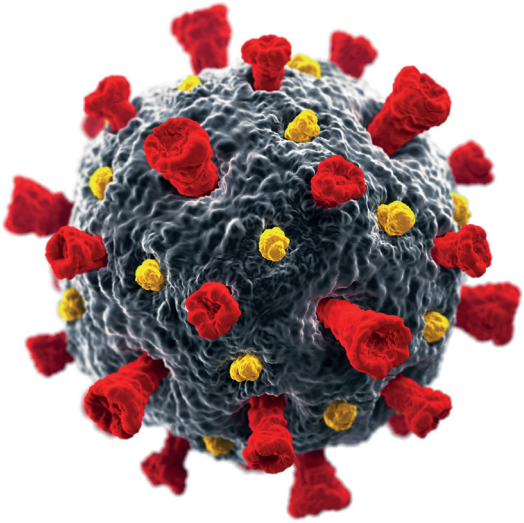
DEPARTMENT OF SCIENCE, TECHNOLOGY,
ENGINEERING AND PUBLIC POLICY

COVID-19: Health Systems Policies and Key Lessons from Successful States



2

STEaPP Working Paper Series

COVID-19: Health Systems Policies and Key Lessons from Successful States

Abstract:
Pandemic preparedness is a concept that has demanded the world's attention in the wake of COVID-19, an outbreak that has clearly indicated that no health system is fully prepared to face a pandemic. The novelty of this virus has ignited a range of responses in countries across the world, sparking debate around those that have proved to be the most effective in mitigating the outbreak. This work aims to identify these responses, focusing on health systems policies, by analyzing the actions of eight countries deemed as having performed highly effectively within their respective continents. The analysis incorporates available data from Oxford University's *COVID-19 Government Response Tracker* with relevant literature review. The findings indicate that swift, decisive action was taken by these states to implement comprehensive contact tracing, testing of symptomatic patients, public information campaigns and strict public health guidelines including mandatory mask wearing. Despite certain context-specific variations, it was found that the overarching commonality across all nations has been transparency and public information-sharing, which is likely to have increased compliance with public health guidelines. The authors hope that these findings contribute to the global conversation about aspects of health systems that should be strengthened in preparation for future – inevitable – pandemics.

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Table of contents

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About the STEaPP Working Paper Series

The STEaPP Working Paper series aims to publish emerging analysis and thought with the aim of improving links between research and policy; We will make available a diversity of outputs in different formats including pre-published versions of journal articles, drafts of longer academic or policy outputs, multi-media content and policy reports; We accept submissions from STEaPP and UCL staff, students, honorary fellows and relevant from other academic and policy colleagues.

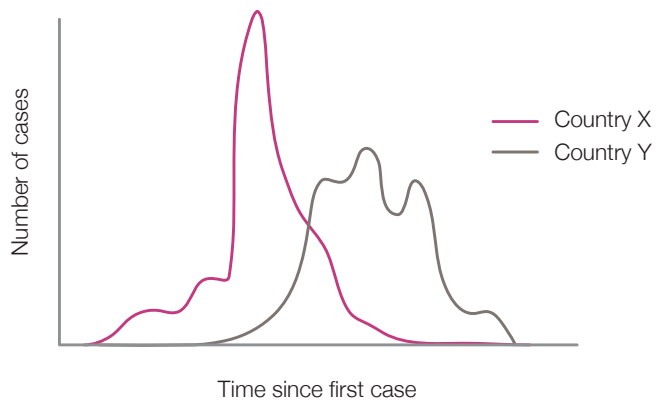
Background

COVID-19 — or coronavirus disease 2019 — is caused by a betacoronavirus named SARS-CoV-2, which affects the lower respiratory tract and can cause severe pneumonia in humans (Sohrabi *et al*., 2020). SARS-CoV-2 is a zoonotic disease (Lai *et al*., 2020) that spreads from person-to-person primarily through droplets transmitted via coughing or sneezing (Rothan & Byrareddy, 2020). The most common symptoms are fever, dry cough and fatigue, while less common symptoms can include aches, sore throat, diarrhea, headache, and loss of taste or smell (WHO, n.d.). The majority of reported cases have been asymptotic or mild, and the symptoms appear approximately 5 days after exposure to the virus (Li *et al*., 2020) making the tracking and isolation of the cases fairly difficult. While the fatality rate is estimated to be 1.4% — lower than SARS and MERS but higher than swine flu (Worldometer, 2020b) — the risk is much higher for the elderly and those with underlying conditions.

