SOUTH KOREA, SINGAPORE AND TAIWAN TAKE ON CORONAVIRUS

Er-Win Tan

KEY TAKEAWAYS

- Faced with the COVID-19 pandemic, countries around the world have adopted various strategies for contact-tracing to suppress virus outbreaks.

- These strategies have sought to balance individuals' rights to privacy on the one hand, and the authorities' ability to use digital surveillance to gather data quickly on the other. This poses a challenge: how can governments acquire data needed to combat COVID-19, whilst simultaneously protecting private data to maintain public trust in their institutions?

- The Agile Governance model has been cited as being critical in enabling the ROK and Taiwan to suppress COVID-19. Although Agile Governance has not been specifically tied to Singapore's efforts against COVID-19, its implications are evident in the context of Singapore's public health measures against COVID-19.

- Other similar models of public policy governance that have been cited by scholars include Quadruple Learning (in the case of the ROK) and Anti-Fragility (in the case of Singapore).

- Policy recommendation 1: Adaptable pre-crisis preparation is necessary to ensure that states are ready to respond to crises at short notice.

- Policy recommendation 2: In responding to viruses, states and policymakers should see digital surveillance as a tool, not a panacea, in assisting with the task of contact-tracing.

- Policy recommendation 3: Oversight over digital technology is necessary to ensure that the general public cooperates with public health recommendations.

- Policy recommendation 4: Enforcement action is necessary against sections of society that wilfully violate public health guidelines.

Since the outbreak of the COVID-19 pandemic, nations across the world have been faced with challenges to social resilience. The Republic of Korea (ROK), Singapore and Taiwan have been praised to varying degrees by the global media[1] for rapidly flattening the curve of COVID-19 infections with low death tolls, without implementing draconian lockdown measures. Their combination of technology and public health measures has been lauded as a viable model for successful containment.[2] Mark Manantan[3] highlighted the ROK and Taiwan for their application of the principles of Agile Governance based on human-centered policies and their appropriate use of information technology as part of a 'whole-of-society' approach in dealing with COVID-19.[4] Whilst Agile Governance has not been specifically utilised in analysing Singapore's efforts against COVID-19, the presence of parallels between the three countries' public policy measures warrants a comparative evaluation of their efforts in overcoming the pandemic. ■

INTRODUCTION

1   *Asquith, James. 2020. "Encouraging Outlook—In Taiwan, Singapore And South Korea Life Is Continuing Without Lockdowns." Forbes, 1 April. (https://www.forbes.com/sites/jamesasquith/2020/04/01/positive-outlook-in-taiwan-singapore-and-south-korea-life-is-continuing-with-relative-normality/#5562add67335).*

2   *Aron, Ravi. 2020. "Combating COVID-19: Lessons from Singapore, South Korea and Taiwan." The Wharton School of the University of Pennsylvania, 21 April. (https://knowledge.wharton.upenn.edu/article/singapore-south_korea-taiwan-used-technology-combat-covid-19/).*

