

HOW SLOVAKIA TESTED ITS WHOLE POPULATION FOR COVID-19

Between 31st October and 1st November, Slovakia conducted mass testing of its entire population aged 10-65, testing 3.6 million people, with approximately 97% turnout, using lateral flow tests with 15 min waiting time for results. Those who tested negative were provided with a paper certificate and released from a strict curfew. This enabled the country to identify 38,000 new cases, 15x the daily average using their Test & Trace system. The operation, led by the army, took 17 days from inception to the launch of Wave 1 whole country testing and involved 40,000 personnel (including the entire military, 15,000 healthcare workers and volunteers). The mass testing and certification was entirely paper-based, to make it quicker and avoid any technical glitches. **If a country was to replicate this, it would need 1,000 locations and 8,000 staff per 1M population.**

Having worked with the team in Slovakia, and having spent the testing weekend with them, we provide the summary of how the testing worked, including contextual information and potential lessons learned.

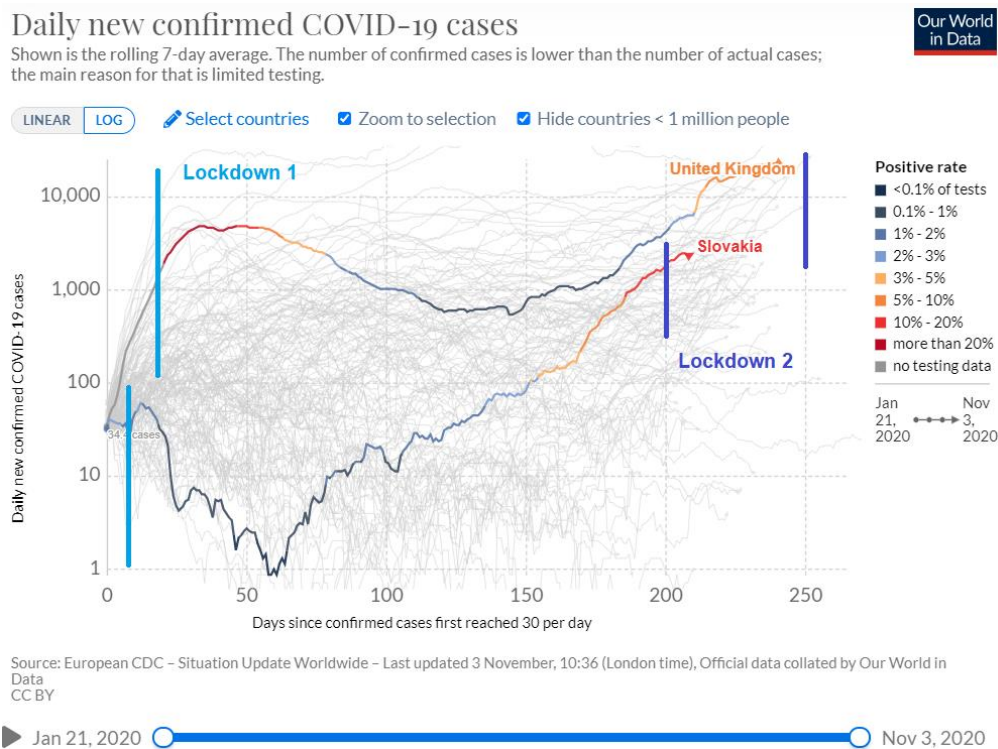
1. BACKGROUND AND STRATEGY

In late September, Slovakia started to see a second wave of COVID-19, eventually reaching the current 7-day median of 2,500 cases, with 458 cases per 1,000,000 (the UK is currently at 329 cases per 1,000,000). This came as a big shock, because the country hardly saw any cases in the first wave. Back then, thanks to an early lockdown and border closures, Slovakia performed the best in Europe, with the fewest cases and a lowest number of deaths. Clearly, easing over the summer and reopening the schools took its toll.

The country faced a familiar trade-off: either a lockdown, with punitive costs to an already hard-hit economy, or continued spike in cases, with a collapse of the healthcare system. After the first wave, Slovakia's GDP fell by approx. 10%. The Minister of Economy wanted to avoid another full lockdown. But the risks for the healthcare system - suffering from under-investment in past decades - are great, even though Slovakia has 3 times as many beds per capita then the UK and sufficient supplies (Slovakia has produced the most ventilators per capita).