COVID-19 spread around the globe rapidly following the reporting of the emergence of the disease in Wuhan, Hubei Province of China in December 2019 (WHO, 2020a). The first case outside China was confirmed in Thailand in mid-January (WHO, 2020b), followed by 22 more countries in Asia, Europe, and North America, who reported their first cases by the end of January (Kantis, Kiernan & Bardi, 2020). By the end of February, number of cases outside China was higher than those within China (Jones *et al*., 2020) after surging numbers of new cases due to the outbreaks in South Korea and Italy followed by Iran and France. The main factor for the initial global spread of Covid-19 is proposed to be the air traffic from China showing a strong correlation between passenger volumes and number of cases in destination countries (Lau *et al*., 2020). However, many other factors, such as the implemented control measures, have influenced the further spread of the virus, as well as the air traffic from the secondary epicenters of COVID-19 (e.g. Italy and Iran).

Accordingly, every country has reached the peak of the outbreak at different times. Although the "shape" and "height" of the peak might be different depending on the characteristics of the country (Figure 1) and how the outbreak is handled, every country will have a 'peak'(s) which represents the slowing of new active cases, signifying that the outbreak is under control and the strain on health systems will not worsen any further. As the primary epicenter of the outbreak, China was first to reach a peak mid-February, while countries from Europe, North America and the rest of Asia had their peaks around April and May (Roser *et al*., 2020). On the other hand, the number of daily deaths is still rising fast in South American countries (BBC, 2020) that were hit later due to being relatively less connected with China and the rest of the world. In this context, Africa is one of the last continents to be affected (Fox, 2020) and therefore the impact of the virus and the countries' responses to COVID-19 can't yet be accurately assessed.

Figure 1: Representative graph showing two countries' peaks with different "shape" and "height"



Rationale

The novelty of the COVID-19 pandemic has led to the implementation of a range of different, "unprecedented measures" by countries in an attempt to control and mitigate the virus. These measures include national lockdowns, quarantine, social distancing rules, contact tracing plans, and expansion of testing capabilities, among others. Because of the broad variation in response and outcome for countries around the world, academics and policymakers have begun to engage in rigorous debate and enquiry into the approaches that have been the most effective against the outbreak. The aim of this work is to contribute to this global conversation by identifying these approaches, with a specific focus on health systems policies. This is achieved through analysis of the health systems policy actions of eight countries that performed 'effectively' in their respective continents during the first wave of the COVID-19 outbreak, according to the selection criteria for this study.

It is important to note that this study took place in May 2020, and therefore intends to capture key considerations pertaining to the initial spread of the virus, from January-May 2020. Events that occurred subsequent to this time period should be subject to further study.

Methods

Before this analysis can take place, the measure of what defines an 'effective' response to the COVID-19 outbreak must be underlined. According to a fair amount of reporting done on the success of different countries' approaches, a prevalent measure used appears to be the total number of deaths relative to the population size of countries that have passed the 'peak' of the initial spread of the virus; in other words, countries impacted by COVID-19 that were able to maintain a low death rate throughout the height of the outbreak are those that are perceived to have responded the most effectively (Dewan, Pettersson & Croker, 2020). Another prevalent measure is the number of reported cases and the way in which countries were able to 'flatten the curve', yet this may not prove to be the most accurate benchmark due to inefficiencies around testing in many countries.

Using the total deaths measure, and acknowledging that not all COVID-19-related deaths are reported, some examples of countries (those that have 'passed the peak' of the initial spread according to the rise of cases) that performed highly effectively include: Vietnam, Taiwan, Hong Kong, Jordan, Australia and New Zealand. Outside of Asia and Australasia, countries in Europe that performed the most successfully include the Czech Republic and Greece. However, it is clear from the table below that European countries performed less effectively in general, relative to Asian and Australasian nations.

Table 1: Total number of COVID-19 deaths relative to population size for selected countries

Country	Total deaths	Population size (millions)	Deaths per million
Vietnam	0	95.54	0
Taiwan	7	23.6	0.29
Hong Kong	4	7.49	0.53
Jordan	9	9.96	0.88
Australia	102	24.99	4.08
New Zealand	22	4.89	4.5
Czech Republic	317	10.63	29.83
Greece	173	10.73	16.13

Sources: Statista (Statista, 2020a, 2019) and Our World in Data (Our World in Data, 2020). Last updated: 28th May 2020

The data explored for this study pertain specifically to 'health systems policies', which are categorised by Oxford's *COVID-19 Government Response Tracker* (Hale et al., 2020) according to the following five indicators:

- Public information campaigns
- Testing policy
- Contact tracing
- Emergency investment in healthcare
- Investment in vaccines

The authors conduct quantitative analysis of the data between January 1st and May 28th for the first three indicators, displaying this data according to a timeline of the outbreak for each country, which specifically features the date of the first reported case and the peak(s) in active cases (please see *Annex* for more details). Less focus is placed on indicator (4) due to lack of currently available data and indicator (5) is disregarded altogether due to no vaccine having been used in a national response to date.

