Forum geografic. Studii și cercetări de geografie și protecția mediului
Volume **XIX**, Issue **2** (**December** 2020), pp. **212**-**224**
http://dx.doi.org/**10.5775/fg.2020.039.d**

Containment and mitigation strategies during the first wave of Covid-19 pandemic. A territorial approach in CCE countries

Liliana POPESCU[1]

[1] Faculty of Sciences, Geography Department, Univeristy of Craiova 13, A.I. Cuza Street, Craiova, Romania
* *Corresponding author*: popescu_liliana25@yahoo.com

Received on 01-08-2020, reviewed on 15-09-2020, accepted on 21-09-2020

Abstract

The paper analysis the situation in CEE countries in terms of containment and mitigation strategies for the pandemic, but with a focus on the health systems and vulnerability factors (low scores for global health security index, understaffed health systems, higher shares of vulnerable people – obese persons, diabetic or those living in poor quality housing). As the new SARS-COV-2 spread throughout the world, Central and Eastern European governments rushed to preventive actions to reduce its spread, all the more considering that the first cases were imported from abroad (mainly from Italy). Public health measures carried out during the spring outbreak were effective, mainly due to the significant reduction in the contact rates and social distancing, which was partly voluntary, partly enforced. Thus, in early March, in person classes were suspended, persons returning from the areas with community spread of the virus were forced into quarantine, along with workplace closures, travel restrictions and shielding measures for individuals. In CEE countries, the lockdown, when enforced, preceded the curve of infections. There was little variation in the design and implementation of mitigation strategies, which were deployed very quickly, hence a much lower infection rate that did not pose additional strain on the health system.

Keywords: *COVID-19, social distancing measures, social vulnerable groups*

Rezumat. Strategii pentru limitare și diminuare a primului val al pandemiei de Covid-19. O abordare teritorială în țările din Europa Centrală și de Est

Lucrarea analizează situația din statele ECE cu privire la strategiile de limitare și diminuare a pandemiei, punând accent pe sistemele de sănătate și factorii de vulnerabilitate (valori mici ale indicelui de securitate globală a sănătății, sistemel de sănătate cu personal puțin, ponderi mari ale populației vulnerabile – persoane obeze, cu diabet sau cele care locuiesc în condiții precare). Pe măsură ce virusul SARS-COV-2 s-a răspândit în tot maimulte state, guvernele țărilor din ECE s-au grăbit să ia măsuri preventive pentru limitarea răspândirii, cu atât mai mult cu cât primele cazuri au fost importate din străinătate (în principal din Italia). Măsurile de sănătate publică luate în timpul epidemiei în primăvară au fost eficiente, în principal datorită reducerii semnificative a infectărilor datorită contactului și distanțării sociale, care a fost parțial voluntară, parțial impusă. Astfel, la începutul lunii martie, școlile au fost închise, persoanele care se întorceau din zonele cu răspândire comunitară a virusului au fost forțate să intre in carantină, urmate apoi de limitarea deplasărilor și măsuri de protecție individuale. În statele din ECE, restricțiile severe, atunci când au fost aplicate, au precedat curba infecțiilor. Au existat foarte puține diferențe în ceea ce privește conceperea și implementarea strategiilor de diminuare, care au puse în practică rapid, de unde și o rată suficient de mică a infectărilor care să nu pună o presiune mult prea mare pe sistemul de sănătate publică.

Cuvinte-cheie: *COVID-19, măsuri de distanțare socială, grupuri sociale vulnerabile*

Introduction

„A pandemic or an epidemic is actually not only how widespread a disease actually is, but rather how it is perceived" (Gilman, 2010).

COVID-19 is the newest, fastest and most severe infectious disease of the new century, that rapidly evolved from a case of atypical pneumonia during December 2019 in a Chinese town, to a global health emergency as declared by the World Health Organization (WHO) on 30 January, 2020 and subsequently to pandemic (11 March 2020). Obviously, at the start of any pandemic, such as COVID-19, effective vaccine and antiviral drugs are not available. So, there is no wonder that when this happened, public health officials throughout the world struggled to introduce measures to control its spread, most of them focused on non-pharmaceutical social distancing, but also quarantine of entire cities or regions, as well as for all individuals returning from the most severely affected countries. Containment (aimed to minimize the risk of transmission from infected to non-infected individuals) and mitigation measure (aimed to slow the disease and to reduce the peak in health care demand) are key public health interventions currently available to minimize the dramatic health consequences caused by COVID-19 (OECD, 2020b).

As part of mitigation strategies, social distancing measures, including closure of public facilities and shopping malls, postponing sports and cultural events are the most readily available means against any pandemic during the early phases of the outbreak,

that can be enforced regardless of the level of economic development of any region or country. Quarantine as a social distancing measure is the most intrusive upon individual liberty and therefore raises the greatest number of ethical, legal, and policy issues (Rothstein, 2015).

The Center for Disease Control and Prevention (CDC) has described social distancing as a set of "methods for reducing frequency and closeness of contact between people in order to decrease the risk of transmission of disease" (Kinlaw et al., 2009), but recently has updated this definition, considering COVID-19, as remaining out of congregate settings, avoiding mass gatherings, and maintaining distance (approximately six feet or two meters) from others when possible (Pearce, 2020).

Comparing three different approaches for the COVID-19 pandemic, i.e. laissez-faire approach (do nothing), herd immunity (non-pharmaceutical measures taken to keep the number of new cases at the maximum of healthcare capacity) and aggressive approach (extensive testing, case tracking and case isolation), Ugarov (2020) demonstrates that in terms of mortality, the laissez-faire approach results in higher costs followed by the herd immunity approach and by the aggressive approach, while for the costs on output of goods and services, the order is exactly opposite. This is also partially sustained by the results of the analysis carried on by Swedish researchers, that physical distancing and isolation of infectious individuals without lockdown is effective in mitigating much of the negative direct health impact from the COVID-19 pandemic in Sweden, but has a higher death toll compared to other Scandinavian countries who did implement a lockdown (Sjödin, et al., 2020, p. 3). Lockdown however, should not be neglected, as recent studies point to the fact that the countries that implemented the lockdown have fewer new cases that countries that did not, and that the benefits of lockdown increase exponentially with the passing of time (Alfano & Ercolano, 2020).

Quarantine, involving the compulsory application of public authority to individuals, create tensions between protecting population health and respecting individual autonomy and dignity (Fidler et al., 2016). Ethical issues related to the quarantine refer to: i) necessity, effectiveness, and scientific rationale; ii)) proportionality and least infringement; iii) humane supportive services; and iv) public justification (Rothstein, 2015).

Recent researches focus on the role of quarantine as a means to control the spread of COVID-19; Nussbaumer-Streit et al., (2020) indicates that quarantine was most effective, and cost less, when it was started earlier, while combining quarantine with other prevention and control measures had a greater effect than quarantine alone. However, quarantine alone seems not to be enough to contain the spread of the virus. Still, if governments have not the means to run a great number of tests so as to identify the carriers of the virus, the observed mandatory quarantines around the world seem to be close to what it can be considered optimal (Piguillem & Shi, 2020).

Other researchers dwell on the issue of lockdown as a planning solution for controlling casualties, claiming that the optimal policy prescribes a severe lockdown beginning two weeks after the outbreak, covers 60% of the population after a month, and is gradually withdrawn covering 20% of the population after 3 months (Alvarez et al., 2020). Several authors have considered the problem of resource allocation by public health authorities aimed at controlling an outbreak of a new emerging disease, such as SARS, MERS or COVID-19 (Thunström et al., 2020, Wilder-Smith & Freedman, 2020, Viner et al., 2020, Courtemanche et al., 2020, Briscese et al., 2020).