A particularly sobering example is that of the neighbouring Czech Republic (Slovakia's closest neighbour and a former partner in Czechoslovakia, dissolved 30 years ago), which is now Europe's second worst hit country (1,053 per 1,000,000): [Its healthcare effectively collapsed, as non-covid care is not provided anymore and volunteers are stepping in to plug the holes for over 15,000 medical professionals sick.](#)

Figure 1. UK and Slovakia's road through the pandemic



Box 1. Slovakia in a nutshell

Slovakia has a population of 5.4 million. It is a highly developed economy (32,000 int\$. per capita) in Central Europe, a member of the EU and Eurozone (since 2004 and 2009, respectively). Average life expectancy is 78 years old, health spending is 2,300 \$ per capita (half of the UK spending). The state was created in 1993, following the dissolution of Czechoslovakia.

1. LOGISTICS AND TESTING SITES

The Slovakian Cabinet decided to rapidly organise whole population testing ('Operation Common Responsibility') to achieve two concurring aims:

- Avoid spread to save lives - flatten the curve to ensure that a strengthened T&T can cope and a hospital crisis is averted,
- Avoid further strict lockdown to save the economy.

Under-10s and over 65's were excluded. Participation was not obligatory: citizens who did not wish to participate could instead opt to self-isolate for 10 days, but would not benefit from the early release from lockdown (see below).

Communications

The government highlighted the importance of testing to avoid the 'Czech' scenario of an overwhelmed healthcare system. The rationale was to 'get positives out of the circulation' to make sure that the rest of the country can get back to a more normal life, whilst keeping social distancing and other rules. The key narrative was that of 'fighting back' and 'active public resistance' to the virus.

Box 2. Government communications

All information about mass testing is available on the government COVID-19 website (korona.gov.sk/celoplosne-testovanie-na-covid-19), as well as on a special website dedicated to the mass testing (somzodpovedny.sk), with a live count of progress. This included clear advice on how to get tested (including videos) and what to do when testing positive or negative. The Slovak MoD repeatedly texted all citizens to inform them about the testing and the need for HCP or volunteers.

The screenshot shows the website korona.gov.sk with a search bar and navigation menu. The main heading is "Celoplošné testovanie na COVID-19". Below it, there is a section "O TESTOVANÍ" with text explaining the testing process and a video player showing a test result. A section "Čo je antigénový test na COVID-19?" is also visible. At the bottom, there is a section "Čo MUŠITE VEDIET?" with a list of bullet points.

korona.gov.sk

Vyhľadajte ÚVZ obsahujúca izoz. **Potvrdenia o výsledkoch od lekára z povinnosti preukazovať sa negatívnym antigénovým alebo RT-PCR testom počas zákazu vychádzania. Predtajte si výsledky ÚVZ ohľadne výstupu osôb do priestorov verejnosti a zamestnávateľa (PDF 433 kB).**

Domov > Celoplošné testovanie na COVID-19

Celoplošné testovanie na COVID-19

O TESTOVANÍ

Celoplošné testovanie obyvateľov Slovenska sa uskutoční od 31. októbra do 1. novembra 2020 a od 8. až do 9. novembra 2020. Celoplošné testovanie pomôže zachytiť skryté ohniská nákazy a spomaliť šírenie vírusu, vďaka čomu získajú naši lekári čas a priestor na to, aby sa postarali o chorých. Tým, že sa pridáme otestovať, zistíme nielen svoj vlastný stav, ale teda pomôžeme ochrániť aj svojich blízkych a ľudí v širšom okolí.

Čo je antigénový test na COVID-19?

VÝSLEDOK DO 15 MINÚT

Čo MUŠITE VEDIET?

- Testovanie bude dobrovoľné a budú sa na ňom môcť zúčastniť všetci od desať rokov.
- Neodporúča sa len tým, ktorí majú nad 85 rokov a trávajú väčšiu časť vo svojich domovoch, prípadne vďačným obyvateľom so zníženou mobilitou či zdravotnými obmedzeniami, ktorí sa prirodzene vyhýbajú sociálnemu kontaktu.
- Testovania sa nezúčastnia klienti Domovov sociálnych služieb a hospitalizovaní pacienti v nemocniciach, ktorým bude testovanie vykonané priamo vo svojich zariadeniach.
- Testovanie prebehne v dvoch vikendoch po sebe. Odporúča sa absolvovať obe testovania. Medzi testovaniami – minimálne dva týždne – sa nikto nič nedeje a nie je potrebné dodržiavať žiadne opatrenia.