The colour scheme used in these charts represents the degree to which each health system policy has been implemented; information on the meaning of each colour is featured in the legend below. Findings from the quantitative analysis are supported through a literature review on each country's response.

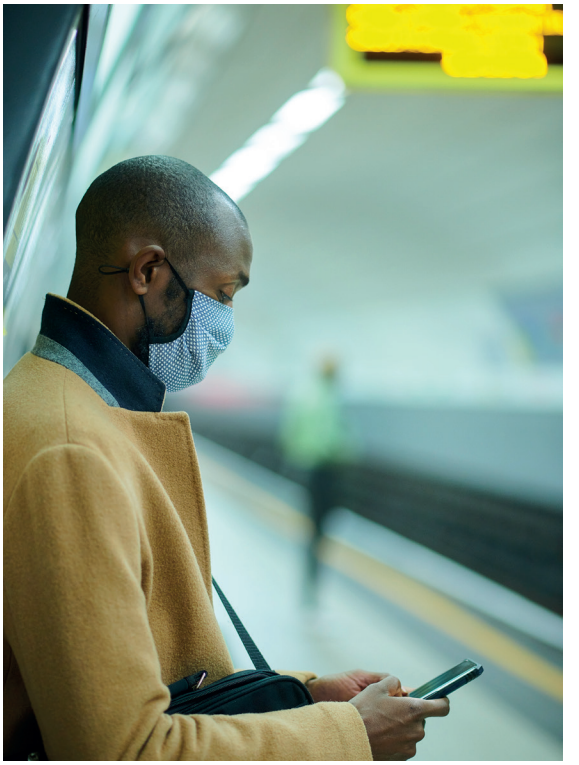
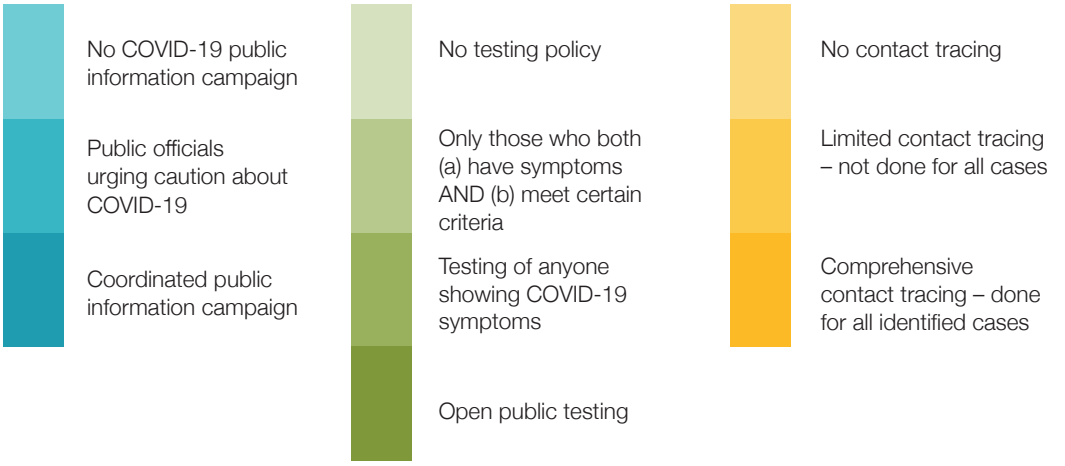
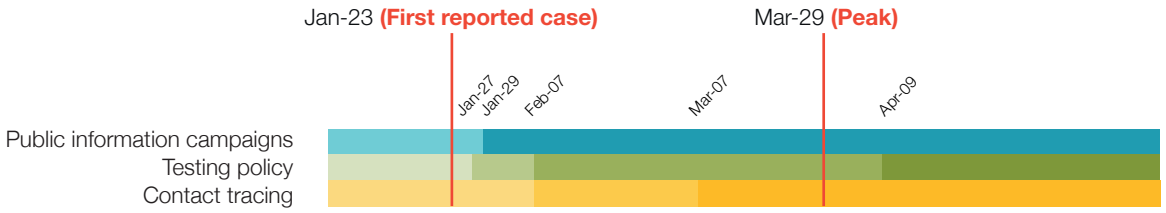


Figure 2. colour-coded system employed on pages 7-14 to indicate the degree to which each health system policy has been implemented