Some researchers are against the massive quarantine of people. Thus, Standl et al. (2020) argue in favour of 'inverse quarantine' (IQ) as a public health approach to save lives and to keep the economy vital, to prevent fatal outcomes during infectious epidemics or pandemics by isolating people with high risk but not yet infected. For COVID-19 this means that comorbid people and the elderly should isolate themselves and should preferably get disinfection, meanwhile shortening the time span needed to reach herd immunity and thus reduce the risk that pathogen strains become more aggressive. Similarly, Kouřil & Ferenčuhová (2020), using the example of the Czech Republic, address the issue of 'smart quarantine', which would rely on the use of information communication technologies (ICT) and big data analysis, that should not only limit and control the infection rate, but also accelerate the return to normal life with minimal impact. Thus, using three direct sources of information to designate individuals who may have encountered the virus and become infected, public health authorities could have reverse contact tracking.

The widespread use of quarantine is not such a simple endeavor whatsoever, presenting serious planning and implementation challenges. Effective quarantine planning entails a number of vexing issues that require interagency cooperation within a jurisdiction (DiGiovanni et.al. 2004). Some researchers argue that officials should avoid taking unnecessarily stringent measures so as to appear decisive, as any intervention must be medically defensible in its effectiveness to contain the spread of disease and protect against threats to the public health (Barbisch et al., 2015). The debate between supporters and opponents of the quarantine policy raises issues connected to human rights, security, and ethics (Gesser-Edelsburg & Shir-Raz, 2015). Hence, quarantine could never be uncontroversial (Newman, 2012).

When the lockdown order for Wuhan city was issued in late January in a desperate effort to contain the spreading of the virus to other parts of China, Western democracies were shocked and heavily criticized this draconian measure (Ren, 2020, Kretschmer, 2020, Graham-Harrison & Kuo, 2020, Buckley & Hernandez, 2020). However, over the next months, most European countries resorted to lockdown of the entire country to contain the epidemic. Although Italy, the most severely affected country in EU, was the first democratic country to issue such an order on March, 10th, it was soon followed by many other European countries, some of them facing the same crisis (Spain, France), others fearing that fate (CEE countries). Public health stations, the police and sometimes the military were working together on enforcing compliance with the health control measures, unlike in China, where, allegedly, local enforcement of lockdown did not rely on police, but on a thick network of territorial institutions and authorities (Ren, 2020).

This study is a simple first review of the containment and mitigation strategies adopted by eight CEE countries (Poland, Czechia, Slovakia, Hungary, Romania, Bulgaria, Croatia and Slovenia) during the first wave of Covid-19 pandemics (February-June 2020) and their outcome, focusing also on reasons behind the rapid and drastic social distancing measures. Our analysis relies heavily on the official information provided by the governments and international organizations, changes in legislation, so as to follow the new needs of both the medical system and the population, as well as official statistical data, information presented by the regional and international media.

1. Social background

Global Health Security Index

In October 2019, the Johns Hopkins Center for Health Security (JHU) published their rapport developed together with Nuclear Threat Initiative (NTI) and the Economist Intelligence Unit on the Global Health Security Index, the first comprehensive assessment and benchmarking of health security and related capabilities across 195 countries, pointing to the fact that national health security is fundamentally weak around the world and no country is fully prepared for epidemics or pandemics (Cameron et al., 2019). Surprisingly, most of the European countries fall under the category of 'more prepared', only eight being ranked among 'most prepared'; Slovenia is one of these few states (ranked twelfth overall), ahead of high-income countries such as Germany, Switzerland or Japan. Three out of the eight analysed countries (Bulgaria, Romania and Slovakia) have scored below 50 (out of 100 maximum), which means significant weaknesses in the countries abilities to prevent, detect and respond to health emergencies. For the first dimension – prevention (ability to prevent the emergence or release of pathogens), all CEE countries scored in the middle tier, while for the risk environment (political system and government effectiveness), all of them are in the first tier. The average score for rapid response and health systems is 41.4 of 100 and 42.5 respectively, making them the lowest scoring categories by far, which means that there are limited capabilities regarding emergency preparedness and response planning, exercising response plans, emergency response operation, linking public health and security authorities, risk communication, access to communications infrastructure, and trade and travel restrictions and that the health systems are not sufficient and robust to treat the sick and protect health workers (Cameron et.al., 2019).

Health systems

As health systems throughout the world are facing the most serious global pandemic crisis in a century (OECD, 2020c), in order to cope with the current outbreak, they must address three main priorities: staff, supplies and space. At the beginning of the pandemic in Europe, many feared that the health systems in the former communist countries would not cope with the rapidly deteriorating situation and that they might collapse, hence the enforcement of rapid and strict mitigation measures.

Indeed, according to the statistical data provided by EUROSTAT database, six out of eight analyzed countries fall in the category of understaffed systems, with a low number of doctors and nurses per hundred thousand inhabitants (Fig. 1), Poland having the worst situation in EU: 237.7 doctors and 587.7 nurses per hundred thousand inhabitants, compared to the EU average of 366 and 1461, respectively, and well behind Italy, the country with the highest pressure on the health system during the analysed period. Only Bulgaria and Czechia have a better situation, with a slightly higher number of doctors than the EU average, but with a lower number of nurses, a situation somewhat similar to that of Spain. Most definitely, the fear that the existing workforce in these countries would be even more stretched to address the additional demand for care arising from the epidemic was not misplaced. Hence, some countries have mobilized military health professionals to assist both in treatment and relocation of patients (Poland, Romania), as well as for the management of hospitals and building military camps to provide more bed capacity, including ICU units (Romania). A network of hospitals was designated as the first line for receiving COVID-19 patients and in many cases (Czechia, Poland, Romania, Hungary), health workers from

Forum geografic. Studii și cercetări de geografie și protecția mediului
Volume **XIX**, Issue **2** (**December 2020**), pp. **212-224**
http://dx.doi.org/**10.5775/fg.2020.039.d**

smaller units throughout the country were transferred to these hospitals in major cities, where the need for medical staff was higher. Like in most EU countries, CEE countries, except for Croatia and Slovakia have also mobilized health care students mainly to assist concerned population by answering questions thought telephone hotlines.

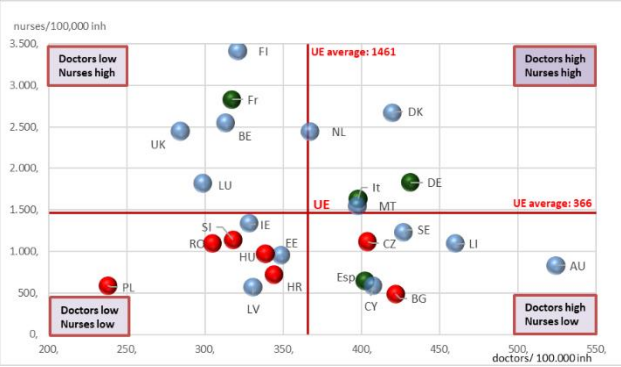


Fig. 1 Number of doctors and nurses in EU countries, 2018 (or nearest year)

Data source: Eurostat.

Note: Ireland and Cyprus – nurses and midwives professionally active; Sweden – practicing nursing professionals and midwives; remaining countries – practicing nurses, midwives, health care assistants and home-based personal care workers.

Unlike the poor situation regarding the health workforce and supplies, CEE countries have a slightly better hospital capacity, the higher number of beds per population compared to the EU average being among the very few factors not putting an immense strain on the system. In terms of existing capacity, out of the eight analysed countries, Bulgaria had the most hospital beds per 100,000 inhabitants in 2018 (Fig. 2), being ranked second in the EU, following Germany.