The screenshot shows the website somzodpovedny.sk with a navigation menu and a large banner. The banner features the text "Spoločná zodpovednosť" and "celoplošné testovanie". Below the banner, there is a section "Zdravotníci, ktorí máte záujem pomôcť" with a button "Informácie TU". At the bottom, there is a live count of tests: 2581113 otestovaných and 25850 infekčných.

somzodpovedny
sk

Pol hodina. Väčšie časť môže zachrániť (nielen) Váš život!
31. októbra – 1. novembra 2020 prebieha prvý celoplošné testovanie

HOME Aktuálne informácie Hľadame zdravotníkov Najčastejšie otázky Odborné miesta Pre firmy

Spoločná zodpovednosť

celoplošné testovanie

Zdravotníci, ktorí máte záujem pomôcť **Informácie TU**

V sobotu sa pretestovalo:

2581113 **25850**
otestovaných infekčných

Logistics

The Slovak government took the decision on the 13th of October to conduct the whole population testing, under the leadership of the army - the largest such operation in the country's history. Thirteen million lateral flow tests have been ordered and expedited from South Korea (costing €50M). The operation was ready in 10 days but it was then decided that only the pilot sites will be tested first.

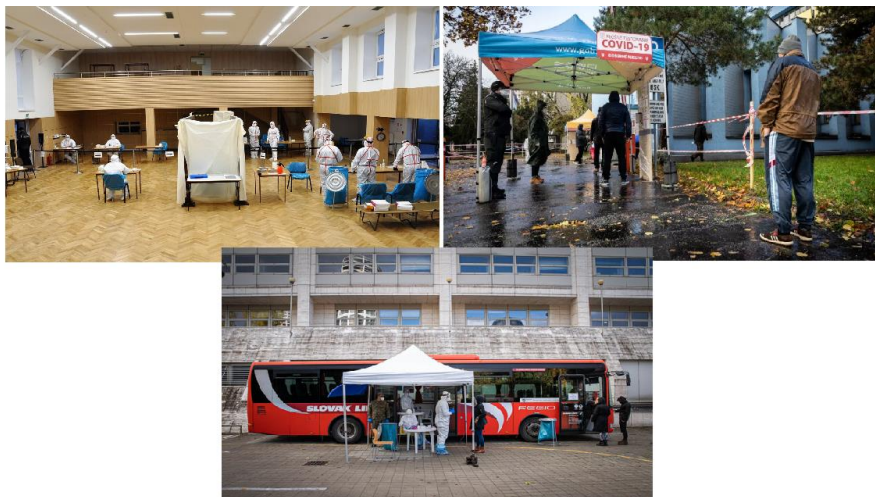
Box 3. Lateral flow tests

Slovakia used Korean lateral flow tests with 70% sensitivity, meaning 3 out of 10 positives will go undetected (but should be less infectious). A [recent study of these tests from the Czech Republic also found that they detect 50% of asymptomatic cases and virtually no false positives.](#) It is likely that a validation study may be conducted in Slovakia in the next couple of days by PCR test producers to confirm these findings.

Given not all positives will be caught, the government recommends to all negatives to continue to exercise caution until the second wave of testing (meaning wearing face masks indoor and outdoors and complying with the rule of six).

The military divided the country into 16 regional headquarters and created approximately 5,000 testing spots, with a single commanding officer. Each spot roughly corresponds to a municipality. The army was in charge of planning, distributing the tests, PPE and certificates across the country and disposing of medical garbage. It cooperated with municipalities to create testing teams for each testing site, formed of administrative staff (2 people), healthcare professionals (2+), security (1 policeman) and a commanding officer (military). The total organisation involved 40,000 people, of which 6,000 soldiers, 15,000 HCP and the rest were volunteers.