Findings

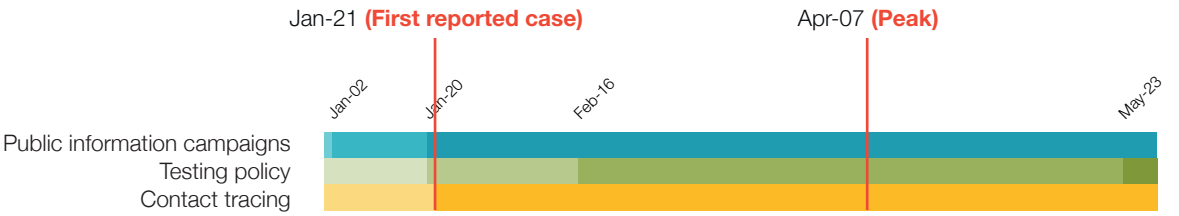


Vietnam

Vietnam is a southeast Asian nation that shares a border and "massive volume of trade with China" (Nguyen & Vu, 2020). Despite being predisposed to a higher level of risk for these reasons, Vietnam is viewed as a model nation for its response to the COVID-19 outbreak, having suffered zero virus-related deaths to date. This success has been described as the result of very early and decisive action, and a "three-pronged government strategy" (Tran & Klingler-Vidra, 2020) led by a national steering committee for COVID-19 control, which includes: rigorous testing, targeted lockdowns, and constant communications (Tran & Klingler-Vidra, 2020). Focusing on policies relating to health systems, testing and communications, these measures were adopted around the time of the first reported case on January 23rd. According to the *Government Response Tracker*, testing by epidemic control teams of symptomatic patients that meet specific criteria was initiated on January 27th, and quickly scaled up to all symptomatic patients on February 7th. Testing was further expanded to asymptomatic individuals on April 9th, approximately one and a half weeks after the peak in active cases on March 29th. Fair access to testing across the country was ensured through the establishment of "testing stations" (Tran & Klingler-Vidra, 2020), that were set up across different cities and open to all citizens (Tran & Klingler-Vidra, 2020). Furthermore, affordable test kits manufactured in Vietnam had been developed in early March, which "helped the government's intensive testing strategy" (Tran & Klingler-Vidra, 2020). Public communications allegedly began in early January, with the government making very clear the severity of the disease. A comprehensive public awareness campaign was officially launched, according to the *Government Response Tracker*, on January 29th. Due to the complex system of different provinces, districts, and communes, the government had to be "creative in its communication methods" (Tran & Klingler-Vidra, 2020), using regular text messages to "distribute updates on symptoms and protection measures" (Zhang & Sy, 2020).This was paired with the use of visual communication, such as posters, to further guide citizens' actions. Vietnam also focused on "aggressive contact tracing" (Le, 2020) and isolation measures. The *Government Response Tracker* shows that limited contact tracing was initiated on February 7th, expanding to all identified cases on March 7th. Face masks and other protective measures have been in place for the duration of the pandemic and will remain in place for the foreseeable future. Overall, Vietnam's response allowed the health system "time to treat each patient, and in so doing, keep the number of COVID-19 deaths at zero" (Tran & Klingler-Vidra, 2020), serving as an "example for other countries and territories with limited resources" (Vu & Tran, 2020).

"Overall, Vietnam's response allowed the health system 'time to treat each patient, and in so doing, keep the number of COVID-19 deaths at zero.'"

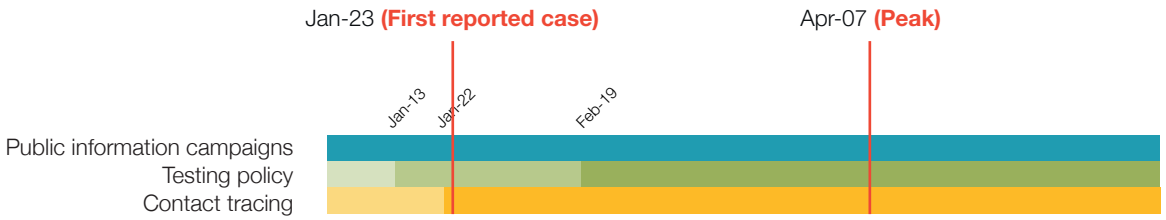
Findings (cont'd)



Taiwan

Taiwan's response to coronavirus has been recognised as "among the best globally" (Griffiths, 2020). Despite its classification as "one of the most at-risk areas outside of mainland China" (Griffiths, 2020) because of its close proximity and physical connectivity, Taiwan managed to maintain an impressively low death rate. Among the reasons for this success include the rapidity and transparency (Griffiths, 2020) of their response, which in large part can be attributed to their previous experience with the 2003 SARS outbreak. In 2004, the government of Taiwan established a disaster management entity, the *National Health Command Center (NHCC)*, that "focuses on large-outbreak response" (Wang, Ng & Brook, 2020), including a "Central Epidemic Command Center (CECC)" (Wang, Ng & Brook, 2020); the existence of this central command system allowed for highly responsive and effective policy implementation. From the day before Taiwan's first reported case on January 21st, the CECC rapidly began to introduce a series of approximately 124 policy actions (Wang, Ng & Brook, 2020), which included a rigorous testing policy and a highly sophisticated contact tracing system, both introduced around the onset of the first case. Public information campaigns and information sharing with the public, which according to the *Government Response Tracker* began as early as January 2nd (approximately 3 weeks before the first reported case) were also crucial for the enhancement of public cooperation with public health guidelines without lockdown measures ever having to be implemented. The CECC also "took control of face mask distribution from the private sector" (Yip, 2020) on the 31st January to ensure fair pricing and distribution through "setting the price of masks and using government funds and military personnel to increase mask production." (Wang, Ng & Brook, 2020). These decisive steps enabled Taiwan – which passed its peak in the number of cases on April 7th – to largely avert what could have been a significant public health crisis.

