Responding to a global pandemic.
A Comparative Analysis of New
Zealand, Taiwan
and the United Kingdom

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DEDICATION

To my mother and father.

Finally, in memory of James.

ABSTRACT

The ongoing COVID-19 global pandemic has proven that most States were unprepared and complacent in the face of the imminent epidemic threat that epidemiologists had long warned of. The COVID-19 pandemic confounded the expectations of public policy analysts and epidemiologists alike in terms of which States would fail in their response and which would succeed. This dissertation seeks to identify the causes behind the varying degrees of success or failure initial policy responses to the COVID-19 pandemic. To do so, it employs a Mill's Method of difference to compare the two successful cases of Taiwan and New Zealand and the failure case of the United Kingdom. The key result, found by applying Rubin and Bækkeskov's expert-led securitisation theoretical framework, is that the two successful responses were guided by independent and transparent scientific advisories or semi-autonomous technocratic authorities and the failure case had a politicised scientific advisory that lacked both independence and transparency.

Key Words: Pandemic response, three country comparison, expert-led securitisation, independent and transparent versus politicised advisory.

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ABBREVIATIONS

BBC – British Broadcasting Corporation

TCDC – Centre for Disease Control (Taiwan)

CECC – Central Epidemiological Command Centre (Taiwan)

COVID-19 – Coronavirus Disease 2019

COVIDSIM – Coronavirus Disease Simulator

GHSI – Global Health Security Index

GDP – Gross Domestic Product

H1N1 – Swine Flu

H1N5 – Avian Influenza

ICU – Intensive Care Unit

NERVTAG - New and Emerging Respiratory Virus Threats Advisory Group (United Kingdom)

NHS – National Health Service (United Kingdom)

NZMH – New Zealand Ministry of Health

MOHW – Ministry of Health and Welfare (Taiwan)

OECD - Organisation for Economic Development

OxCGRT – Oxford COVID-19 Government Response Tracker

PMCSA – Prime Minister's Chief Science Advisory (New Zealand)

RNZ – Radio New Zealand

SAGE – Scientific Advisory Group for Emergencies (United Kingdom)

UK – United Kingdom

US – United States of America

WHO – World Health Organisation

WN-CoV – Wuhan Coronavirus

1. INTRODUCTION

On the 31st of December 2019, the World Health Organisation (WHO) China Country Office notified its Western Pacific Regional Office about the Wuhan Municipal Health Commission's media statement of 44 cases of "pneumonia of unknown cause" (WHO 2020a). Key questions emerged as to the nature of the threat and how the Chinese State had managed the initial outbreak, especially in light of China's lack of transparency vis-à-vis SARS in 2002-3 (*Economist* 2020; Wang and Horby *et al*. 2020). Such suspicion and prior experience with epidemics motivated a pre-emptive approach from the neighbouring State of Taiwan, which immediately began screening airplane passengers from Wuhan for the thus far identified symptoms (MOHW 2020).

As China progressively imposed a strict regional lockdown, questions were raised regarding the proportionality of that response and whether such measures were necessary or replicable in democracies or even authoritarian states of lower capacity (Ghiretti 2020; STAT 2020). At the time, the rate of transmission, severity of symptoms and potential risk to life posed by COVID-19 were not yet known or easily estimated (*Economist* 2020).

An empirical puzzle emerged regarding what strategies are most effective in suppressing the initial spread of such a virus and what trade-offs are essential to their implementation. With high case and mortality rates in economically developed countries, mere economic development soon proved not to be a sufficient discriminator. A debate quickly developed regarding whether individual rights had to be dramatically curtailed as they were in China and whether an economic shut-down was avoidable.

The three cases of Taiwan, New Zealand and the UK discussed here provide a new set of answers to these questions as each approached the puzzle in its own way. Taiwan confounded early predictions of being among the worst affected in terms of cases and mortality by emerging as one of the least. New Zealand has kept cases and mortality (321.01 cases per million, 4.56 deaths per million) almost as low as Taiwan (18.94 and 0.29). The UK, expected to be the most prepared of the three, ended up with the largest case and mortality rates per million (4,322.97 and 604.10).

I chose these three cases as they are all Liberal Welfare States of high economic development with strong public health systems that were, therefore, expected to perform similarly to each other and effectively overall. Additionally, they are also all island nations, giving them a shared geographical advantage in terms of border management. Being similar in all but their pandemic response performance, with one proving a to be a case of failure, they can reasonably be compared to find the discriminating factor that separated that case from the two success cases.

I chose the topic of pandemic response efficacy due to the disproportionate weight previously placed on structural, economic and cultural factors in the analysis of epidemic preparedness, including in response to COVID-19, at the expense of analysing policy, its background assumptions and the actors and processes that formulate it. One such assumption is that a health emergency response can favour either public health or economy, in a limiting dichotomy. Another is that strategies will be feasible or not according to the political system of the State at hand, meaning that authoritarian and democratic states inherently have differing policy options available to them, in another limiting dichotomy. The success cases studied here upend both of these assumptions.

Furthermore, with more epidemics likely to emerge in the wake of increasing environmental destruction (Tollefson 2020), a better understanding of how health emergencies should be managed is needed for governments to face these threats in a manner that lowers mortality rates as well as social and economic disruption. This leads me to my research question: What explains the varying success or failure of pandemic responses from Taiwan, New Zealand and the UK?

This thesis starts with a literature review in section 2 that assesses rival hypotheses on the success and failure factors of COVID-19 responses globally while referring to literature on past epidemics. Next, in section 3, the research question and a corresponding hypothesis are proposed. Subsequently, the methodology of the investigation is outlined in section 4. The results of the study are presented in section 5 and discussed in section 6. In section 7, I acknowledge limitations to the study, propose areas of further study and conclude.

2. LITERATURE REVIEW

Prior to the COVID-19 pandemic, the main factor thought to determine pandemic preparedness was economic development, which was often paired with the national provision of healthcare. This limited approach informed pandemic preparation assessments and indexes and has since proven unsatisfactory.

For example, the Global Health Security Index (GHSI) of Pandemic Preparedness for 2019, put together by John Hopkins' University Centre for Health Security, The Nuclear Threat Initiative and The Economist Intelligence Unit, placed the United States and the United Kingdom as the first and second most prepared nations for an epidemic event (John Hopkins Center for Health Security *et al*. 2020). Abbey *et al*. (2020; Appendix 1) have shown that the Index's ranking for almost the entire Organisation for Economic Development (OECD) group of countries has been proven wrong by the current pandemic. Just before the pandemic, Razavi *et al*. (2020, p. 1), also questioned the methodology with which the Index was compiled, questioning the "skew of indicators towards the priorities of high-income countries, the validity of some indicators, the scoring system and its weighting".

The GHSI group has since sought to explain (Bell 2020), emphasising that the highest-scoring nations still scored low (US 83.2/100, UK 77.9/100) and that the index should have been interpreted *in primis* as indicating the lack of preparedness of all countries and of the world. Moreover, as stated in a paper published in September 2020:

> "Going forward, the Index should include new or stronger metrics about additional capacities, such as medical supply chains and *a better understanding of national leadership. The strength of a country's leadership and the confidence of its people in their government and their leaders is just as important (if not more important) than technical capacities.* Future versions of the Index will give greater weight to these factors". (Nuzzo *et al*. 2020, emphasis added)

In addition, John Hopkins' COVID-19 modelling was confounded by Taiwan, which it projected to be among the most impacted by the virus with an imminent 9000 to 24000 cases estimated on January 31st (Gardner 2020). This was based on the large average interchange of people between Taiwan and China, from which the virus originated, but did not consider either the institutional and policy reforms undertaken in the wake of SARS, nor that Taiwan had already started to respond when the model was put together. Taiwan started on the 31st of December 2019 with screening airplane passengers from Wuhan, banning entry of Wuhan residents by the 23rd of January and all flights from Wuhan on the same day (among other border controls) (MOHW 2020). John Hopkins' researchers could have based their model not on average numbers of travellers between the States, but on the much lower real-time numbers, thus going beyond mere worst-case scenarios to showcase best practices.

There appears to be an explanatory gap as to why certain governments responded more effectively to the pandemic. The generalised warnings of epidemiologists that most countries would struggle in this regard have been proven correct. However, the reasons for this struggle, as well as which would fail or succeed, have surprised many observers.

In response to this gap and to the more successful responses of East Asian States, several theories emerged, from cultural-essentialist explanations to those that reflect Asian States' recent epidemic experiences, but these are often presented together and informed by applications of cultural psychology and behavioural science (Bavel 2020; Biddlestone *et al*. 2020). These latter theories could be ignored, but policymakers seem to be partly informed by them – see Prime Minister (PM) Boris Johnson's statement on "freedom-loving" Brits (*BBC News* 2020b). The implication, though rarely expressed explicitly, is that certain cultures exhibit more compliance by nature while others are more obstinate and individualistic. This idea is both difficult to measure as well as orientalist (or Western exceptionalist) (Park, 2020).