Figure 2. Different types of testing sites



Municipalities had 10 days to prepare the testing sites, **using their usual election model.** Testing was to take place at typical polling stations (schools, museums, council offices), plus a couple of additional locations. Municipalities had to prepare the buildings or outside locations (eg. buying tents), get volunteers for administrative roles

and inform their citizens (eg. leaflets, websites, local broadcast). They had to cover the upfront costs, though these can later be claimed back from the government.

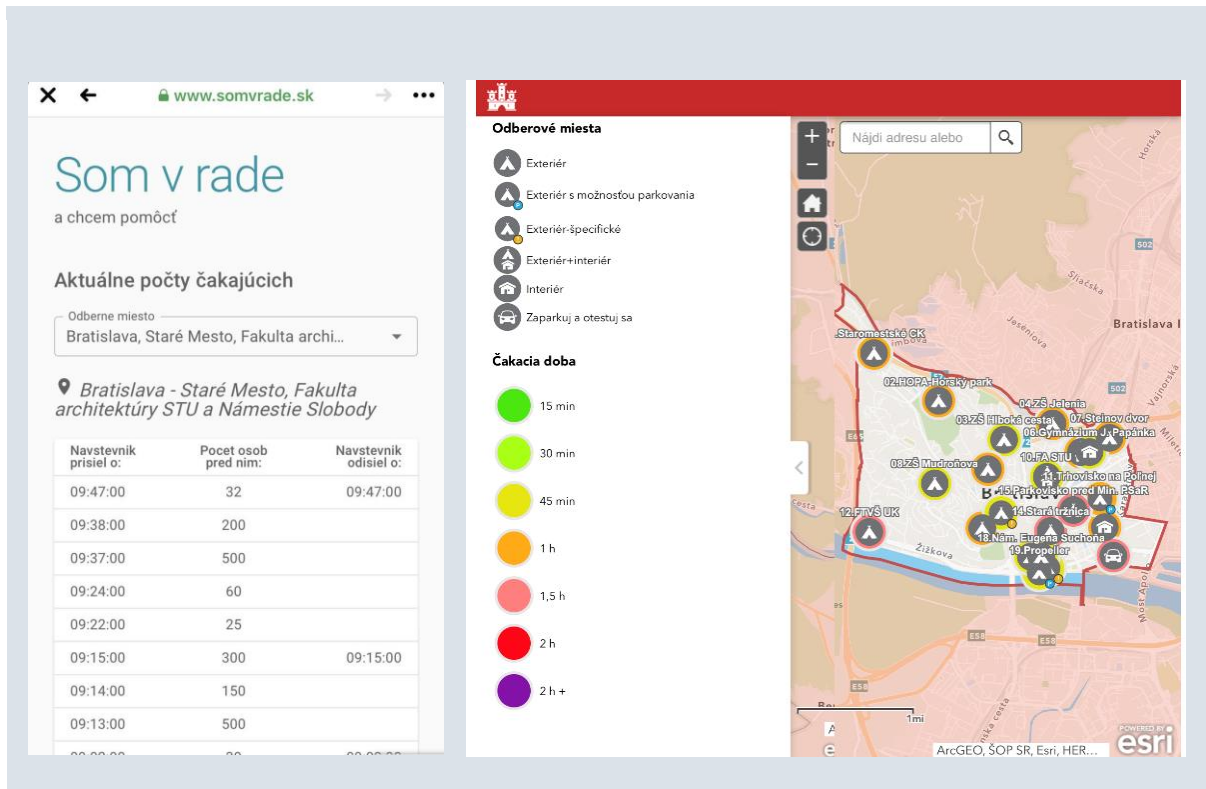
No booking systems were put in place, but municipalities were told to use alphabetical order (e.g. A-L on day 1, L-Z on day 2) or street or house registration numbers. To reduce waiting times, some municipalities installed cameras by the testing spots and live streamed on their websites, whilst others reported waiting times on their website or via local broadcasting. Some municipalities developed apps, showing their testing sites, their type (indoor, outdoor, drive-in) and waiting times (varying from 15 min to up to 2 hours). Two web-solutions crowdsourcing monitoring of testing times were developed by members of the public (somvrade.sk and odbernemiesta.sk).

The government organised mass testing of key infrastructure over the same weekend or 1-2 days before. All hospitals, care homes (staff and patients) and key workers, including their households, were tested in special sites ahead of the general testing. Big employers (10,000+ staff) were also allowed to organise testing of their staff, including their households, in close cooperation with the government which provided all the suppliers.