"In 2004, the government of Taiwan established a disaster management entity, the National Health Command Center (NHCC)… the existence of this central command system allowed for highly responsive and effective policy implementation."



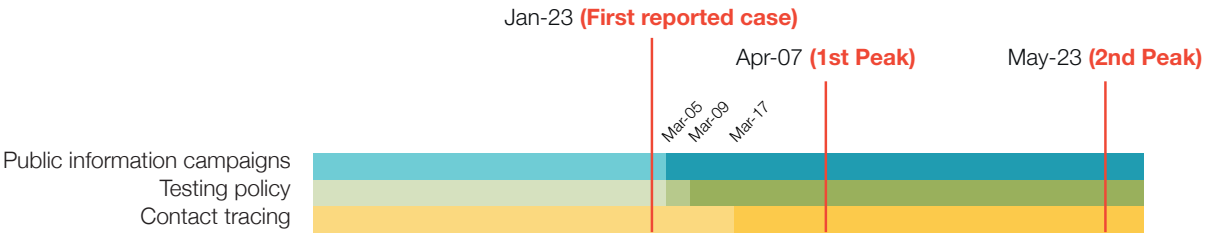
Hong Kong

Hong Kong, one of the world's most densely populated cities with the "most cross border traffic with China" (Tufekci, 2020) has performed remarkably well against COVID-19. Their success can largely be attributed to the speed by which health measures were implemented, as well as to citizens' cooperation with public health guidelines. As is also the case with Taiwan, this is thanks to the country's previous experience with SARS; Dr Peng Wu of the University of Hong Kong stated that "Hong Kong's population was more aware of the need to change their behaviour because of the experience of past infectious disease outbreaks" (Boseley, 2020). Regarding health policies, the government introduced limited testing on January 13th (approx. one week prior to first reported case), expanding access to all symptomatic patients on February 19th. They also introduced extensive contact tracing on January 22nd (the day before the first confirmed case), with "designated facilities for quarantine outside of the home" as well as "procedures for strict enforcement of home quarantine" (Boseley, 2020).

Furthermore, coordinated public information campaigns had been in force from January 1st (the day following China's first official reporting of the coronavirus to the WHO), which generated the awareness that, paired with previously learned behavioural patterns, ultimately enabled Hong Kong to effectively manage the outbreak without having to impose full lockdown measures. Face masks were also widely adopted in January; as of January 23rd (date of first reported case), "74.5%" (Parry, 2020) of survey respondents "wore face masks in public." (Parry, 2020) The government has also mobilized approximately "HK$320 million (US$41million)" (Zhang, 2020) in funding to produce and supply every resident of Hong Kong with reusable face masks that were made available during the end of May. These collective actions taken were key to averting what could have been severe consequences of the first wave of COVID-19 in Hong Kong.

"Their success can largely be attributed to the speed by which health measures were implemented, as well as to citizens' cooperation with public health guidelines."

Findings (cont'd)



Jordan

Jordan has received global recognition for its response to the first wave of COVID-19, which can be credited to swift pre-emptive and innovative measures, in addition to strict containment policies. Well in advance of the first recorded case on March 2nd, the government introduced a National Committee for Epidemics which "on January 26th established several protocols to deal with the arrival of coronavirus" (Younes, 2020), including treatment protocols and the designation of hospitals for COVID-19 cases (Younes, 2020). Following the first reported case on March 2rd, Oxford's *Government Response Tracker* shows that on March 5th, Jordan initiated coordinated public information campaigns across traditional and social media; this included nightly government press conferences during which ministers answer questions from the public – a strategy that contributed to transparency and proved to boost citizens' morale. The government also implemented a testing policy for symptomatic patients who meet specific criteria on March 5th, expanding this to all symptomatic patients on March 9th. Subsequently, on March 17th, limited contact tracing for confirmed cases was introduced, approximately 2 weeks before the first peak in active cases. With regards to boosting current capacity, Jordan is working in collaboration with the World Bank, who approved US$20 million in emergency response funding on April 28th to "enhance contact tracing, risk assessment and clinical care management" (The World Bank, 2020) and has mobilized resources towards enhancing testing capabilities, spearheaded at the German Jordanian University. Despite facing another rise in cases on May 24th after the first peak on April 2nd – correlating with the easing of lockdown measures in early May – there is continued control over the outbreak, which has resulted in no additional deaths. Ultimately, it must be acknowledged that aside from the health systems policies implemented, it is Jordan's decisive action and containment measures that have been critical to the effectiveness of their response to date.