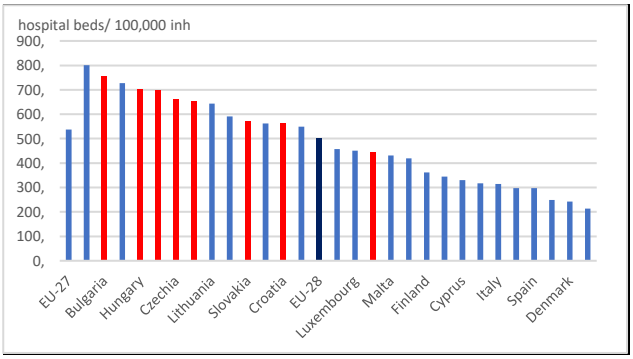


Fig. 2 General hospital capacity - hospital beds in EU countries, 2018 (or nearest year)

Data source: Eurostat

Most countries have between 550 and 700 hospital beds per 100,000 inhabitants, the number being much lower in Slovenia (443), but still considerably higher than in the worst hit countries. However, all these countries have a much lower intensive care capacity than the EU average.

Countries demographic profile

The demographic and social characteristics of countries must not be neglected, as some countries are less susceptible due to the share of elderly people and the prevalence of risk factors, such as obesity, diabetes and heart conditions. There is no doubt about the ageing population process in the European countries, no matter the location or development level; however, out of the eight analysed countries, only in Bulgaria and Croatia the elderly account for more than 20% of the population, the remaining countries having values below the EU-27 average. In addition to being more physically vulnerable to the impacts of COVID-19, older people are more socially vulnerable as well (getting access to food and other products and services) (OECD, 2020a).

All eight countries have a somewhat considerable share of population with diabetes, higher than the European average. The highest percentage is found in Czechia, similar to that registered in Spain (above 10% of the population), while another five countries are similar to Italy (around 8%) (Fig. 3). Obesity rates among adults vary greatly across the analysed countries, from 9% in Romania, one of the lowest value in the EU-27, to 20.6% in Hungary, one of the top three countries in EU-27. Thus, the worst situation in this case is found in Hungary and Czechia, while a less severe case characterizes Romania and Bulgaria (Fig. 3). Nevertheless, in seven out of the eight countries, the severity of these two risk factors is greater than in the case of Italy and to some extent that of Spain, the worst hit countries. These data are very important since obesity and diabetes are a risk factor for the development of severe COVID-19 with the need for hospitalization and mechanical ventilation (Petrakis et al., 2020, Alberca et al., 2020, Mantovani et al., 2020).

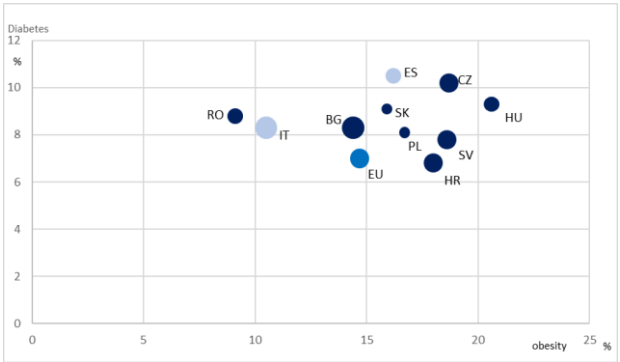


Fig. 3 Share of extremely vulnerable persons due to health conditions (data source: International Diabetes Federation (February 2019), EUROSTAT 2020)

Not only those in poor physical health are extremely vulnerable to COVID-19; those living in poor quality housing, those in precarious financial condition or those socially isolated are also at particular risk. And while governments can provide immediate support for lost income, it is harder to address overcrowded household conditions and access to basic sanitation (OECD, 2020a), which are all the more needed during an epidemic. While only 17.2% of the EU-27 population lived in overcrowded dwellings, the overcrowding rates exceed 30% in five out of the eight CEE countries, peaking in Romania (45.8%), followed by Bulgaria (41.6%), Croatia (38.5%), Poland (37.6%) and Slovakia (34.15) (Eurostat, 2019). Moreover, there are much more people at risk of poverty (population living in households where equivalised disposable income per person was below 60% of the national median) in these countries: Romania (56.4 %), Slovakia (54.9 %), Bulgaria (48.7 %) and Poland (47.7 %) (Eurostat, 2019) (Fig. 4). In addition to overcrowding, aspects of housing deprivation must also be considered, especially in Romania, Bulgaria, Poland and Hungary, where more than 8% of the population suffered from severe housing deprivation in 2019, such as the lack of a bath or a toilet, a leaking roof in the dwelling, or a dwelling considered to be too dark (Eurostat, 2019), all aggravating conditions for the spread of the virus.

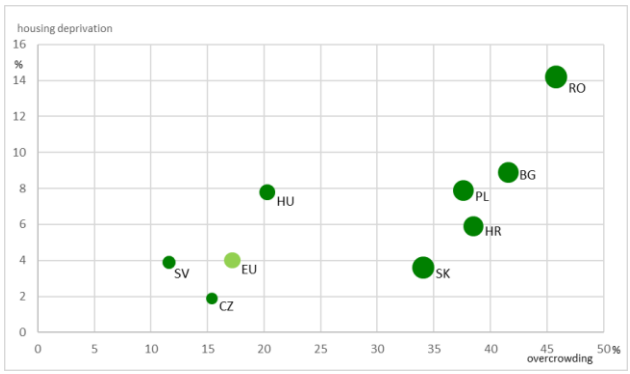


Fig. 4 Quality housing in analysed countries (2019) (data source: Eurostat)

2. Timeline

Almost a month after the first COVID-19 case was confirmed in Europe, CEE countries registered their first cases. Croatia was first, on February, 25, followed, on the 26th by Romania. In the span of two weeks, the other six countries had at least one confirmed case. For most countries, the first confirmed cases were „imported": most of them from Italy (either infected abroad – Croatia, Czechia, or as a contact of infected persons from Italy – Romania, Slovenia, Slovakia), but also from Germany in the case of Poland (Krzysztofik et al., 2020) or Iran in Hungary (Reuters, 2020). Only in Bulgaria patient zero remains unknown (Официално, 2020). Since Poland and Romania are among the main source countries of transnational labour migrants in the EU (Şoşea et al., 2018, Creţan & Light, 2020), a rapid increase in the epidemic was expected to occur within a few weeks (Krzysztofik et al., 2020).

With just few confirmed cases, the authorities took rapid and drastic measures to limit the spread of the virus, in a desperate attempt to „flatten the curve", as hospitals could face a capacity constraint and quite limited intensive care units that would prevent a high mortality rate. Thus, in most analysed countries, the officials did not wait for the number of infected persons to reach treatment capacity constraint and at the beginning of March, imposed indiscriminate mass quarantine for all individuals returning from the red areas or for those who were suspected of having had contact with a confirmed COVID-19 case.

3. Containment measures

Due to the lack or insufficient number of testing kits and machines to process the samples, diagnostic testing was a bottleneck in most of the analysed countries. The differences in the extent of testing among the CEE countries is quite large throughout the March-June period, but especially in the beginning of the pandemic, with Bulgaria and Croatia (the countries also having the lowest GDP per capita) ranking last and Slovenia (highest GDP/ per capita) on the first place. While at the end of March six of the countries had carried on less than 2 tests per thousand, Slovenia, with 11.43 tests per thousands, exceeded Germany (10.5) and Italy (8.4). Similarly, at the end of June, the number of tests carried on in Slovenia was double than that in Bulgaria, Croatia or Hungary (Fig. 5).