Box 4. Apps monitoring waiting times

Note that there was no official government-funded booking or waiting time digital solution. Some examples of popular apps:

- **Som v rade (I'm in the queue)** enabled people to let others know how long they've been waiting at different sites.
- The old town of Bratislava displayed on its app a map of all testing sites, their type (inside, outside, drive-in, etc.) and the average waiting times, with live updates pointing people towards sites with fewest people.



How testing spots worked

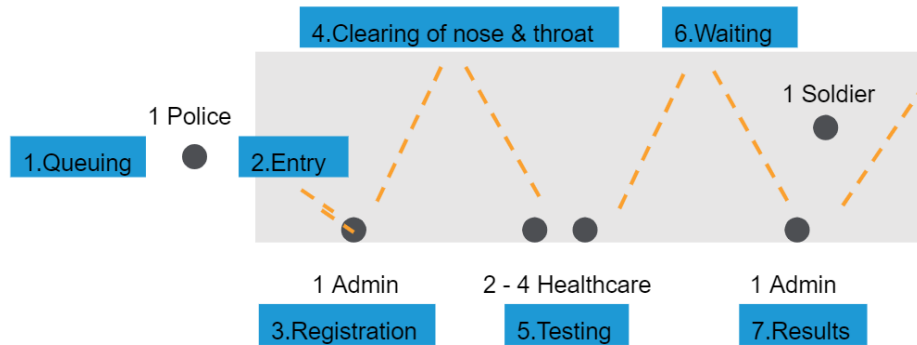
Each site usually has multiple testing spots. Each spot aims to conduct roughly 800-1,000 tests in total (Day 1+ Day 2), averaging 35 tests per hour.

Box 5. Example numbers for a municipality in Bratislava region

The municipality has approx. 25,000 inhabitants, of whom 17,000 are eligible for testing (between 10-65 years old). However, they expected that up to 20,000 would turn up, given that some people don't have permanent residence in the area. The municipality created 18 testing spots at 7 testing sites, aiming to process 800 people per testing spot, with an average of 35 people tested per hour. The average wait time (from arrival at the queue to exit) was 1 hour. The estimated cost for the municipality was €40,000, so approximately €2 per tested person. The mayor was informed 10 days in advance, though the organisation could be completed in a week if needed, but two weeks would be ideal.

Every testing spot has the following parts: 1. Queue (socially distanced), 2. Entry (manned by a police officer), 3. Registration (manned by an admin staff/volunteer), 4. Clearing of nose and throat, 5. Testing (manned by 1 HCP conducting the swab ('Category A') and 1 HCP doing the test ('Category B or C'), 6. Waiting (socially distanced), 8. Results (an admin staff/volunteer giving certificates), followed by an exit.

Figures 3 and 4. Process map of testing spot



After queuing in a socially distanced way, the police officer calls the person in. The person gives their ID to the admin staff for registration (note: All citizens older than 15 years have a national ID card. Those younger than 15 years old brought their national health insurance card).



The registration staff hands the person two raffle tickets. The person then moves onto an area dedicated for clearing their nose and throat, to maximise test effectiveness. Testing staff then call them for a swab, conducted by Category ‘A’ healthcare professionals. They then collect a raffle ticket, and the other HCP in charge of testing notes the number down on the test. After the swab, the person waits for 15-20 min in a designated, socially distanced, waiting area. Completed tests are brought to the second admin staff who calls the number. The person comes forward and gives their ID for the staff to fill in their certificate where they indicate the test result. If negative, the person can leave. If positive, they receive additional information on what to do.

Box 6. Healthcare professionals

In Slovakia, only some HCP are authorised to perform this procedure by law. Following some regulation changes, the split was as follows:

- **Swabbing - Category A:** Doctor, nurse or GP nurse, paramedic. In addition, the swab can also be performed by a midwife, medical laboratory technician, medical students (5th-6th year), nursing students (2nd-3rd year), emergency care (2nd-3rd year)
- **Assistance - Category B & C:** Dentist, pharmacist, physiotherapist, public health practitioner, nutritional therapist, dental hygienist, radiological technician, dental technician, medical device technician, optometrist, pharmaceutical laboratory technician, masseur, ophthalmic optician, orthopedic technician, dental assistant, paramedic, speech therapist, psychologist, medical teacher and laboratory diagnostician.