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Australia

The actions taken by Australia to respond to COVID-19 allowed the country to mitigate a potentially severe outbreak and maintain a low death rate relative to the rest of the world. Credit has been attributed – on top of swiftly implemented lockdown and social distancing measures – to the actions of local/ state governments, who "didn't wait for direction" from the federal government for them to act; "they were consistently ahead with more pragmatic traditional public health activities" (Nunn, 2020). This involved the immediate introduction of comprehensive contact tracing, coordinated public information campaigns, and the testing of symptomatic patients who meet a specific criteria on the day of the first reported case in the country (January 25th). Notably, according to the data from Oxford's *Government Response Tracker*, testing capacities were not expanded to all symptomatic patients until May 15th – approximately six weeks after the peak in active cases on April 4th. On top of the aforementioned policies, the Australian government introduced a *Health Sector Emergency Response Plan for Novel Coronavirus (COVID-19)* on March 23rd, outlining "how key activities will operate and how the public can support the response" (Department of Health, 2020). Clear instructions and communication from the government contributed to a very high level of compliance with public health guidelines; on April 22nd, Professor Mathews, a specialist in infectious diseases at the University of Melbourne, was reported stating that "at least 80 per cent of the population is following the rules" (Nunn, 2020). With regards to mask wearing, this was not considered mandatory, with the federal government advising that "the majority of people won't benefit from wearing a surgical mask" (ABC, 2020). Finally, the Australian government took measures including mobilising an emergency investment of $2.4 billion for the health sector to fight coronavirus on March 11th, with "$1.1 billion specifically allocated to support the COVID-19 response in primary care" (Desborough et al., 2020). The decisive steps taken by the government at both the federal and local level resulted in a relatively low COVID-19 death rate thus far and the easing of lockdown restrictions as of May-June 2020.

"Credit has been attributed – on top of swiftly implemented lockdown and social distancing measures – to the actions of local/ state governments, who "didn't wait for direction" from the federal government for them to act… "

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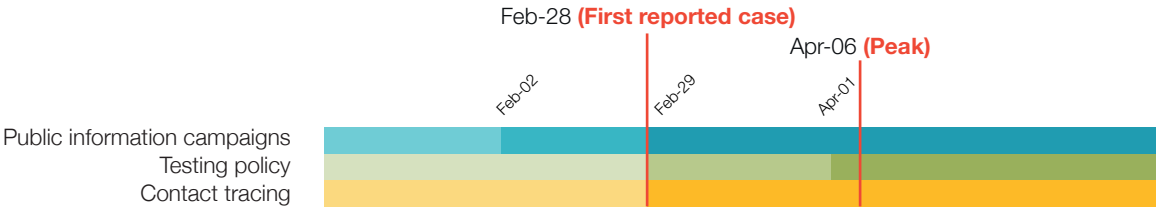
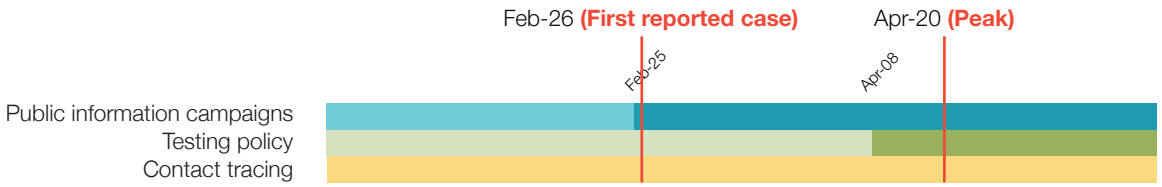


New Zealand

From the first reported case on February 28th, to the peak in active cases on April 6th, until the present, New Zealand has effectively eliminated the virus with no new active cases (as of the last week of May). The way in which this success was achieved has been attributed to the country's swift implementation of lockdown measures, the government's transparency, and speed of mobilization of health systems policies. Regarding these policies, New Zealand began by launching public information campaigns, with government officials urging caution about COVID-19 approximately one month before the first case was reported. The government initiated their testing policy on February 28th; initially, access was limited to only those who have symptoms and meet specific criteria, yet this was expanded on April 1st (5 days before the peak in active cases) to all symptomatic patients. New Zealand's testing measures were highly rigorous, attributable to the work of the Ministry of Health (MOH) from March to rapidly – within just six weeks – unify and create a centralized network within the country's traditionally "highly devolved" (Cox, 2020) healthcare system. This allowed them to process approximately "8000 tests per day, the highest per capita in the world" (Cox, 2020) by the start of May. The MOH initiated comprehensive contract tracing for all confirmed cases from February 28th through an initiative called the *National Contact Tracing Solution*. New Zealand also engaged in rigorous production of face masks – with approximately "18 million masks in its reserves" (Pasley, 2020), reported the week before the peak in active cases. The outcome of these decisive actions has deemed New Zealand a global example for pandemic response.