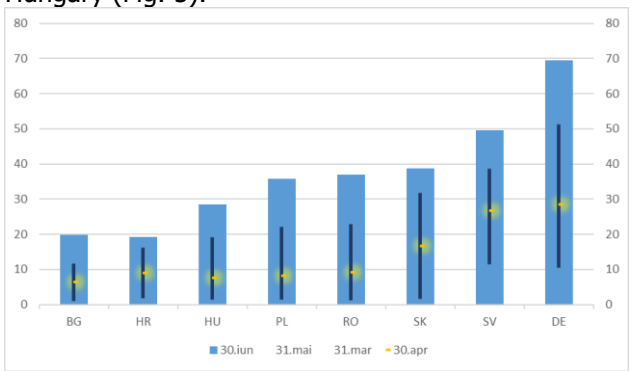


Fig. 5 Total Covid-19 tests per 1,000 (data source: Roser et al., 2020)

Mandatory quarantine measures were introduced early on in all analysed countries for people returning from the red zones (initially Asian countries, and soon after from Italy); people returning from areas with high infection rate, as well as the direct contacts of a confirmed case were subjected to a mandatory 14-day quarantine. Bulgaria has prepared in Sofia and

Forum geografic. Studii și cercetări de geografie și protecția mediului
Volume **XIX**, Issue **2** (**December 2020**), pp. **212-224**
http://dx.doi.org/**10.5775/fg.2020.039.d**

major towns some specially designated facilities for isolation in case wider spread of the virus, but until the end of June 2020, they had not been used (Rohova, 2020). In the Czech Republic, municipalities were required to provide for the isolation of homeless people, so tent camps were built in bigger cities; during the first few months of the pandemic, social facilities for long-term care were required to reserve 10% of their capacity to accommodate suspected or infected cases among their residents in isolation (Žiačik & Bryndová, 2020). Croatia has organized special facilities for quarantine only for foreign citizens. While in all other CEE countries people were ordered to self-isolate in home quarantine unless their health conditions required medical treatment, in Romania they were placed in special designated places.

Following the severe situation in Italy and Spain, the countries hosting the largest Romanian communities in EU, ever more Romanians that had temporarily left the country in search of a better payed job (circular migration), were forced to return home, many from the northern provinces where the epidemic situation was the worst. According to the Romanian Border Police, in just 2 days, 11-12 March 2020, there were 107,000 persons that entered Romania, coming mainly from Western Europe, and more than 40,600 returning during February 26th – March 10th 2020. Quarantine involved a large number of asymptomatic citizens sequestered in specifically designated location, pursuant to the legal order issued on February, 26th, which stipulates that local public administrations must provide special designated places destined for quarantine and that quarantine is compulsory for all persons returning from areas with large scale community transmission of COVID-19. Initially, people were quarantined in premises belonging to the ministry of health, but later on, as the number of quarantined persons staggered, hotels and boarding houses were also used, local authorities supplying individuals with adequate shelter, food and medical care.

The novelty, as well as the magnitude of the threat presented great challenges for the Romanian government and health officials to manage and coordinate the quarantine among various agencies belonging to the Ministry of Health and of Public Affairs, as well as private entities (mostly accommodation facilities, but also NGOs, who mostly provided volunteers who shopped and delivered for persons in self-isolation). Because quarantine at this magnitude has not been used in the past, public health authorities and local administrations were forced to hastily establish the infrastructure needed for the enforcement of quarantine, including facilities, hotline for people to be informed, staff to provide medical assistance to quarantined individuals, as well as to monitor the compliance with quarantine and self-isolation rules.

Overall, according to the statistical data released daily by the authorities, there were more than 73,000 persons that were quarantined from February, 27th, until July, 3rd (the last day when the official statistics mention this type of information), accounting for more than 1 million quarantine days, while another half million persons were in self-isolation during the same period. The first two weeks of April, just before Easter, witnessed the highest daily numbers of quarantined persons (more than 25,000) (Fig. 6), despite the repeated warnings from the government officials for the diaspora to not return home for the holidays.

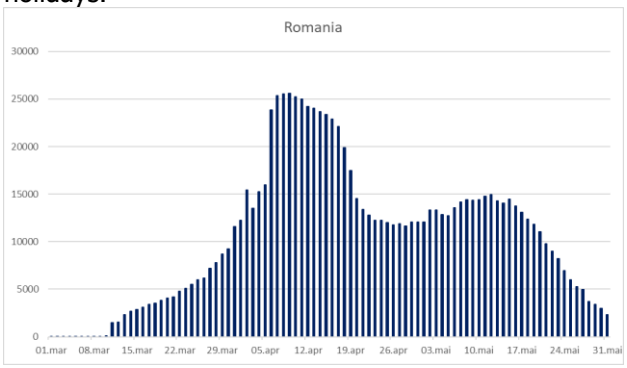


Fig. 6 Number of quarantined persons (March-May 2020) (data source: www.stirioficiale.ro)

As a result of the large number of persons that had to be quarantined, local authorities called private accommodation facilities to host these people. Thus, in all the major towns throughout the entire country, 3 and 4 star hotels and boarding houses were used during this period. The number of quarantine centres increased from 407 in March to 658 in April, followed by a somewhat lower number in May, 513. It is worth noticing that in April, during the peak of quarantine, some of the counties in the northern part of the country registered more than 30 quarantine centres (Maramures having 43 such centres), while in 9 out of 41 counties there were more than 20.

Due to the low testing capacity, the persons that were quarantined were not tested for COVID-19 unless they developed major symptoms during the 14 days. The Ministry of Health payed 48 €/ day/ person for accommodation, which is the price equivalent for at least a 3-star hotel accommodation, plus three meals a day. Only in late July did the government change the legislation, allowing for people to be quarantined at home, and only when persons could not provide for themselves and their families the necessary conditions for physical separation would they be quarantined in special designated places provided by the authorities (institutionalized quarantine).

However, Poland, the most populous country in CEE region, had by far the highest number of quarantined persons, from late March until late April, more than 140,000 people having been quarantined daily (Fig. 6) (any person returning from abroad is subject to mandatory quarantine at home for a period of 14 days, while contact cases must be quarantined for 10 days).

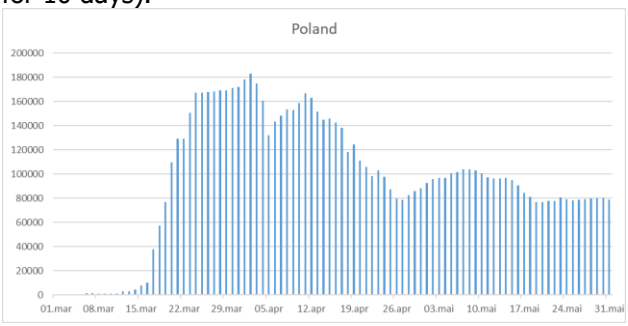


Fig. 6 Number of quarantined persons (March-May 2020) (data source: a) (Sas, 2020)

Police and state security services have systematically checked places of home isolation and quarantines. Quarantine or isolation usually takes place at the person's place of residence or, in special cases, in places designated by the local authorities (some hotels, hostels, dorms and sanatoriums close to hospitals have been converted into special isolation facilities to accommodate people who cannot quarantine at home. These isolated patients are provided with medical care and meals, with the National Health Fund covering the cost (Kowalska-Bobko et al., 2020).

4. Mitigation measures in CEE countries during the first wave of COVID-19

With the Covid-19 outbreak, it soon became obvious that containment and mitigation policies are essential for health care systems to lower the peak in demand for care and, hopefully, reverse the flow of the pandemic (OECD, 2020c).

Mitigation measures include banning of mass events (towards the end of March, most of the counties banning gatherings of as little as 3 or 5 persons), closure of non-essential activities (countries have temporarily closed restaurants and bars, as well as shops and recreational facilities) and encouraging companies to use new technologies and allow their employees to work from home, whenever possible. School closures were deployed rapidly in CEE countries (11-16.03.2020), just as in many other countries around the globe. When the outbreak peaked in Italy and Spain, Slovenians, Poles, Romanians and Hungarians were ordered into a national lockdown (Table 1).