The essentialist bent corresponds to the wider literature on culture and blame attribution during epidemics and pandemics, with Kapiri and Ross (2020) providing a useful overview of how such thinking has obscured factors such as policy decisions and communication strategies in a number of crises, and Jones (2011) likewise on Ebola. Gostin and Lawrence (2015) have also accounted for how cultural explanations for the 2014 Ebola outbreak obscured the role of poor communication and policy implementation by both the WHO and local governments. In the case of Ebola in West Africa, Benton and Dionne (2014) argue for a more robust understanding of the complex dynamics of post-colonialism, so as to move beyond racially charged and prejudicial analysis in favour of addressing the structural and historical contributors to such outbreaks. Wilkinson and Fairhead (2017) also highlight the need to understand politics rather than culture to effectively analyse the Ebola epidemic. Here, in an apparently contrasting case to that of Asian States' success in facing COVID-19, understanding the initial failures of West African States in their response to Ebola demands a greater focus on the role of historical context and political contingencies. In both cases (East Asian COVID successes and West African Ebola failures), despite their contrasts, a more useful analysis emerges by studying the historical origins of health and general authorities, as well as their relationship to each other and local communities, than by applying *ex ante* cultural assumptions. Thus, in this thesis the history of the actors involved in the management of the health emergency shall also be considered and cultural generalities avoided.

A more credible explanation for Asian successes is that these countries recently faced several epidemic threats and learned from their varying degrees of failure (An and Tang 2020). South Korea's perceived failures with a re-emergent MERS in 2015 (Oh *et al*. 2018), China's and Taiwan's with SARS in 2003 along with the continent's general heightened awareness after the 2005 Avian Influenza (H1N5) made for more experienced polities and motivated concrete legislative and institutional reforms. Similar explanation also corresponds to New Zealand, which in 2009 suffered 19 Swine Flu (H1N1) fatalities. The Ministry of Health (NZMH) created a new Pandemic Preparedness Plan in 2010, updated in 2017, which it utilised in responding to the current pandemic (NZMH 2017).

Another view is that geographic isolation played a role in New Zealand's success. A large proportion of island nations, especially isolated ones, did indeed succeed in suppressing or eliminating the virus in its first wave (Murphy *et al*. 2020). Therefore, isolation may have granted New Zealand some extra time, which might have been a factor in its successful response. However, New Zealand and other island success cases share key policy similarities with far less isolated Taiwan that appear more explanatory.

An area of study that can be useful to understand differing responses to the COVID-19 pandemic is expert-led securitisation, as exemplified by Rubin and Bækkeskov (2020), particularly in their comparison of two technocratically-led responses to the 2009 H1N1 epidemic in Denmark and Sweden. That study demonstrates that despite overriding similarities in the administrative process of those two cases, namely that politicians delegated considerable autonomy to experts in both cases, the two groups

of experts recommended and implemented two different sets of policies. Similar policy formulation structures can produce different policies. Crucially however, they place that policy formulation process at the centre of their analysis, providing a framework with which to study other health emergencies.

A key aspect of expert-led securitisation theory relates to when "Strong forces in the policy stream pull health experts into such policy processes and push politicians out" (Rubin and Bækkeskov 2020). In such cases, "the question becomes who dominates the policy stream: do the political leaders insist on ownership over the policy process or is there room for the experts to encroach on this stream?" (Ibid. 2020). Such a framework is applied here to compare the policy-making processes of the cases studied, with emphasis on the degree of independence and transparency of the expert advisors.

3. RESEARCH QUESTION AND HYPOTHESIS

The research question this thesis poses is:

What explains the varying success or failure of pandemic responses from Taiwan, New Zealand and the UK?

3.1 Markers of Success and Failure

The variation in response efficacy I will be seeking to explain is represented by the degree of success of each government in preventing the spread and increase in mortality of COVID-19 within their respective populations, as measured in cumulative terms from the start of the pandemic (January 2020) to July 2020, using data from Our World in Data. A secondary marker of success can be found in the impacts to wellbeing and economic activity as measured by GDP growth in the same period.

Table 1:Cases and deaths in absolute and per million terms as well as world ranking of July 15th, 2020 (Our World in Data, n.d.)

Country	Cases	Cases per million	Deaths	Deaths per million	World Ranking Cases per Million	World Ranking Deaths per Million
UK	293,469	4,322.97	41,010	604.10	33	5
New Zealand	1,548	321.01	22	4.56	74	146
Taiwan	451	18.94	7	0.29	182	189

Table 1 shows the stark difference in performance between the United Kingdom and the other two cases in terms of mortality and case count. New Zealand, it should be noted, had also declared the virus eliminated (temporarily) by June 8th (*BBC News* 2020d) and it rose in the lowest case count ranking to reach 50th place by March 2021. Moreover, Balmford *et al*.'s (2020) study has shown the UK to be among the countries that has presented mortality rates so close to the expected death rate for 2020, despite the pandemic, as to be suspected of wilful underestimation and misrepresentation.

In regard to the secondary markers of success, impacts of response policies on general wellbeing and lifestyle can be discerned from the overall stringency of closure and containment policies. In these terms, Taiwan and New Zealand have some of the lowest scores globally while the UK is in the top 5 countries over time, as presented in Section 4.4 of the results. Unsurprisingly, given the high case incidence, mortality and eventually policy stringency, the UK economy has been most impacted, with negative 9.8% Real GDP growth annual percent change for the whole of 2020. Alternatively, with diametrically opposite metrics in cases, mortality and stringency, New Zealand's GDP shrank by 6.1% and Taiwan's by 0.0% (IMF n.d.)[1]. Though New Zealand took a significant economic hit, it did well relative to other OECD countries.

Both in epidemiological containment terms and in regard to the economic and social impacts of that containment, the UK failed and the other two cases succeeded[2].

3.2   Context

The context of this comparison is one of economically developed states that faced a novel and unknown threat, which motivated a disruptive response to minimise mortality, with both threat and response likely to be felt unequally within their societies.

(1) Despite sharing many traits that were understood to be key to pandemic preparedness, the three case results have shown considerable variance in outcomes, with the most economically developed of the three cases, and the highest-placed on the GHSI index, being actually the least successful.

(2) The nature of novel communicable diseases is such that they may spread quickly and are both difficult to recognise as well as most likely untreatable to begin with. These are enigmatic threats, also in terms of scale. Thus, the degree of stringency of the response needed to contain

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[1] I used year on year GDP growth as opposed to more granular data as even this high-level view is revealing due to the large variance between cases.

[2] The categorisation of the UK as a failed case also corresponds to the results of Ibrahim, Binofai and Alshamsi's (2020) framework.

most emerging pathogens is contentious. To stop them before they spread beyond control, governments may have to act pre-emptively, prior to the threat being widely acknowledged or understood, thus adding to response controversy. Threat estimations may also be mistaken and governments may therefore risk needlessly causing disruption and wasting political capital[3].

(3) Suppressing a novel communicable disease involves disruptive measures that limit personal freedoms and slow economic activity, with decision-makers facing trade-offs. This creates controversy surrounding response strategies, as is amply evident from the ongoing pandemic crisis.

(4) Pre-existing inequalities that lead to large variance in population density, hygiene, underlying health and exposure rates among different groups, coupled with pathogens' varying severity for different age groups and medical profiles, mean that this enigmatic threat is not the same to all[4]. This disparity further augments the potential for controversy and conflict, as well as rumour and disinformation.

These four points highlight the political complexity of pandemic response and the central role of policy and how it is formulated. Therefore, though medical in nature and apparently the purview of epidemiologists, health emergencies are political in the Harold Lasswell understanding of Politics of "Who gets what, when and how" (Lasswell, 1936). This might be rephrased in this context, and in a manner that recalls Rubin and Baekkesov, as "Who suffers which limitations and controls on behalf of whom? When should they start and how long should they last? And how should this be decided and enforced?".

3.3   Variables and Hypothesis

In this context, the dependent variable is:

- The effectiveness of the pandemic response.

The independent variables are:

- The degree of independence given to health and scientific advisors in formulating strategies or advice;
- The transparency with which the advice is published.

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[3] As Rubin and Erik Bækkeskov (2020) put it "Politicians are often likely to be punished for mismanaging a health threat either by overreaching or underestimating the response".

[4] As evident throughout New Zealand's Influenza Pandemic Preparedness Plan, e.g. neatly summarised in reference to Pacific Peoples "Interrelated risk factors, socioeconomic determinants and complex cultural values, beliefs and preferences increase the potential risk and impact of an influenza pandemic for Pacific peoples in New Zealand" (p. 18). Also see Kapiri and Ross (2020).

The causal mechanism I expect to see emerge from this study is that greater independence and transparency of advisories leads to more pre-emptive, stringent and effective responses. This leads to the research hypothesis:

During pandemic events, the more independent and transparent the scientific advisory process is, the more pre-emptive the policy recommendations and the more effective and ultimately less disruptive the government response.

4. METHODOLOGY

This thesis follows Mill's Method of difference in a small-N comparison of three States with broad structural similarities but varying pandemic containment strategies and results, which allows the differentiation of success and failure factors in each State's pandemic response strategy.

To select the cases, I first adapted a definition of success and failure in COVID-19 response policies used by Wondreys and Mudde (2020), who base their method on several datasets, measures of mortality and case incidence in proportion to each other and to overall population, as well as to the number of people tested. Following their method, I identified two clear success cases in the first six months of the pandemic and one failure case.

The two success cases relied on imposing border closures in contrast with WHO advice (WHO 2020c). Both, therefore, appeared to leverage their geographic advantage as islands. It hence followed to select the UK for comparison as a third highly similar island state whose pandemic response had widely failed according to the above measures.