Getting enough HCPs was the biggest challenge. Initially, the commanding officer of each site called only local doctors. Only later did the Slovak DH provide data on all Slovak HCPs that the army contacted systematically (100,000+ calls made). However, by Thursday, 2 days before mass testing, only 30% of testing spots had enough registered HCPs. The participation was voluntary, but the remuneration was to be €7 per hour plus €20 for every infectious case. At the last minute, an extra €500 was promised to those HCPs who took part on both days. For example, this means that a HCP in an area with 2% prevalence would earn approximately €900. For context, the average monthly salary of a doctor is €2,400 and of a nurse €850. This extra incentive helped to recruit 100%+ HCPs in time.

2. INCENTIVES AND ENFORCEMENT

Incentive structure

The Slovak government opted for a very effective carrot-and-stick strategy. It instituted a strict curfew a week before the testing, meaning that people could only leave their homes to go to work or to shop for essentials (Note: It was also forbidden to travel outside one's district). The testing was said to be 'voluntary' but with the following consequences:

- Those who did not get a test would be subject to continued curfew until the second round of testing. This includes vulnerable people (plus above 65 years old) who are not advised to get tested.
- Those who tested negative would be able to go to work, shops and outside for exercise but within existing guidelines (ie. face masks indoors and outdoors,

the rule of 6, covid-secure restaurants and shops with 1 person per 15m², ban of assembly, etc.).

- Those who tested positive - and their household - would have to self-isolate for 10 days.

This effectively meant that most people had to get tested in order to be able to work (36% of the population work in manufacturing), otherwise they would have to take annual leave or unpaid leave, if unable to work from home. Positive cases, on the other hand, can request sick pay.

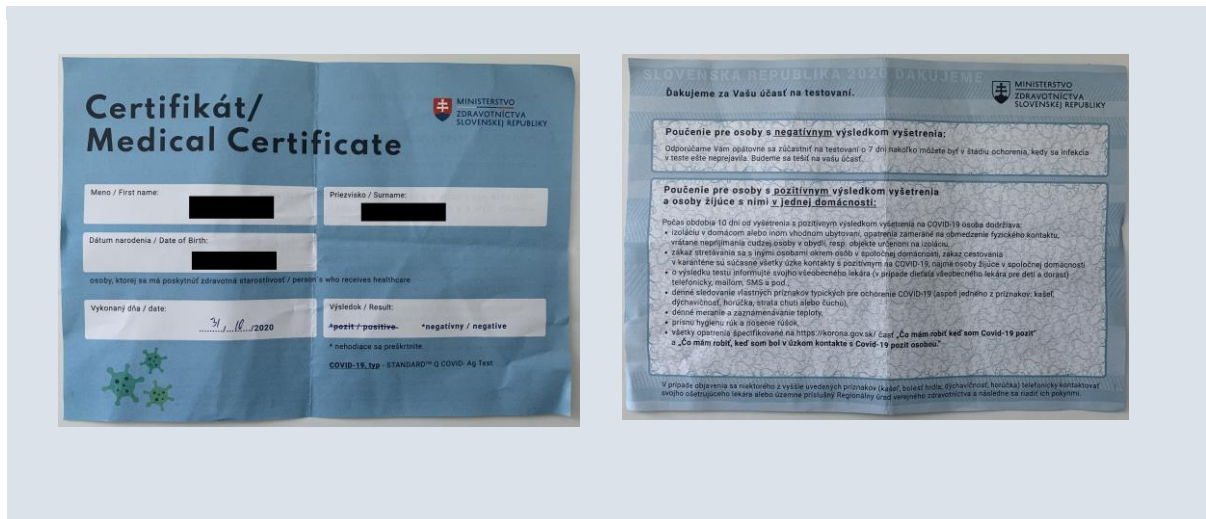
To validate test outcomes, the government issued paper certificates, printed by the state-owned mint, using banknote-style protective measures (eg. a watermark). It issued new regulations, enabling shops and employers to request and check that people are carrying their certificates, which can be also required in spot checks by police. Exemptions include people who have had COVID within the last 3 months (though, they need to carry a confirmation from their GP that is less than 90 days old).

