Online Appendix:

Table A1: Transmission prevention measures in Slovakia in spring and summer 2020

Introduction of restrictions in March	Relaxation of restrictions since May
Physical distancing and mask wearing	
• Since 8.03. limiting physical contact and keeping safe distance have been recommended • Since 25.03. use of face coverings mandatory in public places	• Since 21.04. use of face coverings is not mandatory outdoors if 20m* physical distancing rule is observed and indoors for people living in the same household • Between 11.05. and 04.07 further groups have been added to the list of exempted groups: actors and media presenters; teachers, nursery and primary schools and exterior sports; high school students and certain diseases) • Between 20.05. and 03.06. required physical distance outdoors was reduced to 5m* and then to 2m*. • Since 10.06. use of face coverings is only recommended outdoors, providing 2m physical distance rule
Group gathering	
• On 06.03. population was asked to consider not participating in group events • Since 10.03. group gatherings have been prohibited	• Since 20.05. up to 100 people are allowed to participate in group events (indoors and outdoors) with the exception of sport events; 2m distances between participants must be ensured • Since 10.06. the limit has been increased to 500 people • Since 1.07. the limit has been increased to 1000 people, but every other row must be left empty (for seated events) and only 50% of venue capacity can be filled (for both seated and standing events)
Free movement of people	
• Since 8.04. ban on non-essential people movement (in place until 14.04., i.e., to cover Easter break)	• N/A
Measures in schools	
• Since 16.03. closure of all educational institutions	• Since 01.06. all nurseries and primary schools (1st – 5th grade) can resume face-to-face education (physical attendance is voluntarily) • All students can return for the last week of June to return textbooks, get certificates etc.
Measures in workplaces	
• Since 16.03. closure of all non-essential businesses • Since 30.3. distance of 2 meters is mandatory in all businesses that remain open and 25m2 per customer must be assured	• Since 20.05. number of customers in all businesses must be limited to 1 customer per 15m2 • Since 27.05., shops and service providers must observe either the rule above or ensure physical distancing of 2m between customers • Since 10.06. the rules above become voluntary
Measures to protect vulnerable populations	
• Since 08.03. visits to inpatient facilities prohibited • Since 25.03. visits to all social care institutions prohibited • Since 30.03. dedicated shopping introduced for people aged 65+ at grocery stores	• Since 22.04 all businesses that remain open are obliged to provide dedicated opening hours for persons aged 65+ from 9.00 to 11.00 every day • Dedicated opening hours were cancelled on 03.06.
Border control	
• Since 13.03. national borders have been closed (with exceptions, e.g., for people commuting to work) • Since 01.05. all people travelling to Slovakia must undergo a quarantine (with exceptions, e.g., for people commuting to work)	• Since 21.05 border control and movement has been significantly eased, enabling travelling to other V4 countries for 48 without a quarantine or a negative RT-PCR test • Since 10.06 Slovak boarders opened to additional 19 'safe' countries and border-crossing has been allowed without a need for a test or quarantine • Since 25.08. borders have been opened to arrivals from most countries, with arrivals from 'risk' countries requiring a mandatory RT-PCT test

Note: * In the other V4 countries, populations were asked to maintain physical distance of 1.5-2m.

Source: Authors, based on information compiled in the COVID-19 Health Systems Response Monitor.

Figure A1: Securing hospital capacity to treat COVID-19 patients in Hungary in Spring 2020

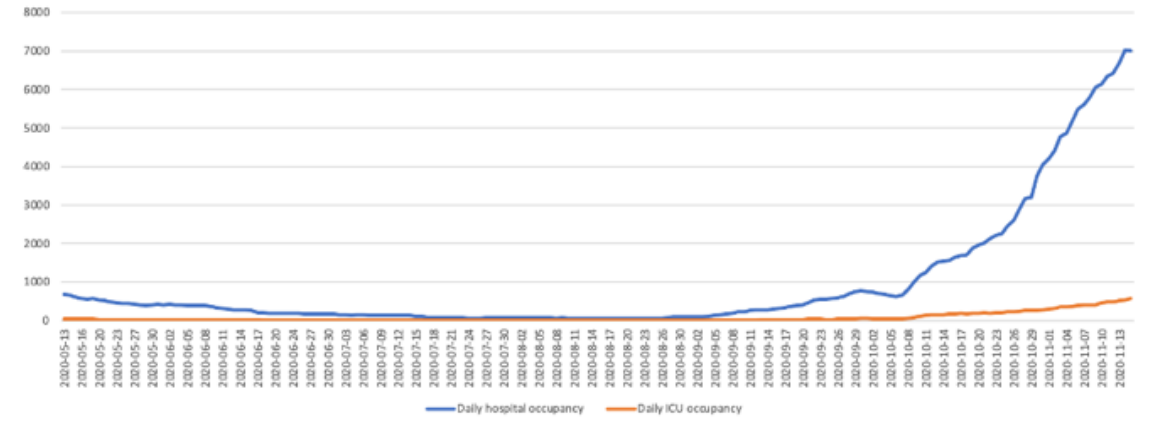
Between March and April, the Hungarian government took steps to expand hospital capacity to accommodate prospective suspected and confirmed COVID-19 cases. In total, about 36,000 beds were secured for treatment of COVID-19 patients. This included the following measures:

- **Deferring elective procedures:** most hospitals in the country deferred elective procedures, providing only emergency procedures to non-COVID-19 patients, and discharged chronic care patients.
- **Repurposing of existing facilities:** One of the hospital buildings in Budapest, which was under renovation, was repurposed for the isolation of suspected COVID-19 cases.
- **Building of new temporary facilities:** A temporary (container) hospital with 150 beds was built in the city of Kiskunhalas; a temporary facility with 330 beds was established in the exhibition buildings of Hungexpo in Budapest; a camp-hospital was built by the army in the yard of a hospital in Budapest to primarily serve as a triage facility (although, if needed, it could have been converted into a treatment facility for COVID-19 patients); military installations have also been set up in other hospitals, mainly to provide screening services for patients prior to entering hospital facilities.
- **Using private capacity:** one partly publicly funded private hospital in Budapest with 144 beds, the National Centre for Spinal Disorders, offered its capacity for the treatment of COVID-19 patients.

With the rate of infection remaining at low levels over spring and summer, only a very small fraction of the freed-up COVID-19 capacity was used during this period (see chart below). By the 14th of May, there were fewer than 3500 confirmed COVID-19 cases in Hungary [5]. On that day, the government announced that hospital beds that have been freed up for COVID-19 patients would be released for regular use and from the 15th of June all health care services were made available without restrictions. About 80% of previously reserved COVID-19 beds were released for regular care and only 20% remained reserved for treating coronavirus patients.

When the infection rate started rising again, the share of beds dedicated to treating COVID-19 patients was increased again. On the 4th of September 2020, 20% of the total number of beds was dedicated to treating COVID-19 patients. This share was increased to 40% on the 7th of November and on the 9th of September the Minister of Human Capacities ordered suspension of elective surgeries and designated almost all hospitals to treat patients with COVID-19.

Daily hospital and ICU occupancy for COVID-19 in Hungary, March to November 2020



Source: ECDC [4].

Figure A2: Mass testing in Slovakia in October-November 2020

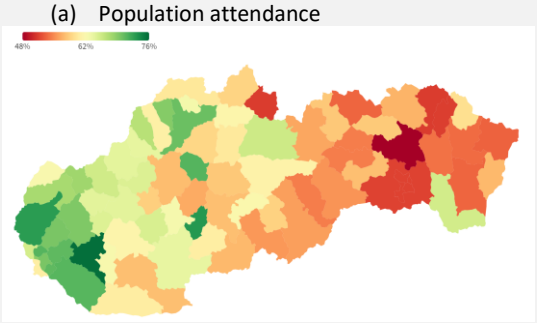
On the 17th of October, the Prime Minister announced that mass testing of the entire population aged 10-65 using rapid antigen tests would be carried out from the end of October with the logistical support from the army. The decision was taken without prior consultation with national experts and was seen as highly controversial [6]. People not participating in the mass testing were required to quarantine at home. Testing was piloted on the weekend of 23-25 October. Despite public pressure, tests have not been validated for field use. Analysis of the tests in laboratory settings performed by the hospitals showed that test sensitivity was 63-67% and test specificity 98.5–100%. Based on these results, test sensitivity in field use was expected to be below 50%, with experts warning that pilot test results could be potentially misleading [6]. Despite this, three rounds of testing were carried out over three consecutive weekends in November on the order of the Prime Minister.

During the first round of mass testing on the last weekend of October 2020, 3.625 million people were tested, with attendance varying from 48% to 76% of the population between the districts (see charts below). Out of all people tested,

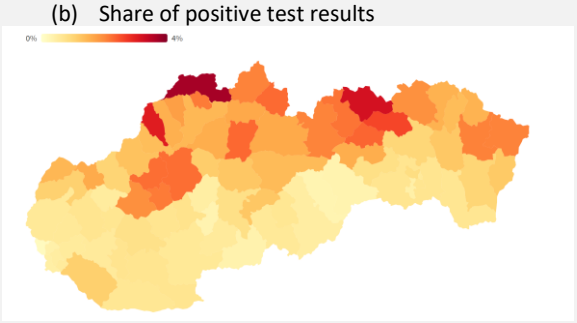
38,359 (1.06%) tested positive. But given the test's specificity, only 23–25 thousand people were expected to actually have had the infection.