"The way in which this success was achieved has been attributed to the country's swift implementation of lockdown measures, the government's transparency, and speed of mobilization of health systems policies."



Greece

Despite Europe's overall shortcomings in responding to the virus, relative to other continents (ECDC, 2020), there are some countries whose actions have allowed them to maintain a low COVID-19 death rate when compared to other European nations. Greece has been commended as one of the most successful European countries for its response to COVID-19 so far, despite having the second oldest population in Europe (Statista, 2020b) and a health system with limited capacity and capabilities. This fragility can be attributed to the ongoing impact of the economic crisis, which has dealt a significant blow to the nation's health system (Karamanoli, 2015). This situation left no room for mitigation strategies, with the government therefore turning to containment and closure policies, which were implemented early and extensively as soon as the first COVID-19 case was diagnosed on the 26th of February (Magra, 2020). Greece was also very quick to implement an effective coordinated public information campaign, which included daily television broadcasts warning the public about the weak status of the health system and the consequent necessity for harsh and strict measures despite their impact on the economy (Perrigo & Hincks, 2020). This, in turn, resulted in the widespread support of lockdown measures and the successful implementation of the containment policies. On the 8th of April, a testing policy was finally implemented for symptomatic patients. Still, the extent of testing has been very limited (Broom, 2020) and thus the number of COVID-19 cases cannot be accurately estimated. Ultimately, the impact of Greece's extensive containment policies demonstrates the success that 'last resort' measures can have when implemented in a timely manner; for the reasons outlined previously, this approach has been highly important for Greece.

"Ultimately, the impact of Greece's extensive containment policies demonstrates the success that 'last resort' measures can have when implemented in a timely manner."

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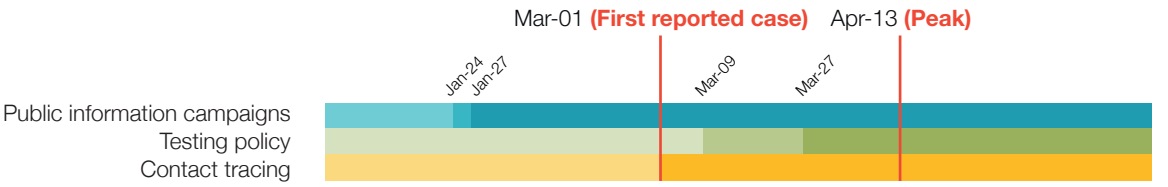

Czech Republic

Czech Republic has also responded well in its management of the COVID-19 outbreak. Although the virus reached Czech Republic relatively late as compared to other European countries, it was among the first countries to close its borders and impose 'lockdown' on the 16th of March (Jones & Shotter, 2020; Aljazeera, 2020). Czech Republic was also very quick to introduce health systems policies. Public officials had started urging caution about coronavirus well before the first case of COVID-19 was reported on the 1st of March, in addition to a coordinated public information campaign having been in place since the 27th of January. On the day of the first reported case, comprehensive contact tracing was introduced for all identified cases. People who were in contact with confirmed cases were preventatively quarantined for 14 days (Ministerstvo zdravotnictví, 2020a) and data from mobile phones and debit cards were later used to facilitate contact tracing (Ministerstvo zdravotnictví, 2020b). Around a week after the first reported case, testing for those who had symptoms and met specific criteria had begun, and the testing capacity was quickly increased for anyone showing the symptoms approximately two weeks later. Furthermore, Czech Republic was the first European country to make mask-wearing mandatory (Hutt, 2020), which might have played an important role in its effective response (Gray, 2020). The masks were not provided by the government due to being already in short supply for health professionals, but instead the government encouraged the nation (both citizens and private companies) to step up production of masks (Tait, 2020). Finally, blanket testing of 27,000 people was carried out soon after the number of active cases reached a peak mid-April (Lopatka, 2020). The results of this study provided information on the prevalence of the virus among the population, which has been essential to inform the decisions on easing lockdown measures at the end of April.

"Around a week after the first reported case, testing for those who had symptoms and met specific criteria had begun, and the testing capacity was quickly increased for anyone showing the symptoms approximately two weeks later."

Conclusion

This paper has used the cases of eight countries from three continents to conduct a careful analysis of the effectiveness of responses to the COVID-19 pandemic. Drawing on data from Oxford's *COVID-19 Government Response Tracker* and relevant literature to analyse health systems policies such as public information campaigns, testing, contact tracing, and emergency investment in healthcare, our paper makes the following conclusions.