Countering fraud

- **Getting tested for someone else:** Not possible - or at least more difficult - because national photo IDs were used as identifiers.
- **Double testing:** After Day 1, there were reportedly 24 cases of positive people getting repeatedly tested using different sites, because they did not believe the test. Each time they received a positive result. These cases were picked up, presumably at the end of the day, when all data on positives were collated. To limit this, police announced additional fines (the normal rate for breaking self-isolation is €1,000 on the spot or €1,700 later. Note that the average monthly wage is €1,000), and potential prosecution for the crime of endangering public health by spreading an infectious disease.
- **Falsification of certificates:** Falsification should be limited, due to some protective features used by the issuer, the national mint company. There were a few reported cases of people trying to buy blank certificates; additionally small numbers have been 'lost' during the deployment.

Box 7. Certificates

A paper certificate template is filled in with the name, date of birth and date of testing. The test result is indicated by crossing the outcome - positive or negative - not applicable. Overleaf is information on what to do for both negative and positive cases. There is no deadline stated for when the certificate becomes invalid, as this is conditional on the future government strategy (eg. 2nd round of testing).



Enforcement

It is yet to be seen in practice the extent to which certificates will be requested in different venues. In theory, they can be requested by shops, employers and police during a spot check. We understand that the government is not planning extensive enforcement activity because turnout has been high and the prevalence is very low. The key enforcement agents have been employers, who communicated that they will require the certificate in order for people to go back to work on Monday. The fine for breaking the curfew - i.e. being outside without a valid negative certificate - is €1,000 on the spot, or €1,700 later.

4. RESULTS OF WHOLE COUNTRY TESTING

Pilot of mass testing

10 days after the initial decision, a pilot was organised in the 4 districts with significant outbreaks in Northern Slovakia. The pilot testing was conducted over three days (Friday - Sunday), with the testing sites open between 8am - 10 pm. Incentives were similar: certificates of negative test results were required by employers and retail venues. However, a strong motivation was for these regions with outbreaks to improve their reputation, as well as for individuals to know whether they were positive and could be endangering their family. The eligible population (10-65 years old) was 155,000 out of approximately 180,000 inhabitants. The turnout was 91% with 140,000 tested, of whom 5,500 were positives (4%). In some high prevalence areas, as much as 8% of people tested were positive. The pilots indicated that test sites should be opened earlier in the morning to reduce waiting times.

Wave 1 of whole country testing (30/10 - 01/11)

The testing was scheduled following a week of strict curfew for the weekend of 30th October - 1st November (normally a public holiday 'All Saints' weekend, when people travel to visit graves of their family). Across the country, 4,800 testing spots were opened (98% of planned sites) from 7 am till 10 pm, with just 2 short breaks (lunch and evening). All ministers and many MPs volunteered on testing sites.

Day 1 and Day 2

By COP of Day 1, 2.6M people had been tested, with an average prevalence of 1%. This means 26,000 new cases had been discovered. The day felt similar to an election day, with people waiting patiently and no major incidents reported.

By COP of Day 2, another 1M had been tested, again, with an average prevalence of 1%. The day was much quieter, with shorter queues and, again, no major incidents reported.

Final results

In 2 days, Slovakia tested 3.6mil out of approximately 3.7mil eligible people (10-65 years old), with the average prevalence of 1%, hence identifying 38,000 new positive cases. Compared to the standard Test & Trace, this means Slovakia identified twice as many as the totality of its currently recorded active cases (current active cases: 39,000) or 15x its daily average. **In the four pilot districts, the week-on-week prevalence has fallen by on average 56%** (from circa 4% to 2% of the population). This method has also helped Slovakia identify a couple of new outbreak areas.

5. NEXT STEPS AND LESSONS LEARNT

Some key issues and questions emerged as a result of whole country testing:

- **Enforcing self-isolation of positives:** Personal information of positive cases - and their households - is collated and shared with the regional Test & Trace programme, as well as the police. The two will coordinate to monitor compliance with self-isolation of each case. No additional support for positives has been announced so far, other than the standard sick pay and the offer of accommodation for self-isolation.
- **No need for official tracing:** At 90%+ compliance, and with re-testing of key areas in a week's time, there is no real need for official tracing. This is because most contacts have been tested, and may be re-tested again, and household contacts need to self-isolate. However, the PM asked the index cases to inform their contacts nevertheless.
- **Minimise misbehaviour of false negatives:** At 70% specificity, circa 3 in 10 positives were likely not picked up. However, these should be the less infectious cases. All negatives are told to continue to exercise caution and to follow

current NPIs (eg. facemasks indoors and outdoors, the rule of 6, working from home if possible, ban of assembly, etc.).