Population attendance and share of positive results in the first round of mess testing in Slovakia, by district

(a) Population attendance



(b) Share of positive test results



Source: Dennikn.sk [3].

The second round of testing was carried out one week later, on 7-8 November, again without an experts' approval. This time, testing was only carried out in districts where the share of positive tests exceeded 0.7% (although a group of national experts recommended to only tests populations in the districts where this share exceeded 1.5%, which was the case in 45 districts). Altogether, 2.044 million people were tested, with 13,509 (0.66%) testing positive. In most regions, the share of positive tests was around 0.3-0.4% which is a borderline value given the specificity of the tests used.

The third round of mass testing was undertaken on 21-22 November on a voluntary basis in 458 municipalities with the highest shares of positive tests identified in the second round of testing. The share of positive tests was relatively high – 2.26% - but this was primarily caused by the low attendance, which was only 19%. Experts and public media interpreted this low attendance as a sign of low public support for the mass testing and further rounds of mass testing appear unlikely [1, 2].

Figure A3: Contact tracing in Czechia, March to November 2020

March-August

During spring and summer, contract tracing was mainly implemented by **telephone interviews** of confirmed COVID-19 conducted by public health officers from the Regional Public Health Authorities. Two other tracking tools were developed during this period, but since the epidemiological situation was good, they were not used much:

- **A tracking application called 'smart quarantine'** that uses geolocation history data from mobile phone operators and banks (via card payments) to identify locations of a confirmed case was developed through a civil initiative. This information was meant to support public health officers during telephone interviews with the confirmed cases to help them trace their contacts. The Czech authorities were planning to adopt this app in late spring; however, this idea was abandoned because the number of cases was low, and all contact tracing could be done via telephone interviews.
- **A mobile phone application called 'eRouška'** (which means 'eMask' in English) using Bluetooth technology was developed through another civil initiative. The app connects with mobile phones of other users nearby and exchanges designed identifiers. In the early version of the app (version 1.0), contact numbers of persons who came in close contact with an infected person who tested positive were decoded and passed on to public health officers. The app was adopted by the Czech authorities, but its take-up was low and by the end of August only 2% of the population used it. An improved version of the app was released in autumn (see below).

September-November

By early September and in light of the new surge in infection incidence, it became clear that public health capacity was too low for contact tracing to function effectively. On the 4th of September, there were around 200 daily contact tracers providing an estimated capacity to trace contacts of 400 new confirmed cases per day through telephone interviews. However, already on the 8th of September, the number of new cases exceeded 1000 confirmed cases per day. The following approaches have been used to increase the tracing capacity:

- In late September the government introduced the idea of **'self-tracking'**. A tool was developed to that end in October, whereby newly confirmed cases receive a unique code linking them to an electronic form that they are asked to complete before they are interviewed over telephone. This is supposed to shorten the interview time and increase tracking capacity. After the first week of use, the response rate was around 30% among those who received the unique code (although the code was not sent to all new cases at that time).
- Tracking capacities were increased substantially when **call centres of private companies** offered their capacity for contact tracing. In October and November, call centres of private banks, insurance companies, energy providers, mobile network operators, transport companies and other became part of the tracking system. Operators from these

call centres handled calls to suspected cases, ordering them to contact their general practitioner who would then fill out the PCR test e-Requirement form for them and some operators could order the tests directly too. The operators could also order people to self-quarantine. Initially, Public Health Authorities insisted that the first call with a confirmed case had to be led by an epidemiologist, but with the number of cases increasing dramatically, this requirement was abandoned, and the calls were also led by specially trained staff - usually nurses and medical students - who were not epidemiologists. By mid-October the number of contact tracers increased to 1400 daily, including many other state employees from the police, the fire forces and the army, and civil servants from various ministries and regional offices who temporarily supported the Regional Public Health Authorities in their tracing efforts. Nevertheless, data from the end of October showed that a high share of both detected and suspected cases was not contacted within 48 hours from the time their infection was confirmed (Ministry of Health of the Czech Republic, 2020).

- Due to the low uptake of the 1.0 version of the **eRouška app**, a new version 2.0 was released in the second half of September. The new version offered increased data anonymity, with warnings sent anonymously to the app users who were at risk of having contracted the virus. The system is not linked to the official system of the Public Health Authorities, i.e., people are advised to contact their general practitioner for further advice if they receive a warning through the app. The uptake in October reached 15% of population.

References

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[6] Pravda.sk. (2020). Pilotné testovanie dopadlo dobre. ale nie bez chýb. [The pilot testing turned out well. but not without mistakes.] October 26. Pravada; 2020. Retrieved December 3, 2020 from https://spravy.pravda.sk/domace/clanok/566844-pilotne-testovanie-dopadlo-dobre-ale-nie-bez-chyb.