Table 1

Timetable of mitigation strategies adopted in CEE countries

Action	Bulgaria	Croatia	Czechia	Hungary	Poland	Romania	Slovakia	Slovenia
Temporary closure of borders to non-citizens	Selective closure 18 March	Selective closure 14 March	Full closure 16 March	Full closure 16 March	Selective March 15	Selective 9 March Full 25 March	Selective closure	10 March
Closure of non-essential services	13 March	19 March	14 March	16 March	13/ 24 March	17 March	16 March	16 March
School closure	13 March	16 March	11 March	16 March	12 March	11 March	16 March	16 March
Universities closure		16 March	11 March	11 March	March 16	12 March	9 March	16 March
Banning of large gatherings	13/ 17 March	19 March	11 March/ 23 March	12 March	March 10	8 March	10 March	12 March
State of emergency	13 March – 12 May	-	12 March – 17 May	11 March -16 June	March 14	17 March – 15 May	16/ 25 March**	--
Lock-down	No formal lockdown	23 March - 5 May	16 March – 20 April	27 March – 4 May*	24 / 31 March – 19 April	25 March – 15 May	16 March – 30 March	20 March - 18 April
Use of masks in closed environments	Compulsory 11 April	Compulsory 13 July	Comp 19 March	Compulsory	Compulsory	Compulsory	Compulsory 25 March	Compulsory

(data source: Covid-19 Health System Response Monitor)

*maintaining restrictions for residents living in the most infected areas, but gradually lifting the restrictions elsewhere in the country (Gaal et al., 2020);

** on March 16, 2020, a state of emergency was declared for the health care sector in Slovakia, as of March 25, 2020, the state of emergency applied also to social care facilities providing health care (Smatana, 2020)

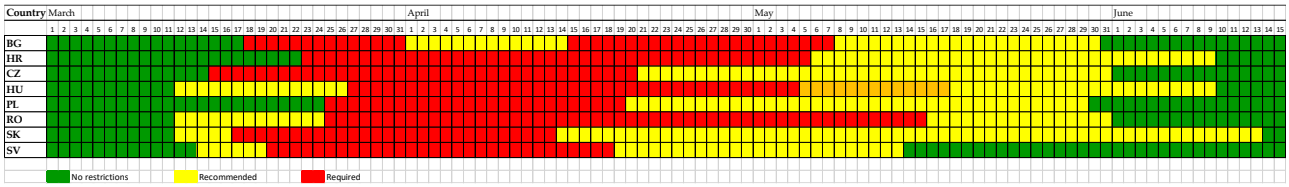


Fig. 7 Period of movement restrictions in CEE countries (Data source: Covid-19 Health System Response Monitor, Thomas et.al., 2020)

The Czech government prohibited the free movement of people even sooner, beginning with March 16th. While Poland and Slovakia enforced a formal lockdown on the entire country for less than a month (26 and 28 days, respectively), Romania registered the highest number, with 52 days, followed by Croatia (44) and Hungary (39 days). Slovenia with 30 days (Fig. 7) had the best outcome, being the first European country to declare an official end to its epidemic (Novak, 2020).

Romania faced a community wide containment for almost 7 weeks in the spring of 2020, a situation that has never happened before, not even during the WWII, in terms of duration and restrictions. During the communist period, there was no similar situation to warrant such measures (not even during the Chernobyl nuclear accident were people forced to remain indoors; the government at that time only recommended people to travel less and preferably spend less time out in the open; but that was only a recommendation, not a compulsory order). In an attempt to curb the epidemic and convince people to comply with the new orders during the emergency period, on March, 26th, a day after it declared lockdown, the Romanian government issued a new law that increased the fines for people that would break the regulations during the lockdown (fines from 2000 up to 20,000 RON, i.e. 400 to 4,000 EUR). The number of fines was considerable. In only two days, there were more than 13,000 people that did not comply with travel restrictions, which were fined some 3.6 million €. In less than a month, police officers issued more than 200,000 fines to people who failed to comply with restrictions to curb the spread of coronavirus, amounting to 78 million €, said to equal Romania's February 2020 corporate tax (Romania Insider, n.d.). Overall, from March, 25th, until May, 6th, the fines totalled 124.7 mil. €; according to the same law, offenders could pay only half of the amount if they managed to do so in the first 15 days since they were fined. However, on May, 6th, the Constitutional Court ruled out the law stipulating these fines as unconstitutional, since it was too general, leaving policemen large freedom of choice, while the amount of the fines was too high considering the financial possibilities of the population (400 € minimum fine, where the average salary is around 666 €). Still, those who were fined should file a court order in order to cancel the fine.

Romania is not the only case where citizens are held responsible for non-compliance with public health directions. Police can issue on-the-spot fines of a minimum of 400 € in Slovenia (ALâlbreht, 2020) for individuals and up to 780 EUR for breaching the obligation to comply with restrictions arising from the crisis measures in the Czech Republic (and a fine of up to 77,000 € for breaching the obligation to refrain from prohibited activities) (Ministry of Health of the Czech Republic, 2020). In Poland, large fines for not complying with the quarantine also apply (up to 30,000 PLN/ 6666 €) (Kowalska-Bobko et al., 2020).

Stringency Index

Drawing upon the data provided by the Government Response Stringency Index (SI) (Thomas et al., 2020), which tracks government policies and interventions on standardized indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0 to 100 (100 = strictest), we can conclude that CEE countries had the stricter public health measures beginning in late March and throughout April and then gradually lifted restrictions. The starting point for mitigation measures is approximately the same; the Czech Republic was the first to register a sharp increase in the SI, but also the first to ease the measures during late April. Croatia, while scoring one of the lowest index in the beginning (SI = 22 on March, 10), quickly followed it, in just a week displaying the highest SI (96.3) during the analysed interval and for the longest period of time (24.04– 09.05.2020). Stricter responses were also registered in Slovenia, Romania and Poland (SI above 85). From June onwards, public health measures were substantially eased; as fig. 8points, there are two group counties: the former including Hungary, Croatia and Poland, with a stringency index above 50, and the latter with Romania, Bulgaria, Slovenia, Slovakia and the Czech Republic - SI below 40, which is still almost double than at the beginning of March.