Figure 1: Jan - Jul 2020, cumulative confirmed COVID-19 cases per million people in the UK, New Zealand and Taiwan (Our World in Data, n.d.)

Cumulative confirmed COVID-19 cases per million people
The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.

Jul 15, 2020	
United Kingdom	4,322.97
New Zealand	321.01
Taiwan	18.94

Source: Johns Hopkins University CSSE COVID-19 Data
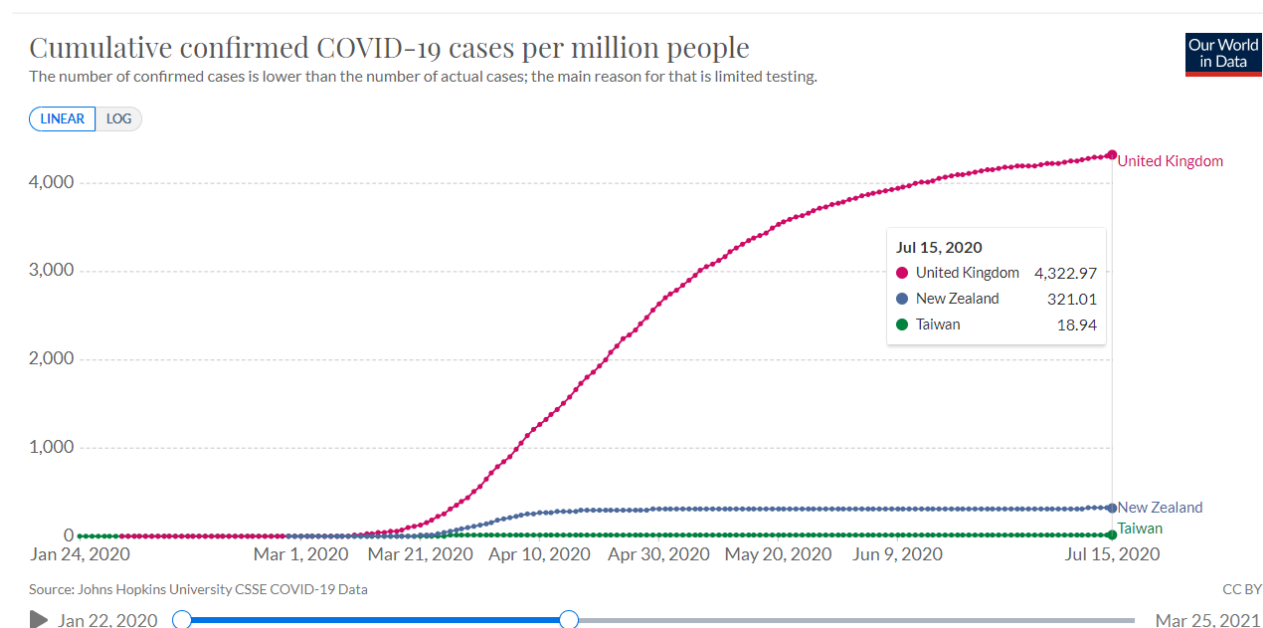
Figure 2: Feb (first available date) - Jul 2020, cumulative confirmed COVID-19 deaths per million people in the UK, New Zealand and Taiwan (Our World in Data, n.d.)

Cumulative confirmed COVID-19 deaths per million people
Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.

Jul 14, 2020	
United Kingdom	603.72
New Zealand	4.56
Taiwan	0.29

Source: Johns Hopkins University CSSE COVID-19 Data
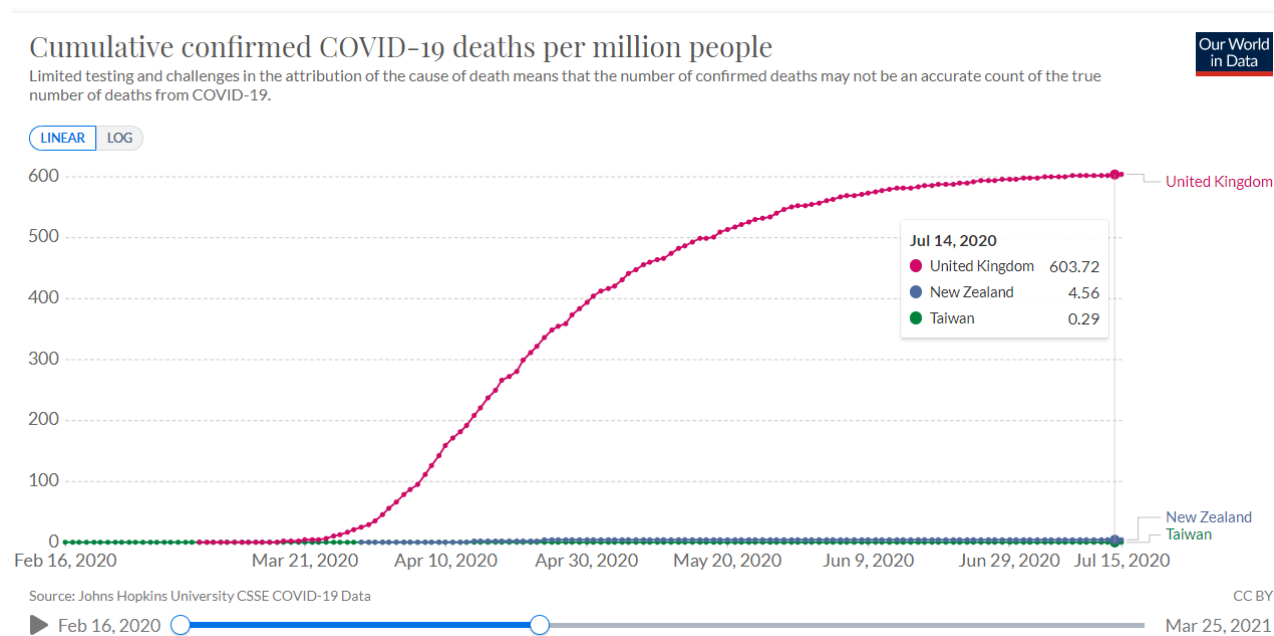
4.1 Structural Comparison

I compare broad economic and travel data as well as welfare and demographic factors to identify which, if any, structural factors may contribute to explaining differences in performance.

4.2 Health Emergency Institutional Makeup

To test my hypothesis, I study how the relationship between advisory and government was structured to assess the degree of independence of the former from the latter in each case.

For the UK, I examine the January 2020 New Emerging Respiratory Virus Threats Advisory Group (NERVTAG) and January to June Scientific Advisory Group for Emergencies (SAGE) meeting minutes and communications and the Prime Minister's press conferences. NERVTAG meetings fed into SAGE meetings, which in turn fed into the Cabinet Office Civil Contingencies Committee meetings, the latter of which do not publish their minutes.

For Taiwan, the data mostly comes from Ministry of Health and Welfare (MOHW) and Taiwan Centre for Disease Control (TCDC) documentation of the pandemic and real-time daily bulletins which the latter began to publish on the 6th of January 2020.

For New Zealand, the data is based on the reports commissioned by the Ministry of Health (MOH), Prime Minister Jacinda Ardern's press conferences and the policy explanations on the government website and the Chief Science Advisor's website.

4.3 Policies Employed Over Time

I map the early policy response of each State. Due to the early contrast in results and policies, and the assumed importance of pre-emption, I focus on the first 7 months of the pandemic, from the WHO December 31st, 2019, Notice, to the declaration of the virus being eliminated in New Zealand, with subsequent events referenced only where relevant.

4.4 Communication

I also compare how each State communicated measures to its public and how this has been qualitatively rated internally and externally. This comparison takes into account the consistency, clarity and simplicity of the message to ascertain if any deficiencies lay not in the policies themselves but in how they were communicated.

After mapping the policies, I use the Oxford COVID-19 Government Response Tracker (OxCGRT) index to corroborate my findings (Hale *et al*. 2021). OxCGRT relies on Our World in Data and uses 19 indicators to determine the severity of government measures implemented throughout the pandemic.

The indicators are grouped across the four policy categories of Containment and Closure (with 8 indicators), Economic (with 4), Healthcare (7) and a Miscellaneous category.

5. RESULTS

5.1 Structural Comparison

The three cases are highly similar in structural terms[5]. Their population density shows significant variance, but their urbanisation is similar: New Zealand, with the lowest population density also has the highest urbanisation. Taiwan is the most densely populated, though the least urbanised, and the UK is the intermediate case in both terms.

The UK spent the largest proportion of GDP on health with a completely free system at the point of need (free primary care). Similarly, the UK had the highest mobile internet penetration but the least effective track and trace program[6]. A more detailed analysis of health and technological capacity reveals that Taiwan and New Zealand may have had certain technological advantages. However, their resource capacity was not tested by the pandemic since both countries managed to eliminate the virus early. Therefore, resource capacity is not the differentiator.

International arrivals are of a much larger scale in absolute terms in the UK (though relative to population, New Zealand shows the largest numbers) and ports of entry are more various. Arguably, this could make a UK border closure policy more contentious, particularly due to at the time being part of the European Union to all effects and purposes.

Table 2: International arrivals absolute numbers and as % of population (World Bank n.d.; Taiwan Tourism Bureau n.d.)