Firstly, of the eight countries under review, despite the mobilisation of health systems policies including contact tracing, testing, and comprehensive public awareness campaigns, there were also context-specific capabilities and actions that may have been key to each country's success. Taiwan and Hong Kong implemented health policies at a remarkably rapid pace, which can be attributed to both countries' previous experience with the SARS outbreak in 2003, from which new entities, protocols, and patterns of behaviour emerged. This early, decisive action enabled the swift mobilization of health resources, testing capacities, contact tracing and public information campaigns, which contributed to a highly effective public health response without the imposition of strict lockdown measures – measures that proved to be key to success in some of the other nations under review, particularly for Jordan and Greece, due to the fragility of their health systems and novelty of managing a disease outbreak of this nature. For Vietnam, Australia, New Zealand and Czech Republic, a careful balance between containment measures and health systems policies were crucial. In addition to 'lockdown', Vietnam (the best performing country according to our criteria) acted according to a low-cost model, ensuring equal access and distribution of testing and crucial public health information, amongst other factors. This was motivated by need due to Vietnam's fragile health system and lack of capacity to manage a large number of cases. Australia, a country with stronger public health capabilities, relied on strategies such as clear communication with the public on new health guidelines, and the mobilization of a significant amount of funding towards coronavirus response efforts. New Zealand notably unified its formerly devolved health system in order to implement highly rigorous COVID-19 testing, whilst Czech Republic issued early and strict communication on public health guidelines including the obligation of the population to wear protective face masks in public.

Secondly, despite context-specific considerations, a number of key themes shared across all countries under review proved to have overarching importance in the response to COVID-19 so far. The first is that of timeliness and the speed by which measures were implemented, particularly around the date of the first reported case. The second is the theme of transparency and information-sharing between health officials and the public; the early launch of COVID-19 information campaigns and the establishment of regular communication channels between the government and the public proved to contribute to ensuring full compliance with public health policies, as well as overall trust in the government. The novelty and uncertainty around the virus have made this consideration crucial for all countries. A sub-theme is that the majority of these countries took seriously early on in their approach efforts towards ensuring the supply and use of face masks. Another commonality that contributed to the success of these nations was the large-scale testing of symptomatic patients. However, it was found that the further upscaling of testing to expand access to asymptomatic patients did not make an impact; none of the above countries implemented testing to this degree, or did not do so until after the peak of the first wave of the outbreak had been suppressed (in the case of Taiwan), according to *Oxford's Government Response Tracker*. Finally, the analysis showed that for nearly all countries under review, the implementation of comprehensive contact tracing either before or around the time of the first reported case was effective in controlling the outbreak.

Overall, aside from the policy actions taken, context and past history have had a role to play in different nations' responses to COVID-19. Notably, one of the reasons why certain Asian countries were able to respond so effectively was due to their recent experience with the 2003 outbreak of SARS, whilst European countries faced significantly more difficulties due to the continent's lack of experience with an infectious disease of this nature since the Spanish Flu in 1918 (Herszenhorn & Wheaton, 2020). As this analysis has indicated, there is no silver bullet that leads to an effective response to a pandemic, but it is more about being aware of the resources of the country and implementing a complementary set of measures to the needs and priorities of that country at a rapid and timely capacity. It is nonetheless without doubt that countries must continue to strengthen their health systems capabilities and capacities in preparation for a future outbreak, and to do so by learning from the nations that have emerged largely successful from this pandemic.

Annex

Dates of first reported case and peak(s) in active cases per state:

Vietnam:
First reported case: 23rd January 2020 (Nguyen & Vu, 2020)
Peak: 29th March 2020 (Worldometer, 2020i)

Taiwan:
First reported case: January 21 2020 (Reuters, 2020c)
Peak: April 7th 2020 (Worldometer, 2020h)

Jordan:
First reported case: 2nd March 2020 (Worldometer, 2020f)
1st Peak: 2nd April 2020 (Worldometer, 2020f)
2nd Peak: 22nd May 2020 (Worldometer, 2020f)

Hong Kong:
First reported case: 23rd January 2020 (Cheung, 2020)
Peak: 7th April 2020 (Worldometer, 2020e)

Australia:
First reported case: 25th January 2020 (Karp, 2020)
Peak: 4th April 2020 (Worldometer, 2020a)

New Zealand:
First reported case: 28th February (France-Presse, 2020)
Peak: 6th April 2020 (Worldometer, 2020g)

Czech Republic:
First reported case: 1st March 2020 (Reuters, 2020a)
Peak: 13th April 2020 (Worldometer, 2020c)

Greece:
First reported case: 26th February 2020 (Reuters, 2020b)
Peak: 20nd April 2020 (Worldometer, 2020d)

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