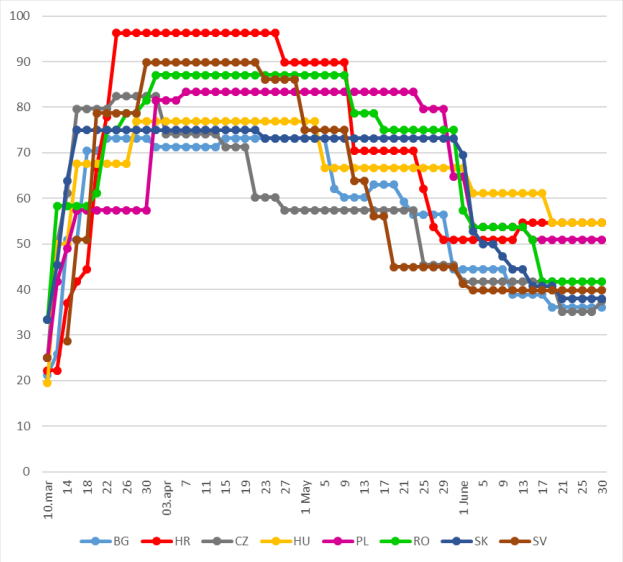
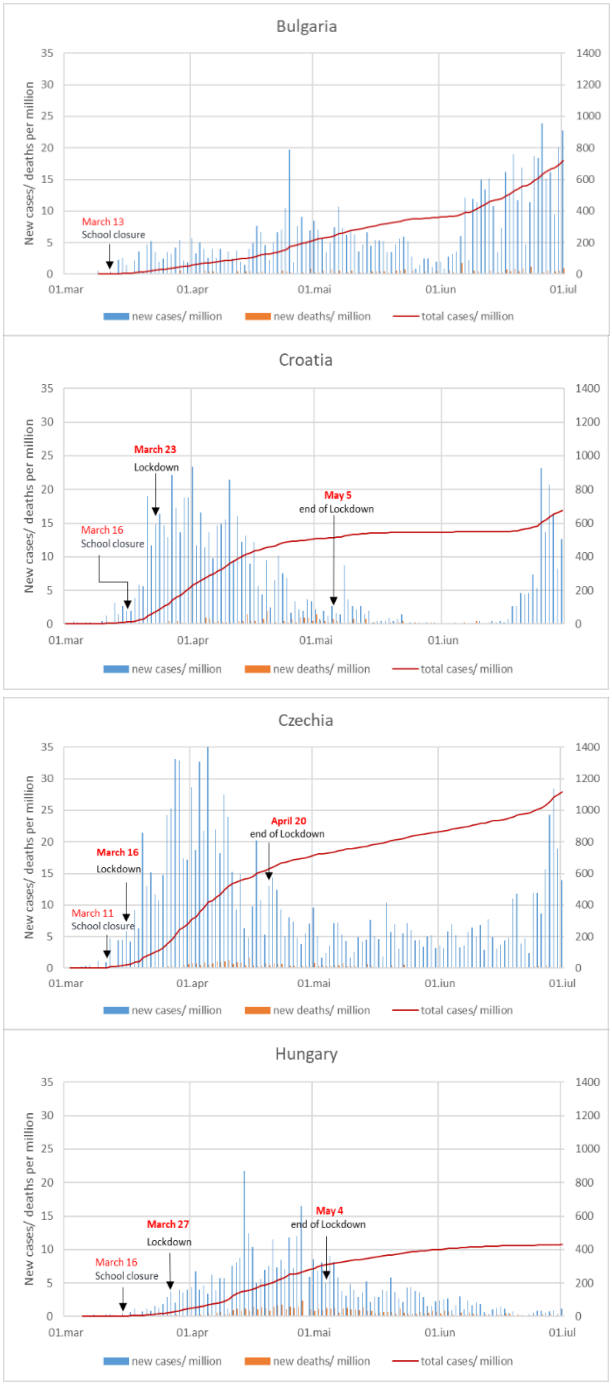


Fig. 8 Government stringency index (data source: Oxford COVID-19 Government Response Tracker)

5. Results of containment and mitigation strategies

There is no doubt that CEE countries did significantly better than many of their Western counterparts during the first half of the year, the infection rate was low and there was little pressure on the health infrastructure. This was due to a head start, introducing restrictions when experiencing much fewer cases. However, despite taking similar action and within the same timeframe, there were some commonalities regarding the infection rates, as cases and deaths have not been spread evenly within the region. The highest number of daily new cases was registered in the Czech Republic and Slovenia (Fig. 9) – 35 daily new cases per million. From late March until the middle of April, the spike in new cases was driven by these two countries, while in Slovakia, Hungary and Bulgaria, both cases and deaths were substantially low (less than 10 daily new cases per million). There is no doubt that differences in figures in most analysed countries are deflated by a much lower testing rate. By the end of March, Slovenia, where insufficient testing was also of concern, had conducted up to ten times more tests than any other CEE country.



Forum geografic. Studii și cercetări de geografie și protecția mediului
Volume **XIX**, Issue **2** (**December 2020**), pp. **212-224**
http://dx.doi.org/**10.5775/fg.2020.039.d**

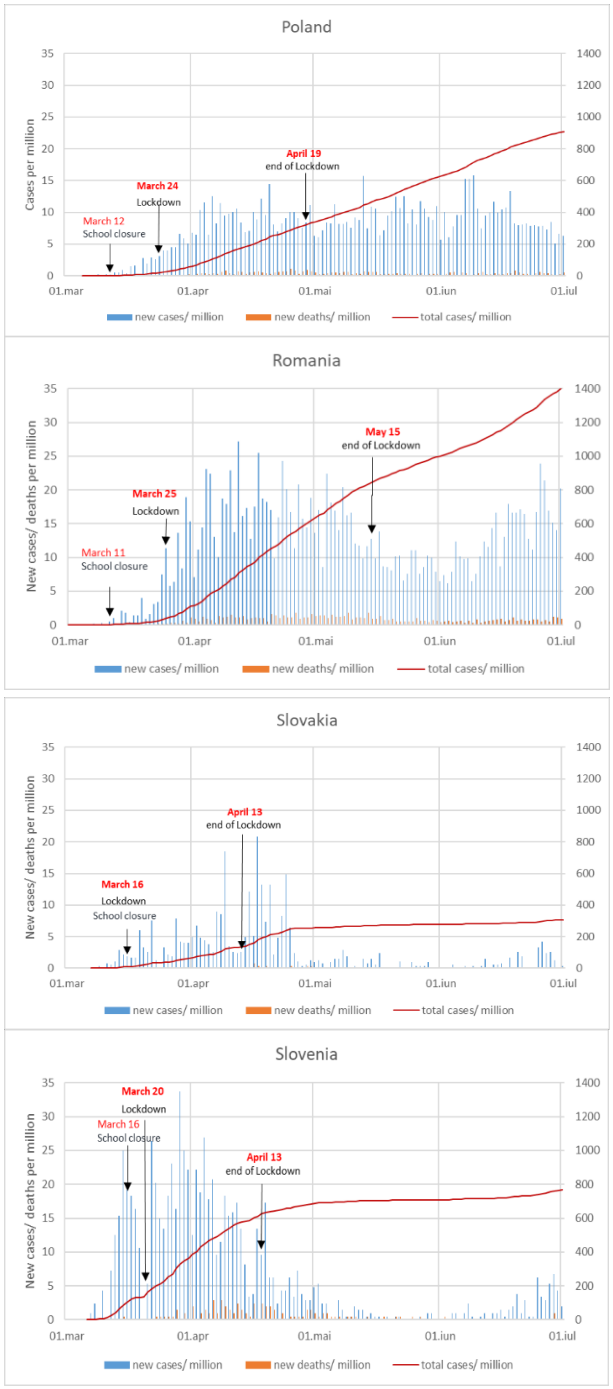


Fig. 9 Evolution in reported COVID-19 cases and mortality in CEE countries (data source: WHO, 2020)

As of June, 30th, Romania has the highest count of reported Covid-19 cases in CEE, with nearly 1400 total cases per million, followed by the Czech Republic (1102) and Poland (902), while Slovakia managed to keep the count just above 300 total cases per million. How has Slovakia successfully contained the coronavirus so far?! Apparently, apart from the government's quick decision to institute a national lockdown, which was common action among all eight countries, there were another two very important powerful factors: i) politics has been set a bit aside, coalition and opposition parties prioritizing the need to fight COVID-19 (Nemec, 2020) and ii) an immediate and universal compliance by the Slovak population – the Slovaks did what they were told despite low trust in the government and acted voluntarily without the need for large-scale coercive enforcement (Beblavy, 2020).

Slovenia is another good example as it was successful in controlling the first wave of COVID-19 epidemic in less than two months, having declared the end of epidemic on May 31, following the proper sequence of interventions and cultural background (Leskovar et al., 2020).

Looking at the tendencies for March-June period, five out of the eight CEE countries present a downward trend of the epidemic; quite sharp in Slovenia and Slovakia, and much more subdued in the Czech Republic (due to the highest number of infections during the March-April and to a new spike by the eng of June), Hungary and Croatia. However, this is not the case for Romania, Poland and Bulgaria, where there is an upward trend.