	International arrivals 2019	International arrivals as % of local population 2019
United Kingdom	40,857,000	61
Taiwan	13,241,966	56
New Zealand	3,888,000	79

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[5] See Appendix 2.
[6] Appendix 2. Also, New Zealand primary care is privately insured while Taiwan utilises a co-pay system that is near-free at point of need.

5.2 Health Emergency Institutional Makeup

The United Kingdom and New Zealand governments both relied on a scientific advisory process to assist policymakers in modelling the potential impact of the Coronavirus and to advise response policies to minimise its consequences in terms of caseload, health system functioning and mortality rate.

Despite this superficial similarity, the relationship of advisory bodies to governments in these two cases revealed variance in terms of independence and transparency, with the UK advisory process exhibiting markedly less of each. Finally, Taiwan's technocratic response structure, which granted a large degree of autonomy to the TCDC and CECC, was the fastest and most effective for this emergency as well as being highly transparent.

Taiwan relied on its Communicable Disease Act (CDC Act) (most recently amended and legitimated in 2019 due to JY interpretation N0690 on SARS legislation having been implemented in a proportionate and legal manner (Taiwan Judicial Yuan 2019)). Article 5 CDC Act allows the Taiwan Centre for Disease Control (TCDC) to direct quarantines of ports of entry; Chapter 5 Article 58 allows comprehensive border controls to be enacted by the same body and Article 31 allows the sharing of information on patients and suspected cases between institutions (Communicable Disease Act, 2004, Amended 2019). Thus, starting with the first unidentified pneumonia alert from Wuhan, the TCDC was empowered to coordinate port of entry screening and to send experts to Wuhan on a fact-finding mission. Once the virus was detected within Taiwan, the Minister of Health, Dr Shih-Chung Chen, was appointed as the Commander of the Central Epidemic Control Centre (CECC) by the Premier, Su Tseng-chang (Taiwan TCDC 2020) on its activation on the 20th of January. The crucial initial response prior to that date, therefore, was directed by the TCDC, with political oversight and final responsibility of the health minister coming subsequently (as called for by the TCDC Act).

I verified the above findings from the TCDC website by contacting it directly and was informed:

> Taiwan TCDC (TCDC), as an agency under the Ministry of Health and Welfare (MOHW), is the highest infectious disease control authority in our country. Commonly, TCDC leads the way in protecting and preparing the nation against infectious disease threats and emergencies by formulating policies and plans as well as executing response activities. But when it comes to national emergency, it required coordinated work involving different government departments as well as the private sector [...] On December 31, 2019, through its regular public opinion monitoring system online, TCDC noticed a new respiratory infectious disease like SARS [...] TCDC immediately formed a response team and initiated its border control measures, such as

implementing onboard quarantine of flights from Wuhan [...] sent an email to the IHR [...] *At that time, it was TCDC who had the power to make decisions* (emphasis added).[7]

New Zealand leveraged the Health Act of 1956, the Epidemic Preparedness act of 2006, the Influenza Pandemic Plan of 2017 and finally it passed the COVID-19 Health Response Act on March 25th, 2020. Similarly, the UK relied on the 2008 Health and Social Care Act and the Civil Contingencies Act of 2004 and passed the Coronavirus Act in March 2020 (Unite Against Covid n.d.). The UK and New Zealand had the legal authority to implement the same or equivalent policies as the Taiwan TCDC. However, these decisions were politically directed by elected officials while Taiwan's decisions were initially entirely technocratically directed with political oversight and coordination following.

5.3   Independence and Transparency of Advisories

The New Zealand Ministry of Health (MOH) commissioned several reports, led by Prof. Nick Wilson of the University of Otago for the Chief Science Advisor, Professor Juliette Gerrard. The contributors' names were all published and even the temporarily confidential report on worst-case scenarios was publicly available by the end of March 2020. The reports produced include the Border Closure Report of the 6th of March (Wilson *et al*. 2020b), the Worst-Case Report of the 24th (Wilson *et al*. 2020c) and the Background and Overview to Approaches Report (New Zealand COVID-19 Public Health Response Strategy Team 2020), among others. The Worst-Case report concluded that "A total of 3.32 million New Zealanders would be expected to get symptomatic illness; 146,000 would be sick enough to require hospital admission; 36,600 would be sick enough to require critical care (in an ICU); and 27,600 would be expected to die" (Wilson *et al*. 2020c, p. 1). These drew from and adapted COVID-19 epidemiological models such as COVIDSIM in Germany and the Diamond Princess Cruise Ship outbreak study from Japan, among others, as well as the Ferguson *et al*. (2020) study to estimate potential cases, hospitalisations, ICU unit occupancy and fatalities based on three reproduction rate (R0) scenarios (Wilson *et al*. 2020a).

New Zealand's 30th of March Overview of Approaches provides the following clear imagery (figure 3) of different response strategies. It has proven largely accurate, with the UK an example of a country taking the suppression approach shown below where control levels cannot be dropped to the low category, and Taiwan and New Zealand both taking the elimination approach and thus able to drop the intensity of controls. In this predictive graphic, elimination is the strategy to eliminate the virus entirely while suppression is that of contending with its continued presence within a given country.

The UK also relied in part on the Ferguson *et al*. (2020) paper, prepared expressly for government use and with the lead author a member of SAGE, in which mitigation and suppression approaches are

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[7] See Appendix 4 for the full email message.

weighed. While the report leaves the choice of policy to the discretion of decision-makers, it does say "perhaps our most significant conclusion is that mitigation is unlikely to be feasible without emergency surge capacity limits of the UK and US healthcare systems being exceeded many times over"; and "We therefore conclude that epidemic suppression is the only viable strategy at the current time" (Ferguson *et al.* 2020, p. 16), with the term "suppression" being used differently to how it was used in Figure 3, not as the least stringent policy set but as equivalent to Figure 3's "elimination" (ibid. 2020, p. 1).

Figure 3: Projected intensity of control measures per strategy option (New Zealand Public Health Response Strategy Team 2020, p. 14).

† With high levels of border control
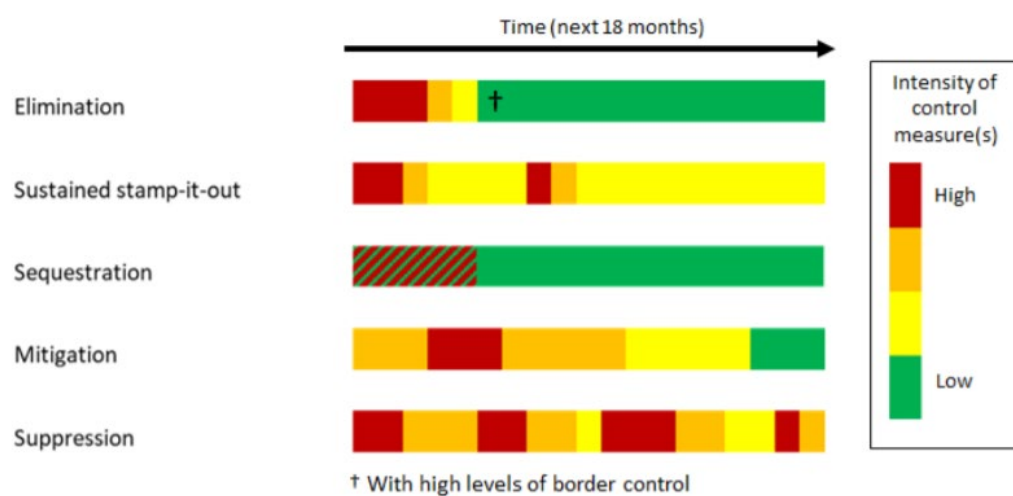
Another approach was adopted prior to the publication of the Ferguson *et al.* paper. More stringency came after its publication (also after the outbreak in Italy), but border closures were not adopted even then. The first NERVTAG meeting on COVID-19 was held on January 13th and the subsequent one on January 21st. In both meetings, port-of-entry screening was discussed and discarded due to *its cost and assumed inefficiency* (NERVTAG 2020a; 2020b).[8] In the first of these two encounters the fact that 4/5 cases detected outside of China had been identified through this method was mentioned but not deemed compelling. The first Scientific Advisory Group for Emergencies (SAGE) meeting on the issue, which includes NERVTAG, was held on January 22nd and port-of-entry screening was again discarded.

Additionally, SAGE's 3rd meeting of February 3rd, 2020 reveals a persistent hesitation to pursue border control policies, as the meeting minutes reveal:

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[8] SAGE meetings are referenced by meeting number; NERVTAG meetings by year and letter as only two are referenced here.

1. On the expected impact of travel restrictions, SAGE estimates – with limited data – that if the UK reduces imported infections by 50%, this would maybe delay the onset of any epidemic in the UK by about 5 days; 75% would maybe buy 10 additional days; 90% maybe buys 15 additional days; *95%+ maybe buys a month.*

2. *Only a month of additional preparation time for the NHS would be meaningful* [...]

3. *To prevent imported infections along these lines would require draconian and coordinated measures*, because direct flights from China are not the only route for infected individuals to enter the UK.

4. Additional measures would be required and 50% reduction is probably about the best that could be achieved with a ban on direct travel from China alone. (SAGE 3 2020, p. 1, emphasis added).

In the next meeting, despite clear benefits from attempting to delay the virus' spread (point 3 below), the prior conclusion was upheld (point 4 below).