Following the successful Wave 1 of testing, the government announced the following measures:

- **Reduced Wave 2 whole country testing:** Only 54% of population will be re-tested from the so-called 'red-region' with prevalence above 0.7%. So-called 'green regions' will not be re-tested, with people having to comply with current NPIs. This means Slovakia effectively has a new tiered system, with travel forbidden across tiers.

Further measures will be applied after Wave 2 (from the 9th of November) of whole country testing:

- **Mass testing of high-prevalence districts:** Some districts from the 'green zone' with high prevalence may be re-tested.
- **Bi-weekly key worker testing:** All hospital and care home staff will be tested every two weeks, including incoming patients and symptomatic patients, as well as some key workers (eg. police, strategic businesses).
- **Walk-in testing station:** Walk-in lateral flow testing stations will be installed in all districts for everyone to use at their leisure.
- **Securing borders:** Some border crossings will be closed and on the remaining open ones, arrivals will have to either provide a negative PCR result not older than 72 hours or get tested on the spot, using lateral flow tests.

Issues encountered and lessons learned

- **Develop effective communication:** Ensure all highest state officials support the project publicly. Fight disinformation (for instance, myths about testing serving for 'inserting chips' in people).
- **Motivate HCP:** Following some issues with reaching HCPs, initially only 60% of sites had enough HCPs signed up. Only after a new significant bonus of €500 for serving both days was announced, did they reach 100% HCP capacity needed.
- **Coordination between commanding officers and municipalities:** The communication at some sites was a bit strained, leading to doubling up between officers and municipalities in their efforts to get HCPs signed up.
- **Give the testing team a head-start:** On Day 1, some testing sites reopened an hour or more later due to some last minute issues with preparation, including lack of some essential materials, site preparation, length of testing of the team, etc. so that the scheduled 1 hour for preparation was not sufficient.
- **Expect crowds early on:** Most people got tested on Day 1, with many coming in the morning, queuing even 1-2 hours before the start, to beat the crowds. This led to high waiting times in the morning on Day 1 compared to Day 2 when people were getting tested almost immediately on their arrival.

- **Avoid drive-ins:** Drive-ins were not tested in the pilot but some big cities wanted to provide a higher standard of care so they introduced drive-ins. This led to kilometers-long queues and absurdly long wait times (up to 25h!), so many drive-ins were closed or did not reopen on Day 2.
- **Comfort during testing:** Municipalities had no time to buy movable bathrooms. It could be advisable to provide spare chairs for the vulnerable or elderly.

Box 8. How BI could improve mass testing

- **Use empowering messaging:** Motivate people by creating a spirit of national resistance to the virus, highlighting the ability to make a positive action and contribute to the national effort to save lives and livelihoods. Use 'save Christmas' messaging.
- **Use powerful and trusted messengers:** Enlist the royal family, the cabinet, the parliament, and local government as supporters of the project. Reach out to the community to encourage them to get tested through trusted institutions and leaders (e.g. a personalised letter sent from NHS, local GP, or a community or faith leader).
- **Package of support for positive cases:** When leaving the testing site, positive cases could receive a 'care package' with information on support offered by local council (eg. linking people up with local volunteers, giving them priority delivery slots for supermarkets, or providing temporary housing to isolate outside of their home if they live with vulnerable people).
- **Non-financial incentives for volunteers:** Offer additional benefits to motivate volunteers to help with organisation, such as free parking, free public transport pass, free museum and gallery entry, etc.
- **Wristbands to improve monitoring:** Along with certificates, distribute paper wristbands to all people who tested negative for easier recognition of whether they can enter venues.
- **Provide additional and rewards for testing:** for example, through lotteries and partnerships with local businesses.
- Offer **travel provision** or **subsidise the cost** for people who live far away from a test site or are currently in receipt of financial support.