Conclusions

Some countries previous experience with H1N1 influenza, SARS or MERS has led to a much thorough response planning and preparedness for pandemics. Although this was not the case for CEE countries, in the early spring of 2020, when Western Europe became the epicentre of the new coronavirus pandemic, the authorities gradually implemented all the tools to curb this epidemic, from case detection and immediate isolation, contact tracing and mass quarantine of people returning mainly from Western Europe, up to community wide containment in a matter of just a couple of weeks.

The first finding of this study is the homogeneousness in terms of timeframe – CEE countries, although not severely hit by the pandemic, enforced similar containment and mitigation strategies very soon after the first confirmed COVID cases, for fear of missing the window to intervene early; thus, the lockdown, when enforced, preceded the curve of infections. Secondly, there was little variation in the design and implementation of mitigation strategies, and the response of the governments in CEE countries was quite successful regarding the flattening of the infection curve during the first wave of the pandemic.

Nevertheless, this pandemic posed an unprecedented challenge for most heath care systems, governments and population alike. The measures for institutionalized quarantine do not only inconvenience people forced to spend 14 days in specific designated place, but also impose a significant financial burden for the country. However,

since July, most of the analysed countries are heading at an alarming pace toward the real peak of the epidemic, with a surge in the number of daily cases, while both public health officials and elected officials err on the side of caution and delay stricter measures for social distancing.

Given the trajectory of this outbreak, it is now of utmost importance to be able to scale up the efforts and continue the social distancing more than ever, not only to „flatten the curve" as it was targeted in spring, and which may be too late for now, but to at least not keep up with the pace the number of new cases increases with. Abiding by physical distancing measures in combination with everyday preventive actions is crucial for reducing the spread of the virus.

References

Alâlbreht, T. (2020). *Policy responses for Slovenia* (COVID-19 Health Response Monitor). WHO, EC. https://www.covid19healthsystem.org/countries/slovenia/livinghit.aspx?Section=1.3%20Isolation%20and%20quarantine&Type=Section

Alberca, R. W., Oliveira, L. de M., Branco, A. C. C. C., Pereira, N. Z., & Sato, M. N. (2020). Obesity as a risk factor for COVID-19: An overview. *Critical Reviews in Food Science and Nutrition*, 1–15. https://doi.org/10.1080/10408398.2020.1775546

Alfano, V., & Ercolano, S. (2020). The Efficacy of Lockdown Against COVID-19: A Cross-Country Panel Analysis. *Applied Health Economics and Health Policy*, *3*, 1. https://doi.org/10.1007/s40258-020-00596-3

Alvarez, F. E., Argente, D., & Lippi, F. (2020). A Simple Planning Problem for COVID-19 Lockdown. *National Bureau of Economic Research Working Paper Series*, Article w26981. https://www.nber.org/papers/w26981

Barbisch, D., Koenig, K. L., & Shih, F.-Y. (2015). Is There a Case for Quarantine? Perspectives from SARS to Ebola. *Disaster Medicine and Public Health Preparedness*, *9*(5), 547–553. https://doi.org/10.1017/dmp.2015.38

Beblavy, M. (2020, May 6). How Slovakia Flattened the Curve. *Foreign Policy*. https://foreignpolicy.com/2020/05/06/slovakia-coronavirus-pandemic-public-trust-media/

Briscese, G., Lacetera, N., Macis, M., & Tonin, M. (2020). Compliance with COVID-19 Social-Distancing Measures in Italy: The Role of Expectations and Duration. *National Bureau of Economic Research Working Paper Series*, Article w26916. https://doi.org/10.3386/w26916

Buckley, C., & Hernandez, H. C. (2020, January 23). China Expands Virus Lockdown, Encircling 35 Million (Published 2020). *The New York Times*. https://www.nytimes.com/2020/01/23/world/asia/china-coronavirus-outbreak.html

Cameron, E. E., Nuzzo, J. B., & Bell, J. A. (2019). *Global Health Security Index. Building Collective Action and Accountability* (p. 324). John Hopkins. Bloomberg School of Public Health. https://www.ghsindex.org/report-model/

Courtemanche, C., Garuccio, J., Le, A., Pinkston, J., & Yelowitz, A. (2020). Strong Social Distancing Measures In The United States Reduced The COVID-19 Growth Rate. *Health Affairs*. https://doi.org/10.1377/hlthaff.2020.00608

Creţan, R., & Light, D. (2020). COVID-19 in Romania: Transnational labour, geopolitics, and the Roma 'outsiders'. *Eurasian Geography and Economics*. https://doi.org/10.1080/15387216.2020.1780929

Eurostat. (2019). *Housing statistics—Statistics Explained: Overcrowding rate*. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Housing_statistics#Housing_quality

Fidler, D. P., Gostin, L. O., & Markel, H. (2016). Through the Quarantine Looking Glass: Drug-Resistant Tuberculosis and Public Health Governance, Law, and Ethics: *The Journal of Law, Medicine & Ethics*. https://journals.sagepub.com/doi/10.1111/j.1748-720X.2007.00185.x

Gaal, P., Szerencses, V., & Velkey, Z. (2020). *Policy responses for Hungary* (COVID-19 Health Response Monitor). WHO, EC. https://www.covid19healthsystem.org/countries/hungary/livinghit.aspx?Section=1.3%20Isolation%20and%20quarantine&Type=Section

Gesser-Edelsburg, A., & Shir-Raz, Y. (2015). Science vs. fear: The Ebola quarantine debate as a case study that reveals how the public perceives risk. *Journal of Risk Research*. https://www.tandfonline.com/doi/abs/10.1080/13669877.2015.1100659

Gilman, S. L. (2010). Moral panic and pandemics. *The Lancet*, *375*(9729), 1866–1867. https://doi.org/10.1016/S0140-6736(10)60862-8

Graham-Harrison, E., & Kuo, L. (2020, March 19). China's coronavirus lockdown strategy: Brutal but effective. *The Guardian*. http://www.theguardian.com/world/2020/mar/19/chinas-coronavirus-lockdown-strategy-brutal-but-effective

Kinlaw, K., Barrett, D. H., & Levine, R. J. (2009). Ethical guidelines in pandemic influenza: Recommendations of the Ethics Subcommittee of the Advisory Committee of the Director, Centers for

Disease Control and Prevention. *Disaster Medicine and Public Health Preparedness*, *3*(Suppl. 2), 185–192. https://doi.org/10.1097/DMP.0b013e3181ac194f

Kouřil, P., & Ferenčuhová, S. (2020). "Smart" quarantine and "blanket" quarantine: The Czech response to the COVID-19 pandemic. *Eurasian Geography and Economics*. https://rsa.tandfonline.com/doi/abs/10.1080/15387216.2020.1783338

Kowalska-Bobko, I., Sowada, C., Badora-Musiał, K., & Kozela, M. (2020). *Policy responses for Poland* (COVID-19 Health Response Monitor). WHO, EC. https://www.covid19healthsystem.org/countries/poland/livinghit.aspx?Section=1.3%20Isolation%20and%20quarantine&Type=Section

Kretschmer, F. (2020, January 23). Wuhan lockdown: China takes extreme measures to stop virus spread | DW | 23.01.2020. *DW.COM*. https://www.dw.com/en/wuhan-lockdown-china-takes-extreme-measures-to-stop-virus-spread/a-52120126

Krzysztofik, R., Kantor-Pietraga, I., & Spórna, T. (2020). Spatial and functional dimensions of the COVID-19 epidemic in Poland. *Eurasian Geography and Economics*, *61*(4–5), 573–586.