3. A delay now in the arrival and spread of WN-CoV in the UK *would be beneficial for improving NHS readiness and ability to manage a UK outbreak and importantly may push any outbreak beyond the winter respiratory season* […]

4. SAGE remains content with the validity of the statement (issued 3 February) on the impact of international travel restrictions on delaying spread of WN-CoV. (SAGE 4 2020, p. 1, emphasis added).

In contrast, in New Zealand's Rationale for Border Closure Report, it is stated that:

It is difficult to estimate the impact of such travel restrictions on reducing the risk of Covid19 arrival in a country. *Nevertheless, the introduction of Covid-19 seems likely to have been prevented (or at least slowed) in a number of countries, presumably via a mix of border control measures, and contact tracing and case isolation/quarantine measures.* (Wilson *et al.* 2020b, p. 3, emphasis added).

Both advisories admitted the difficulties of guaranteeing the efficacy of port-of-entry screening, but New Zealand took that risk while the UK only considered and then rejected much lighter measures. To reiterate, in Taiwan border screenings started the same day as the WHO's first China-office Notice of December 31, 2019, with no discussion with political leaders about their apparent effectiveness.
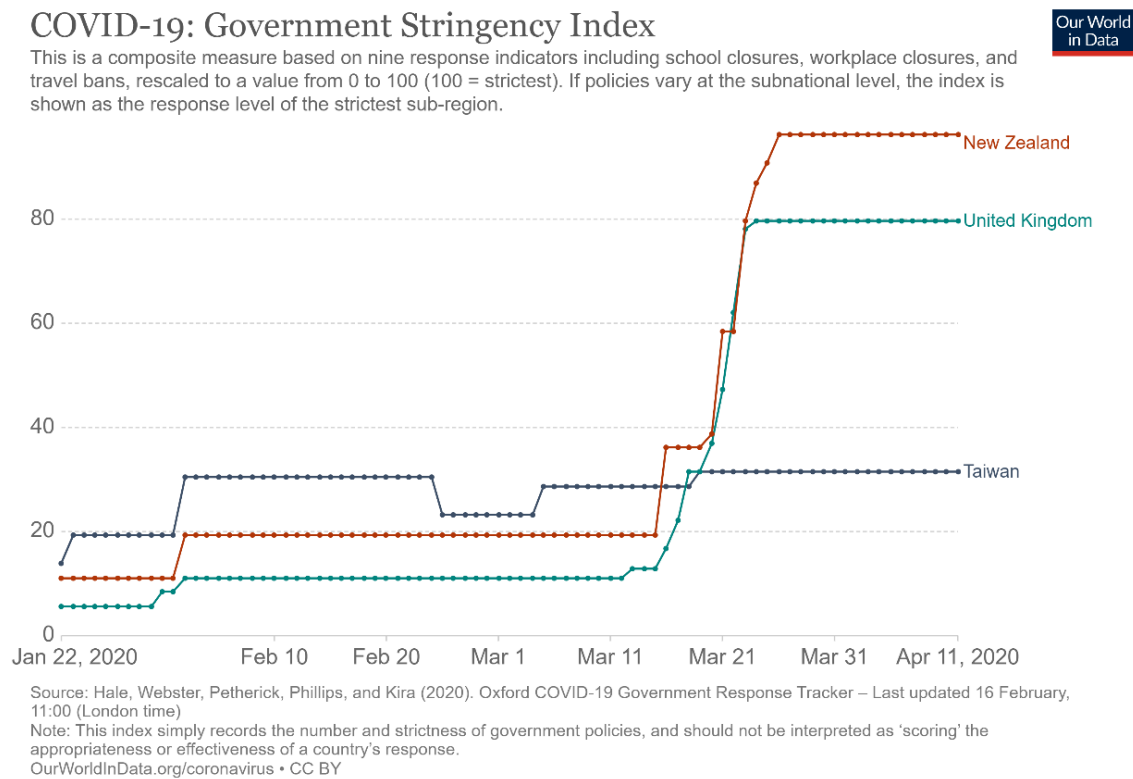
Also relevant to the independence of the advisory groups' respective processes was the partly political makeup of the SAGE membership (SAGE 1-41 2020), with the PM's Private Secretary, Imran Shafi, present at 4 meetings as an observer; Dominic Cummings, Special advisor to the PM and Vote Leave campaign architect present twice as a participant and once as an observer; and Ben Warner, also a key figure to Vote Leave and to the 2019 election campaign present 25 times, 5 as a participant. Vanessa McDougal of the Treasury was also often present, which may be argued to have been less controversial, though having a budget representative attending would also possibly have been constraining to discussions.

In contrast, the New Zealand Chief Scientific Advisor Forum included solely scientific advisors from across government departments. There are no political advisors or strategists involved in that first stage of the advisory process and its advice is presented with greater urgency and clarity. An example is the Prime Minister's Chief Science Advisor (PMSCA) Professor Juliette Gerrard's 12 March 2020 letter to the Prime Minister. Therein she states first that the letter "does not comment on wider issues, such as the costs of border shutdowns to the economy, as I am not qualified to assess these" (PMSCA, March Advice Bundle n.d.). The case is then made, clearly and succinctly, for a stringent "keep it out" strategy and there is little room for interpretation. On its website, Professor Gerrard's role is described as follows: "The PMCSA is independent and not an employee of the Government. This enables the freedom to speak out on important issues" (PMSCA, Our Role and Work Plan n.d.).

Therefore, the advice the New Zealand government relied on was put together by scientific advisors to governmental departments and collated in the above-mentioned reports or communicated by PMCSA letters.

5.4   Policies Employed Over Time

Figure 4: COVID-19 Government Stringency Index (Hale et a.l 2021)

COVID-19: Government Stringency Index

This is a composite measure based on nine response indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0 to 100 (100 = strictest). If policies vary at the subnational level, the index is shown as the response level of the strictest sub-region.

Source: Hale, Webster, Petherick, Phillips, and Kira (2020). Oxford COVID-19 Government Response Tracker – Last updated 16 February, 11:00 (London time)
Note: This index simply records the number and strictness of government policies, and should not be interpreted as 'scoring' the appropriateness or effectiveness of a country's response.
OurWorldInData.org/coronavirus • CC BY

As can be seen in the OxCGRT graph above (Figure 4), Taiwan was the fastest to act. Yet it had the most lenient containment and closure policies of the three States, with no stay-at-home order issued and no emergency powers invoked. Instead, it relied upon border restrictions coupled with the most privacy-invading tracking and tracing methods of the three States, which it achieved by merging the Health Ministry, Police and Immigration and Customs Databases to track any incoming citizens and residents as well as COVID-positive cases. Finally, Taiwan centralised and scaled facemask and PPE production, while also controlling distribution (MOHW 2020).

New Zealand's initial policy response started on January 27th, with port-of-entry screening for flights from Wuhan, and on February 3rd obliged travellers from or transiting through China to quarantine for 14 days. This was extended step-by-step until the comprehensive border closure on the 19th of March and the introduction of a 4-tier Alert System on the 21st of March, which started on Level 2 and reached the maximum Level 4 by the 25th, mandating self-isolation for the entire country. Leaving home was permitted only for essential trips to the pharmacy and supermarket, as well as for individual exercise near the home.

In contrast, on the 16th of March, with the death toll already at 55, PM Boris Johnson encouraged but did not order people to stay home and to thus support the National Health Service (NHS). In relative terms, this softer policy was implemented weeks behind New Zealand's more pervasive measures. On the 20th of March, restaurants and social venues were ordered to close and economic measures such as 80% furlough pay coverage were introduced. Police fines for non-compliance were introduced on the 23rd of March as the UK's lockdown came into effect.

Both the UK and New Zealand only scaled up the stringency of their response after the WHO declaration of a pandemic on March 11th (WHO 2020d), with the UK taking slightly longer in absolute terms but being considerably slower relative to the number of cases. On March 11th, cumulatively the UK had detected 1790 cases, New Zealand only 49 and Taiwan only 5. Two weeks later, the UK's policy reached its highest stringency during the studied period, yet there were already 38,815 cases detected (Roser *et al*. 2020). New Zealand's policy stringency peaked at a higher level, due to the more stringent stay-at-home order and the border closure, in the same week, with a total of just 647 cases on March 31st. Relative to the number of detected cases, the UK had delayed for much longer.

A combination of New Zealand's greater stringency and pre-emption resulted in suppression of the virus, followed by its intermittent elimination and a fast relaxing of lockdown regulations.

It should also be noted that to date, March 2020, New Zealand has not reached 3000 cases nor 30 deaths and Taiwan has stayed below 1000 cases and 10 deaths.

Looking at the rest of the period studied, as shown in Figure 5, Taiwan's stringency stayed low throughout since maintaining the border closure and tracking cases proved enough to eliminate the virus. New Zealand started to scale back its lockdown measures from April 27th, with the country moving into its Tier-3 National Alert, then reaching Taiwan's low level by June when the lockdown was lifted entirely while the border closure was maintained. The United Kingdom's stringency oscillated at a persistently higher level, which appears to have been due to its higher case load and mortality, themselves attributable to a delayed response.[9]

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[9] New Zealand experienced a hiccup in August-September and Auckland is currently under a Level 3 notice again as of February 15th, 2021, with three cases.

Figure 5: COVID-19 Government Stringency Index (Hale et al. 2021)

COVID-19: Stringency Index

This is a composite measure based on nine response indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0 to 100 (100 = strictest). If policies vary at the subnational level, the index is shown as the response level of the strictest sub-region.

