Relevance of the restrictions on national level	Relevance of the restrictions on local level (municipalities, institutions)
The first epidemic wave (March 2020 and August 2020)	mainly "place-based" prevention according to the geographical hotspots of the pandemic	own competencies for settlements in supplementation of the lockdown
The second epidemic wave (September 2020 and January 2021)	mainly restrictive measures	own decision for settlements over 10,000 inhabitants, institutional competencies (e.g., online education or home office)
The third epidemic wave (February 2021 and August 2021)	restrictive measures together with "vaccine-based" prevention	own decision for settlements over 10,000 inhabitants, institutional competencies (e.g., online education or home office)
The fourth epidemic wave (September 2021 and December 2021)	mainly "vaccine-based" measures together with "individual-based" prevention	institutional competencies for making vaccination mandatory for employees
The fifth epidemic wave (January 2022 and June 2022)	mainly "vaccine-based" measures together with "individual-based" prevention	institutional competencies for making vaccination mandatory for employees

Besides national regulations, the Hungarian government was only partially adopting a "place-based" or territorially sensitive approach for measures to fight the pandemic (Uzzoli et al., 2021). The policy interventions had a lower number of tools which were spatially sensitive measures. This means that the municipalities differed on a local level in taking measures, because only settlements over 10,000 inhabitants could make their own decisions in pandemic prevention. These competencies were mainly applied during the first three waves, but their role remained of secondary importance.

Starting from the second wave, in parallel with national regulations, institutional competencies of restrictions against the COVID-19 pandemic were also strengthened. For example, employers could decide on home office, or schools could choose between online and personal education or its mixed form (such as "hybrid education"). From the time of the fourth wave, employers' competencies were supplemented by the fact that they could decide for themselves whether to make vaccination mandatory for employees. Moreover, some public employers – e.g., in education or in healthcare – made vaccination mandatory, thereby increasing the possibility of a new issue of

social disability regarding the pandemic (e.g., unemployment due to the pandemic or barriers of access to work).

Overall, the restrictive and mitigating measures designed to tackle the COVID-19 emergency had diverse spatial implications during the epidemic waves in Hungary, but among them national measures had a primary role in regulation. For instance, during the first wave, various spatially sensitive protection measures were implemented according to the geographical hotspots (the capital city, Budapest and its surroundings, Pest County) (e.g., masks were first required to be worn on public transport vehicles and stores in Budapest). Furthermore, the marked spatial approach also appeared in the easing of restrictions, because preventive measures remained in force in Budapest and Pest County for two additional weeks while they were already eased in less infected areas outside the capital city and its neighboring Pest County. During the second and the third waves, in addition to granting settlements more room to manage concerning containment efforts, the location of geographical hotspots was also taken into account (in a capital city/countryside context), and the role of geographical isolation was emphasized in prevention (Uzzoli et al., 2021). Municipalities received the decree to make detailed local rules for public mask mandate in settlements with populations over 10,000 during the second, third, fourth and fifth waves. Local municipalities also received some power to introduce additional restrictions, e.g., closing the settlements to visitors on weekends.

From the third wave on, a new element of protection measures appeared in the form of vaccination. It was a new basis for organizing Hungarian anti-epidemic measures. For example, during the third wave the easing of multi-stage regulations was directly connected to the number of vaccinated inhabitants. "Vaccine-based" protection remained the main element of the national regulation regarding the COVID-19 pandemic during the fourth and fifth waves, too.

Besides national rules and local opportunities in decision-making, anti-epidemic measures also strongly highlighted the role of individual protection from the first epidemic wave (e.g., mask wearing, social distancing, disinfecting, etc.). "Individual-based" protection became more and more important from the fourth wave, while during the sixth wave, it was the only emphasized method of anti-epidemic approach in the summer of 2022 (besides vaccination).

The comparison of the five waves related to the issue of social disability shows marked differences. Especially, a significant gap emerged between the first three and the last two waves. During the first, second and third wave, the nationally introduced general lockdown could contribute to the strengthening of the barriers of the access to healthcare and to other types of social care. The highest number of COVID-19 deaths during the second and the third waves also drew attention to the importance of the issue of social disability. The disadvantaged social position, the poor health conditions, or the unfavorable living circumstances together contributed to the higher risk and prevalence of COVID-19 related deaths. On the other hand, the lack of personal vaccination also became a risk factor, because in less developed regions or in small settlements the rate of vaccinated population was lower during the fourth and the fifth epidemic wave (Szirmai et al., 2022).

Finally, the role and the way of COVID-19 testing among Hungarian interventions is also worth mentioning. Basically, testing is free of charge in Hungary after having the symptoms if the General Practitioner makes it mandatory. But this way of testing

is very slow, and sometimes it takes several days. So, the majority of people decide to pay for a quick testing, but it depends on their personal income. (Anyway, the PCR test has an official price cap in Hungary.) That is the main reason why there are marked differences in testing activity between different parts of the country, as testing activity depends on socio-economic situation. On the other hand, the other forms of COVID-19 testing – e.g., as a preventive measure based on PCR or antigen tests – are not free of charge.

Summarizing our knowledge on the socio-spatial relevance of restrictions and regulations in Hungary regarding the COVID-19 pandemic, the most essential features are nationally introduced regulations supplemented by local competencies (Uzzoli, 2022). The mitigation measures taken on national level were primary in Hungary's anti-epidemic approach, and it was vaccine-based from the spring of 2021, starting from the third epidemic wave. The competencies of municipalities in restrictions appeared only at the very beginning of the Hungarian coronavirus epidemic, but their role remained of secondary importance. There were significant differences among settlements in terms of their own competencies which depended on their population. It is worth mentioning that local competencies also appeared at institutions, independently of the local municipalities. From the point of view of social disability, restrictions had a relevant effect in increasing barriers of access to healthcare, which could directly and indirectly contribute to the development of a new approach of social disability regarding the pandemic.

4. The similarities and differences between the global and the Hungarian situation

In order to conclude our study, it is possible to highlight the most important result, which is as follows: the effects of the COVID-19 pandemic depend on special social and territorial factors. The emergence of the pandemic and its effects are clearly related to the geographical location of social groups, their living conditions and social structural characteristics, particularly to the influences of the urban and metropolitan areas: these social circumstances create favorable conditions for the spread of epidemics both globally and locally.

Our main discovery is that groups of lower social status, who are less educated and informed, who live in unfavorable residential areas were more affected by the disease than the higher social strata. This is due to the fact that these social groups have weaker capabilities to protect themselves against the virus. Few of these people had the chance to work from home. Their general health condition is also worse.

Comparing Hungarian and international policies targeting the way of COVID-19 testing, one relevant difference can be mentioned. In many countries in Europe 'preventive' testing was free of charge, while in Hungary people had to pay for it. This means that the higher prevalence of COVID-19 might be a result of the difference between the testing measures and activities of Hungary and (mainly) Western European countries.

The policy interventions were mainly based on restriction measures, and the spatially sensitive or "place-based" approach was also present. All of this means that

there are many similarities between the global and the Hungarian situation. But if we want to be more precise, it must be established that we did not simply find similarities, we found similarities rather than differences. The latter statement would require finer and more data-based analyses, which we plan to do in the near future.

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