Leskovar, M., Cizelj, L., & Beović, B. (2020). *Successful Containment of the First Wave of COVID-19 in Slovenia: A Short Assessment*. https://doi.org/10.2139/ssrn.3619766

Mantovani, A., Byrne, C. D., Zheng, M.-H., & Targher, G. (2020). Diabetes as a risk factor for greater COVID-19 severity and in-hospital death: A meta-analysis of observational studies. *Nutrition, Metabolism and Cardiovascular Diseases*, *30*(8), 1236–1248. https://doi.org/10.1016/j.numecd.2020.05.014

Ministry of Health of the Czech Republic. (2020, March 29). *What should I do if I am in quarantine? – Aktuální informace o COVID-19*. https://koronavirus.mzcr.cz/en/what-should-i-do-if-i-am-in-quarantine/

Nemec, J. (2020). Government transition in the time of the COVID-19 crisis: Slovak case. *International Journal of Public Leadership*, *7*. https://doi.org/10.1108/IJPL-05-2020-0040

Newman, K. L. S. (2012). Shutt Up: Bubonic Plague and Quarantine in Early Modern England. *Journal of Social History*, *45*(3), 809–834. https://doi.org/10.1093/jsh/shr114

Novak, M. (2020, May 18). Slovenia to tighten border controls for some visitors amid lockdown easing. *Reuters*. https://www.reuters.com/article/us-health-coronavirus-slovenia-idUSKBN22U1ZK

Nussbaumer-Streit, B., Mayr, V., Dobrescu, A. I., Chapman, A., Persad, E., Klerings, I., Wagner, G., Siebert, U., Christof, C., Zachariah, C., & Gartlehner, G. (2020). Quarantine alone or in combination with other public health measures to control COVID-19: A rapid review. *Cochrane Database of Systematic Reviews*, *4*. https://doi.org/10.1002/14651858.CD013574

OECD. (2020a). *COVID-19: Protecting people and societies*. OECD Publishing. http://www.oecd.org/coronavirus/policy-responses/covid-19-protecting-people-and-societies-e5c9de1a/

OECD. (2020b). *Flattening the COVID-19 peak: Containment and mitigation policies*. http://www.oecd.org/coronavirus/policy-responses/flattening-the-covid-19-peak-containment-and-mitigation-policies-e96a4226/

OECD. (2020c). *Beyond Containment: Health systems responses to COVID 19 in the OECD*. https://read.oecd-ilibrary.org/view/?ref=119_119689-ud5comtf84&title=Beyond_Containment:Health_systems_responses_to_COVID-19_in_the_OECD

Pearce, K. (2020, March 13). *What is social distancing and how can it slow the spread of COVID-19?* The Hub. https://hub.jhu.edu/2020/03/13/what-is-social-distancing/

Petrakis, D., Margină, D., Tsarouhas, K., Tekos, F., Stan, M., Nikitovic, D., Kouretas, D., Spandidos, D. A., & Tsatsakis, A. (2020). Obesity - a risk factor for increased COVID-19 prevalence, severity and lethality (Review). *Molecular Medicine Reports*, *22*(1), 9–19. https://doi.org/10.3892/mmr.2020.11127

Piguillem, F., & Shi, L. (2020). *Optimal Covid-19 Quarantine and Testing Policies*. https://papers.ssrn.com/abstract=3594243

Ren, X. (2020). Pandemic and lockdown: A territorial approach to COVID-19 in China, Italy and the United States. *Eurasian Geography and Economics*, *61*(4–5), 423–434. https://doi.org/10.1080/15387216.2020.1762103

Reuters, T. (2020, March 4). *Hungary confirms first two coronavirus cases*. Reuters. https://www.reuters.com/article/us-health-coronavirus-hungary-idUSKBN20R2RA

Rohova, M. (2020). *Policy responses for Bulgaria* (COVID-19 Health Response Monitor). WHO, EC. https://www.covid19healthsystem.org/countries/bulgaria/livinghit.aspx?Section=1.3%20Isolation%20and%20quarantine&Type=Section

Romania Insider. (n.d.). *EUR 78 mln worth of fines for breaking lockdown regulations in RO so far*. Romania Insider. Retrieved 10 August 2020, from https://www.romania-insider.com/fines-covid-apr-21-2020

Roser, M., Ritchie, H., Ortiz-Ospina, E., & Hasell, J. (2020). *Coronavirus (COVID-19) Pandemic (COVID-19)*. Our World in Data. https://ourworldindata.org/coronavirus-testing

Rothstein, M. A. (2015). From SARS to Ebola: Legal and Ethical Considerations for Modern Quarantine. *Indiana Health Law Review*, *12*(1), 227–280. https://doi.org/10.18060/18963

Sas, A. (2020). *Poland: Number of people quarantined because of coronavirus 2021*. Statista. https://www.statista.com/statistics/1103772/poland-number-of-people-quarantined-because-of-coronavirus/

Sjödin, H., Johansson, A., F., Åke, B., Farooq, Z., Wilder-Smith, A., Åström, C., Thunberg, J., & Rocklöv, J. (2020). *COVID-19 health care demand and mortality in Sweden in response to non-pharmaceutical (NPIs) mitigation and suppression scenarios* [Preprint]. Epidemiology. https://doi.org/10.1101/2020.03.20.20039594

Smatana, M. (2020). *Policy responses for Slovakia* (COVID-19 Health Response Monitor). WHO, EC. https://www.covid19healthsystem.org/countries/slovakia/livinghit.aspx?Section=1.3%20Isolation%20and%20quarantine&Type=Section

Şoşea, C., Popescu, L., & Iordache, C. (2018). Post-communist Romanian migration patterns: Dynamics and territorial perspectives. *Forum Geografic*, *XVII*(2), 171–185. https://doi.org/10.5775/fg.2017.083.d

Standl, F., Jöckel, K.-H., & Stang, A. (2020). COVID-19 and the need of targeted inverse quarantine. *European Journal of Epidemiology*, *35*(4), 339–340. https://doi.org/10.1007/s10654-020-00629-0

Thomas, H., Angrist, N., Cameron-Blake, E., Hallas, L., Kira, B., Majumdar, S., & Petherick, A. (2020). *Coronavirus Government Response Tracker*. Coronavirus Government Response Tracker. https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker

Thunström, L., Newbold, S. C., Finnoff, D., Ashworth, M., & Shogren, J. F. (2020). The Benefits and Costs of Using Social Distancing to Flatten the Curve for COVID-19. *Journal of Benefit-Cost Analysis*, 1–17. https://doi.org/10.1017/bca.2020.12

Ugarov, A. (2020). Inclusive Costs of NPI Measures for COVID-19 Pandemic: Three Approaches. *MedRxiv*, 2020.03.26.20044552. https://doi.org/10.1101/2020.03.26.20044552

Viner, R. M., Russell, S. J., Croker, H., Packer, J., Ward, J., Stansfield, C., Mytton, O., Bonell, C., & Booy, R. (2020). School closure and management practices during coronavirus outbreaks including COVID-19: A rapid systematic review. *The Lancet. Child & Adolescent Health*, *4*(5), 397. https://doi.org/10.1016/S2352-4642(20)30095-X

WHO. (2020). *WHO Coronavirus Disease (COVID-19) Dashboard*. WHO Coronavirus Disease (COVID-19) Dashboard. https://covid19.who.int/table

Wilder-Smith, A., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: Pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine*, *27*(2), 1–4. https://doi.org/10.1093/jtm/taaa020

Žiačik, J., & Bryndová, L. (2020). *Policy responses for Czech Republic* (COVID-19 Health Response Monitor). WHO, EC. https://www.covid19healthsystem.org/countries/czechrepublic/livinghit.aspx?Section=1.3%20Isolation%20and%20quarantine&Type=Section

Официално: Има четири потвърдени случая на коронавирус в България. (2020, March 8). actualno.com; https://www.actualno.com. https://www.actualno.com/healthy/oficialno-ima-chetiri-potvyrdeni-sluchaja-na-koronavirus-v-bylgarija-news_1440246.html