Our World in Data

Source: Hale, Webster, Petherick, Phillips, and Kira (2020). Oxford COVID-19 Government Response Tracker – Last updated 18 March, 11:00 (London time)
Note: This index simply records the number and strictness of government policies, and should not be interpreted as 'scoring' the appropriateness or effectiveness of a country's response.
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5.5 Communication

The British lockdown policy looks similar to that of New Zealand, but it was communicated in ambiguous terms, such as recommending that "you should not [leave home] if you are showing coronavirus symptoms" (GOV.UK, Staying at home n.d.). The Taiwanese rules for those who had been in contact with COVID-19 patients that they "are prohibited from leaving the house or the specified area"; for those in self-isolation that develop symptoms they instruct that they "cannot go to the hospital or clinic by yourself without instructions of local health authorities and cannot take public transportation to go to the hospital" (Taiwan TCDC, Home Isolation n.d.).

The language of the initial lockdown guidelines is at times similar between New Zealand and the UK, but the overall strategy is communicated differently, and the context is different due to New Zealand's border closure and lower case count. In an example of some ambiguity from New Zealand's early updates, the Chief Executive of the Ministry of Health, Dr Ashley Bloomfield is frequently referred to as "asking" contacts of COVID-19 cases to self-isolate or to seek advice (NZMH 2020). With less cases to manage, however, this factor appears of lesser import.

Taiwan and New Zealand both overall employed clear, efficient and empathetic (even humorous) communication methods to inform their populations of the epidemic threat, the policies being employed

to counter it, the logic behind those policies and, perhaps most importantly, the clear and unequivocal aim to suppress and eliminate the virus from their territories (Wang, Ng *et al*. 2020).

The UK's communication underwent various changes, at times exhibiting absolute contradictions. It was strongly criticised by sections of the media and public as unclear, confusing, contradictory and discretionary, leaving ample room for interpretation and lowering public trust. Arguably, a strategy that allows greater individual discretion would require even greater clarity of message, which was not forthcoming.

Finally, an important episode, which has been attributed to an eventual fall in compliance with the first stay-at-home order, was that of Dominic Cummings, a key advisor to the government, being caught 400km from his London home with his wife and son while showing symptoms of COVID-19. Rather than resigning (as did other prominent figures, such as Prof. Neil Ferguson, for lesser infractions) or being demoted by the Prime Minister, he presented a convoluted and confusing story to the public (*BBC News* 2020c). The "Cummings Effect", due in large part to this display of impunity, reportedly took hold (Fancourt, Steptoe and Wright 2020; Jackson *et al*. 2020). It should be noted that equal treatment is stressed as essential to the strategy efficacy throughout the SAGE meeting minutes and reports.

In contrast, New Zealand Health Minister David Clarke in New Zealand immediately apologised and offered to resign for having gone to the beach with his family in contravention of the lockdown rules (*RNZ* 2020). He was demoted by the Prime Minister. The messaging here was clear that the policy applied equally, including to government figures.

6. DISCUSSION

6.1 Structural Similarities

The above analysis demonstrates that the three cases are overwhelmingly similar structurally. More to the point, resource capacity was not put to the test in Taiwan and New Zealand as they never reached high case counts due to their pre-emptive policies.

A structural difference worth considering, however, is that the UK's larger numbers of visitors and ports of entry, along with being to all effects a part of the EU, could be argued to partly explain its poorer performance. It had more possible virus points of origin, which in turn demanded a faster border closure for it to be as effective as this policy was in Taiwan and New Zealand. Therefore, the UK would have had to be as pre-emptive as Taiwan. It would have therefore had to act prior to the consequences of inaction being demonstrated in Italy, which PM Jacinda Ardern benefited from and cited directly to explain her government's more stringent policy (*Newsroom* 2020). With neither a TCDC to take the initiative nor geographical isolation, the UK had a worse starting position. This caveat aside, had the

UK imposed the same policy as New Zealand did in March, it may have had a more successful results overall, if not quite as exemplary as those of the other two.

6.2 Health Emergency Institutional Makeup Variance

The key difference this study finds was in the institutional makeup of the health emergency response, not in resources or other structural factors. The failure case had a non-independent and a politicised scientific advisory. Therefore, the policy options discussed were limited *a priori*. The success case of New Zealand had an independent advisory and the most successful of the three had a close to autonomous TCDC. The spectrum of responses is therefore from the highly politicised to the highly technocratic, with New Zealand being the intermediate case.

The Taiwan TCDC is an empowered medical institution that could direct its response with a high degree of autonomy and was hence faster and more stringent in the crucial initial phase of the pandemic. Although a political figure, the Minister of Health was soon given final say by the executive and Taiwanese health authorities had more powers directly available to them. Thus, one could posit the counterfactual that if Public Health England (PHE) had commanded the same powers, results may have been similar in the UK. However, New Zealand's government made similar choices to Taiwan's with a decision-making framework closer to the UK's. A technocratic response through empowered health institutions is thus not the only avenue to efficacy. It appears possible for the incumbent political party to direct the response effectively if its advisors are independent.

A drawback of Taiwan's empowered TCDC is that the degree of privacy invasion and the control it granted authorities might have potentially serious implications for democracy in the country. Amat *et al*. (2020), in their study of citizen preferences at the beginning of the pandemic in Spain, reveal a high degree of willingness in that country to sacrifice individual rights and freedoms to manage the health emergency more effectively. However, as their study suggests, "a shock that is large enough, such as the COVID, may generate a shift towards a new, self-reinforcing political equilibrium" (Ibid p. 5). Many of the studies they cite relate to shocks and emergencies causing trust in politicians to drop and argue that this has been shown to shake faith in the system, regardless of the specific politicians or parties, in favour of more authoritarian governance methods, particularly in new democracies. Thus, I emphasise here the Taiwanese system's short and mid-term efficacy while acknowledging that the implications for the long-term health of democratic systems are unknown and might be grave.

On the other hand, just as Taiwan would be expected to open its borders when the crisis subsides, it is also expected to give up its surveillance powers and disaggregate the integrated databases that these powers rely on. Should that occur, it would be fruitful for democracy watchers to study how the country both implemented an invasive technocratic response and then reverted to pre-emergency (lesser)

surveillance capacities. Within the strict scope of this thesis, however, risks to democracy aside, the Taiwanese technocratically-leaning institutional structure has proven the most efficient of the cases studied.

6.3   Independence of advisories

In contrast to the UK, the scientists in New Zealand who were tasked with compiling the relevant reports did so independently. They were thus able to call for a stringent and pre-emptive approach with a high degree of transparency.

In the UK, SAGE members included a number of elected officials and their advisors. According to Prof. Andrew Hayward, a leading SAGE member, these meetings appeared to be directed and framed by what were deemed acceptable political bounds[10]. On this occasion, this runs contrary to the findings of multiple authors cited by Rubin and Baekkesov (2020 p. 322) in their expert-led securitisation paper that at times "politicians are eager to delegate responsibility in situations of low political rewards but high political risks. Health threats can be contentious political issues where the remedies (e.g., vaccinations, isolation, quarantines and school closures) carry substantial political risks". This was not the case in the UK, which gave little space to experts to formulate their advice, let alone responsibility to enact it, and instead sought simply to avoid such risks by delaying critical decisions.

The unofficial group Independent SAGE was formed in May 2020, headed by the former Chief Scientific Advisor to the government, Sir Richard King, to provide an alternative to an increasingly criticised official SAGE, and has been since cited in the press extensively as well as in the *British Medical Journal*. It highlights the lack of independence of the official Advisory Group and the complicity it displayed toward elected officials' inaction (Independent SAGE 2020).

A first example of a public display of complicity occurred during the March 3rd Press conference in which the Prime Minister boasted he had "[shaken] hands with everybody" at a recent hospital visit that included COVID patients. Chief Scientific Advisor Patrick Vallance reaffirms the Prime Minister's claim that the advice was merely to wash one's hands. He does not clarify then or after that it was actually to not touch in the first place (*Sky News* 2020). The PM later denied having ever been advised to not touch, though *The Financial Times* (2020) cited the 16 times this had been advised by SAGE previously. The policy was clear, the messaging from political leadership was not, and Vallance did not take the opportunity to clarify or rectify this in the moment or subsequently.

A second example came when Vallance himself advocated a "Herd Immunity" approach, with no vaccine available and which was projected to risk 500,000 fatalities (Ferguson *et al*. 2020) and repeated

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[10] See Appendix 3.

this objective across media interviews on the 13th of March (*BBC Radio 4* 2020). In a subsequent interview, Health Secretary Matt Hancock denied that Herd Immunity was the goal (*BBC Politics* 2020), but the possibility that the government was changing course in response to public opinion was clear and confusion remained.

Vallance displayed complicity during the "hand shaking" moment as well as in his proposal of Herd Immunity. Indeed, Richard Horton, Editor in Chief of the medical journal *The Lancet*, has gone so far as to accuse SAGE of collusion with the government, stating "Advisors became the public relations wing of a government that had failed its people" (Horton 2020, p. 81). Horton also points to a lack of transparency of the Advisory Group, which motivated the founding of Independent SAGE. Complicity bordered on collusion, as is discernible in Vallance's denials that followed the Herd Immunity episode as well as in the heavily redacted SAGE meeting member lists. Horton points to how the first Independent SAGE public meeting on May 3rd was followed on the same day by the government publishing the full SAGE membership list for the first time, and the meeting minutes weeks later, thus displaying a reactiveness, common to much of the response (Horton 2020, p. 82; GOV.UK 2020).

In contrast, New Zealand's initially confidential report on the worst-case scenario was published in full by late March and the entirety of the Taiwan TCDC's organisational structure, policy timeline and content were published and easily accessible on its website in real time.

Also of note are two statements that Professor Hayward has made in an email exchange with me[11] as well as in media interviews (*Guardian* 2020). The first is that the questions scientists were asked by government were "specific". The second is "wider interventions were not something that the government would consider at that time".[12] Both of these indicate that SAGE advisers were not, in contrast with their New Zealand peers, tasked with providing policy options on an objective scientific basis, but rather to discuss given options within a politically defined framework. That is to say, options were *a priori* constrained by political considerations.

It cannot be proven here that SAGE engaged in collusion rather than complicity. This will need a full public inquiry to be ascertained. For now, I can only affirm that the hesitancy of the advice and the visible and audible complicity during press conferences referenced above, along with the lack of opposition expressed or at least noted in SAGE meeting minutes and in Andrew Hayward's account, suggest that SAGE was not sufficiently independent for its task.

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[11] See Appendix 3.

[12] Ibid.

6.4   Communication

Since March 2020, Jacinda Ardern has been lauded for having adopted an easily understood communication strategy (WHO 2020a; McGuire *et al.* 2020). Her government has also been praised for its accessibility in its use of livestreams on Facebook where she responded directly to queries from the public. Ardern's strategy is often singled out for its empathetic nature, with the simple maxim of "be kind" central to the overall message that described the population as a "Team of 5 million" and the strategy to "Go hard and go early". Simplicity, empathy and consistency marked this strategy.

Taiwan's CDC has also received praise for starting their daily bulletins and frequent press conferences from early January, providing clear information on the key regulations and the reasons why they were brought in, countering the stigmatisation of COVID patients and actively fighting the spread of misinformation (Wang, Ng *et al.* 2020). They have also been praised for their innovative use of comedy in their "humor over rumor" campaign against the so-called infodemic to battle the spread of fake news and ensure their messaging prevailed in the attention race (*Taiwan News* 2020).

In a rare critical action, the UK government received a lengthy list of recommendations from SAGE as of the 22nd of March in its Options for Increasing Adherence paper (SAGE, Options 2020), which criticised an incoherent overall approach. An example typical of the paper's content says:

> The guidance currently lacks clarity and specificity with regards to recommended behaviours. For example, instead of the phrase 'try to', it should just say 'do'. Phrases such as 'as much as is practicable', 'non-essential', 'significantly limit', and 'gathering' are open to wide differences in interpretation (SAGE, Options 2020, p. 1).

Another instance, more closely related to policy than its communication, is in stating on compulsion that:

> Experience with UK enforcement legislation such as compulsory seat belt use suggests that, with adequate preparation, rapid change can be achieved. Some other countries have introduced mandatory self-isolation on a wide scale without evidence of major public unrest and a large majority of the UK's population appear to be supportive of more coercive measures. For example, 64% [of] adults in Great Britain said they would support putting London under a 'lock down' (SAGE, Options 2020, p. 2).

Despite this, the 5th of March SAGE minutes include the observation that "[T]he modelling undertaken assumed considerably less than total public compliance for these measures (e.g. 50% compliance for household quarantine)" (SAGE 13 2020). Even though the inaccuracy of this assumption was pointed

to in both SAGE publications and on numerous occasions thereafter, the assumption of low compliance persistently underpinned government policies.

Next, the central response slogan of "Stay home. Protect the NHS. Save lives" was changed in early May to the arguably meaningless "Stay Alert. Control the virus. Save lives", in this case reportedly on the advice of social media experts rather than of SAGE, and was rejected by the Welsh and Scottish Devolved governments as reckless (*BBC News* 2020a; Independent SAGE 2020, p. 3).

7. CONCLUSION

The main question this thesis sought to answer is what explains the varying success or failure of pandemic responses from Taiwan, New Zealand and the UK. This study found that the more independent and transparent the scientific advisory is, the more pre-emptive the policy recommendations and the more effective the government response by consequence. This dissertation highlights that to study health emergency responses effectively, it is necessary to understand the relationship between experts and elected officials in times of crisis.

7.1   Areas of further study

There is not scope in this paper to test whether given electoral systems or ideologies are more conducive than others to ensuring the independence of expert advisors during emergencies. The first instance might entail applying and extending Iverson and Soskice's (2006) theory on the impact of electoral institutions on redistribution politics, with high pandemic pre-emption as a proxy for high redistribution since both are in the first place in vulnerable and out-group interests over those of in-groups. This would be an interesting area to study, especially because of the way that public health emergencies interact with existing social inequalities. Given the large body of literature on blame attribution, vulnerability, inequality and the politics of health emergencies, the methodological and ontological bases exist for further examination of how ideology shaped different government responses to COVID-19. Recent studies of the relationship between populists and experts could also be applied to understand variance in pandemic management.

Similarly, this thesis could not address the cultural essentialist discourse that some political actors and sections of the media have relied on to explain or justify the course of the pandemic in different regions or countries. Given the well-developed literature critiquing such explanations, much of it crossing over with literature relevant to ideological and electoral considerations mentioned above, there is a strong foundation on which such studies could be conducted. Such studies could be paired with analyses of policy and policy formulation processes to begin to define a more useful prism through which to understand how epidemics interact with politics.

Additionally, there was not room here to assess the role of the WHO and how or to what extent it shaped and coordinated the responses of its member and non-member States.

7.2   Limitations

A limitation to this study is that the pandemic is ongoing and this paper only focuses on its beginning. New Zealand and Taiwan's border closures may not be sustainable in the long term. The OxCGRT study gives greater stringency value to internal closures and containment measures than to border closure: this might change if the borders stay shut more than a given amount of time.

A second limitation is the small-N size of the comparison; a larger study of more cases would be an interesting way to further develop the work offered here. Furthermore, until public enquiries are conducted and more information is released, it remains contentious to attribute to the SAGE-government relationship with the entirety of the responsibility for the UK's failure.

7.3   Close

This thesis has attempted to present an argument for a greater emphasis on political and institutional considerations in the analysis of pandemic preparedness and responses. It highlights the importance of the relationship between elected officials and their expert advisors and the possible advantage of semi-autonomous technocratic authority for effective health emergency management. In so doing, it adds to a growing body of literature on the politics of health emergencies and the schools of thought that argue that policy, and how it is formulated, shapes health emergency responses more than economic factors.

Taiwan represents the almost entirely technocratic end of the politicisation spectrum, with an empowered CDC that can direct other areas of government (with MOHW oversight) and shape policy options. A concern that emerges from the evident greater efficacy of the technocratic approach is that it is one with less democratic oversight. Moreover, Taiwan has implemented a degree of citizen surveillance that would be disquieting in a non-emergency context, and until these capacities are rolled back this will remain a potential criticism of its approach. However, for the comparative purpose of this thesis, Taiwan's approach proved to be both the most technocratic and the most effective as it limited cases and deaths more than the other two cases and did so with the least negative economic and social impacts. Should Taiwan roll back its current surveillance capacities, as expected, it will also have potentially provided a solution to the technocracy-democracy dilemma.

The intermediate case of New Zealand demonstrates that the Taiwanese method is not the only effective one. As long as the government is advised independently and the process is transparent, a pandemic response does not necessarily need to be quite as technocratic to remain largely depoliticised. New Zealand has similar numbers of cases and deaths to Taiwan (though somewhat higher relative to

population) and took a significantly smaller hit to the economy than the UK did as a result of its pandemic response.

The UK case, at the politicised end of the response spectrum, has proven the least effective at limiting case numbers and mortality and, in the resulting effort to make up for lost time, the government has implemented the most socially and economically disruptive approach of the three countries studied here. In the UK, the complicit, or at least timid, Scientific Advisory Group's internal process was limited *a priori* by a narrow, government-directed advisory format. The evidence, especially from the juxtaposition of Taiwan's approach and results versus those of the UK, indicates that the degree of independence and transparency of a given pandemic response process is crucial to determining its effectiveness.

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APPENDIX

Appendix 1:

Graph highlighting the inaccuracy of GHS index country performance predictions versus COVID-19 pandemic results.
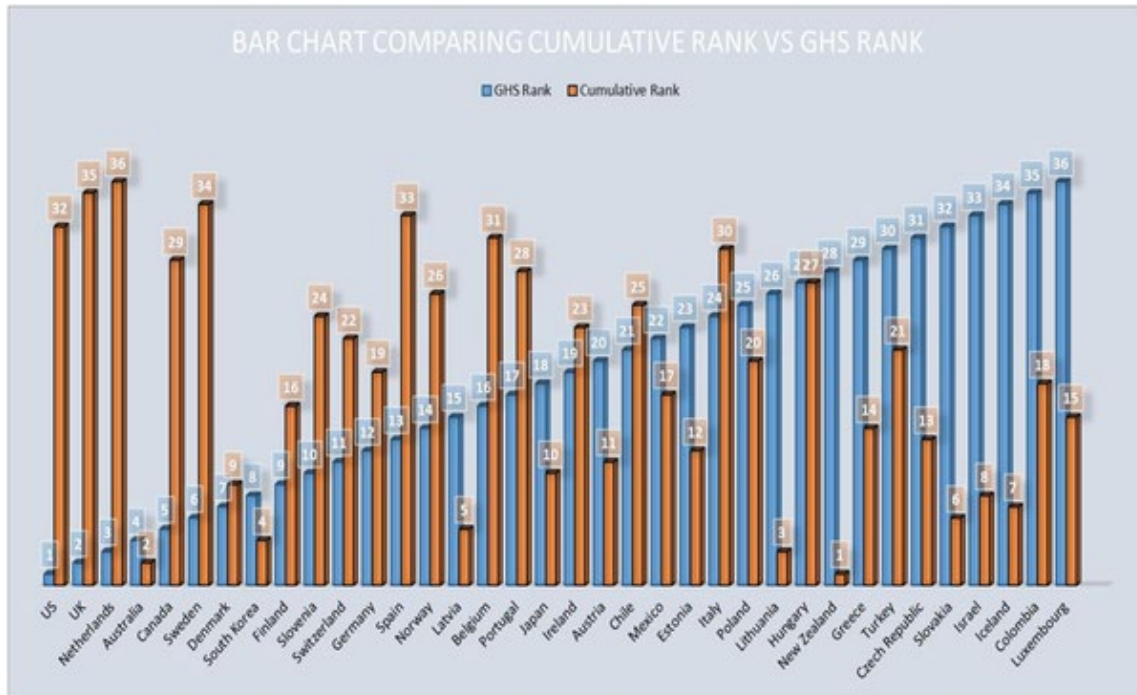

Figure 6: The above graph represents the OECD countries ranked by the GHS index (shown in blue) in ascending fashion from left to right with a superimposed bar chart (shown in orange), which depicts the cumulative score ranking based on total cases, total deaths, recovery rate and total tests performed. (Abbey et al. 2020)

Appendix 2:

Graph highlighting the inaccuracy of GHS index country performance predictions versus COVID-19 pandemic results.

Table 3:Structural comparison elements and sources.

Structural Factors by country	New Zealand	Taiwan	United Kingdom
Total Population (worldometre.com, n.d.)	4,851,331	23,816,775	67,886,011
Population density/sq. km (CIA Factbook, 2020)	18	671	270
Urbanisation % (worldometer.com, n.d.)	86.9	78.5	82.9
Age % over 65 (CIA Factbook, 2020)	15.54	15.72	18.48
Median Age (CIA Factbook, 2020)	37.2	40.7	40.6
Health Expenditure as % GDP 2018 (OECD, 2018; Taiwan MOHW, 2018)	9.30%	6.10%	9.80%
Physician Density per 1000 people (OECD, 2018; Taiwan MOHW, 2016)	3.47	1.9 (2016)	2.79
Hospital Bed density per 1000 people (OECD, 2018; Taiwan MOHW, 2018 and 2016 where indicated),	2.7	6.9	2.5
Mobile Internet Penetration 2019 (statista.com and Office For National Statistics UK).	88	82.8	71

Appendix 3:

Email Exchange with Prof. Andrew Hayward of UK SAGE copied *verbatim* with both Prof. Hayward's and my typos included

Subject: COVID port screening January 2020

Giovanni Dini   18 de enero de 2021, 16:00

Dear Dr Hayward,

I am a Master's student studying International Relations at the Institut Barcelona de Estudis Internacionals and am currently writing my thesis as a comparison of three countries' COVID-19 initial responses. Specifically, I'm comparing the UK, Taiwan and New Zealand.

Reading NERVTAG meeting minutes from January 2020, I noticed that NERVTAG advised DHCP not to implement port of entry screening to slow the entry of COVID-19 from Wuhan. I'm referring to minutes from January 21st, 2020, in which you are noted to have observed that even though 4/5 cases outside of China had been identified via this form screening, there may have been many more that had yet to be identified (point 3.5 of the minutes, attached for your convenience). This was in the wider context of NERVTAG advising DHCP and subsequently SAGE that there should be no such screening due to its high cost and low efficiency.

I wondered whether you would be interested in conducting an interview with me me so that I might be able to accurately represent the thinking in those early meetings on the novel coronavirus. If not, I hope you might answer the following query: in retrospect, knowing what we know now, would you advise the group differently and would you seek to implement an approach more akin to Taiwan's stringent port of entry screening checks, despite the cost? Also, was there anyone in attendance who held the opposite view that which you and the group as a whole concluded on?

I am aware that you would not have known the high degree of infectiousness of this novel virus at the time, that you may have been under pressure to provide given answers or that you may still believe that it was not a cost effective approach. I also believe that you may well have been correct that many cases did pass through ports of entry in other countries, even Taiwan, without detection, but I wonder if the UK might have slowed the spread of the virus more effectively had a different strategy been implemented early on.

I hope this is of interest to you and to hear from you soon.

Sincerely,

Giovanni Dini

Hayward, Andrew   18 de enero de 2021, 18:13

Para: Giovanni Dini

The way Nervtag worked at the time was to answer specific questions posed by government. RIghtly or wrongly the specific question Nervtag was asked was whether or not those coming to the country should be screened, not whether wider restrictions on travellers should be in place (e.g. stopping them coming or quarantine post arrival). This is likely because wider interventions were not something that the government would consider at that time.

In that context it was agreed (by all those on the committee) that there was good evidence that port screening would miss a high proportion of cases who would subsequently develop disease and therefore would not be effective at preventing importation.

The fact that there was exit screening in Wuhan also contributed to the discussion. The lack of availability of an accurate rapid screening test at the time also contributed to the decision.

It is likely that given technologies at the time nothing short of a highly restrictive travel ban with quarantine of those arriving from anywhere in the world would have made a great deal of difference - that was just not on the table as a politically acceptable solution at the time.

Andrew Hayward

Director UCL Institute of Epidemiology and Health Care

Co-Director UCL Collaborative Centre for Inclusion Health - Building Evidence | Supporting Inclusion

Giovanni Dini   18 de enero de 2021, 18:44

Para: "Hayward, Andrew"

Dear Dr Hayward,

I would like to thank you for your prompt response. This is useful information for my research and I will happily include this assessment in my thesis.

Thank you again for your time. If you would wish to speak with me further, I would of course be more than happy to do so.

Kind regards,

Giovanni

Appendix 4:

Email from Taiwan CDC in response to my request for clarification on pandemic response institutional structure

NB: I have not provided my initial correspondence with the TCDC as this was transmitted via an online form that I no longer have access to.

正　本

發文日期：中華民國110年3月26日
發文字號：疾管企字第1100036425號
主旨：署長信箱民眾意見-信件編號:202103160000014-Dear Sir or Madam,I hope my email finds you well.

Dear Giovanni Dini,

Thank you for recognizing our highly effective and efficient management in containing the COVID-19 pandemic.

Taiwan CDC (TCDC), an agency under the Ministry of Health and Welfare (MOHW), is the highest infectious disease control authority in our country. Commonly, TCDC leads the way in protecting and preparing the nation against infectious disease threats and emergencies by formulating policies and plans as well as executing response activities. But when it comes to a national emergency, it requires coordinated work involving different government departments as well as the private sector, non-governmental organizations, and individual citizens to help minimize the impact of the pandemic.

According to Article 17 of the *Communicable Disease Control Act*, "…in consideration of the severity of the domestic and international epidemic conditions, and when considering it necessary to consolidate various resources and facilities, and integrate personnel of the involving organizations (institutions), upon reporting to the Executive Yuan for approval, may establish a central epidemic command center (CECC) and assign one person to be the commanding officer to unify command, supervise and coordinate government organizations at various levels, state enterprises, reserve service organizations and civic groups to implement disease control measures; when necessary, the national armies may be coordinated for support."

第1頁　共3頁

Owing to its experience with the SARS epidemic in 2003, TCDC vigilantly kept track of information about the new outbreak. On December 31, 2019, through its regular public opinion monitoring system online, TCDC noticed a new respiratory infectious disease like SARS was emerging from Wuhan, China. TCDC immediately formed a response team and initiated its border control measures, such as implementing onboard quarantine of flights from Wuhan. On the same day, TCDC sent an email to the International Health Regulations (IHR) focal point under the World Health Organization (WHO), informing WHO of its understanding of the disease. At that time, it was TCDC who had the power to make decisions.

As COVID-19 increased gradually and globally, TCDC announced on January 20, 2020, the activation of the Central Epidemic Command Center (CECC) as a level 3 command center in order to integrate resources of both public and private sectors to fight against COVID-19. On February 27, 2020, the CECC was elevated to Level 1 (the highest) owing to the worsening global epidemic situation. Dr. Shih-Chung Chen, the Minister of Health and Welfare, was designated by the Premier of the Executive Yuan as the commander. Since the CECC was activated, cross-agency meetings and expert consultation meetings have been held regularly and continuously within the CECC; the CECC Commander has the authority to make the final decision.

If you have any questions or would like more information about COVID-19 as well as other health topics, please visit the Taiwan CDC website or call the Communicable Disease Reporting and

Consultation 1922. For more in-depth information about COVID -19 policies in Taiwan, please visit us online at the "Crucial Policies for Combating for COVID-19" website. The materials found there include different aspects of Taiwan's epidemic prevention work, and how Taiwan is helping the international community.

Sincerely,

Taiwan Centers for Disease Control