3   *Research Fellow, National Chengchi University.*

4   *Elmi, Nima et al. 2018. "Agile Governance Reimagining Policy-making in the Fourth Industrial Revolution." World Economic Forum. (http://www3.weforum.org/docs/WEF_Agile_Governance_Reimagining_Policy-making_4IR_report.pdf).*
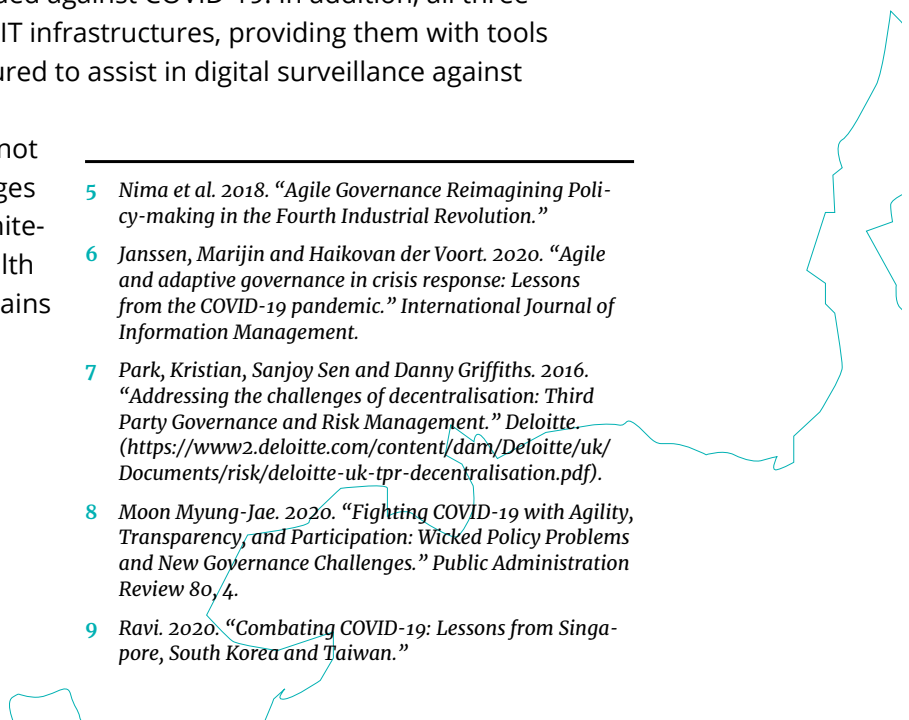
AGILE GOVERNANCE IN THE TIME OF THE PANDEMIC

Four characteristics of Agile Governance are noteworthy. First, as emphasised in the 2018 World Economic Forum, Agile Governance is an inclusive, human-centered approach to public policy which works by involving more stakeholders through high levels of engagement and the appropriate use of digital technology.[5] Second, policymaking organs constantly review their policy successes and failures, avoiding the trap of responding to future crises by adopting outdated policy tools.[6] Third, responsibility and power is decentralised to regional municipal governments, civil society and other stakeholders, on the logic that they are more nimble in responding to local circumstances.[7] Fourth, the Agile Governance model promotes active levels of voluntary public participation. To increase public awareness of the rationale behind government mandates and to create a shared sense of civic responsibility, public trust in government institutions is crucial.[8] In the following sections, the ROK, Singapore and Taiwan highlight the varying levels of success of their interpretations of the Agile Governance model.[9]

The selection of these three countries as case studies for this manuscript is based on the fact that all three countries, in spite of facing high levels of human movement from China, and (in the case of the ROK and Singapore) high levels of infection during the early stages of the pandemic, have been able to sharply flatten the curve in mitigating community transmissions, as well as having low death tolls. Nonetheless, it is necessary to acknowledge the limitations of this study. Singapore and Taiwan are islands, and South Korea is, in effect, an island due to its hostile northern neighbour. Geographical separation from contiguous neighbours reduces the entry points that have to be guarded against COVID-19. In addition, all three countries have large IT infrastructures, providing them with tools that can be reconfigured to assist in digital surveillance against COVID-19. Although Taiwan, to date, has not experienced any surges in infection, the definiteness of its public health policy measures remains

5 Nima et al. 2018. "Agile Governance Reimagining Policy-making in the Fourth Industrial Revolution."

6 Janssen, Marijin and Haikovan der Voort. 2020. "Agile and adaptive governance in crisis response: Lessons from the COVID-19 pandemic." International Journal of Information Management.

7 Park, Kristian, Sanjoy Sen and Danny Griffiths. 2016. "Addressing the challenges of decentralisation: Third Party Governance and Risk Management." Deloitte. (https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/risk/deloitte-uk-tpr-decentralisation.pdf).

8 Moon Myung-Jae. 2020. "Fighting COVID-19 with Agility, Transparency, and Participation: Wicked Policy Problems and New Governance Challenges." Public Administration Review 80, 4.

9 Ravi. 2020. "Combating COVID-19: Lessons from Singapore, South Korea and Taiwan."

debatable. It should be recalled that during the early stages of the COVID-19 outbreak, the ROK and Singapore were singled out as success stories against the pandemic, only to be beset by outbreaks shortly thereafter. Whilst heightened global awareness and vigilance since the outbreak of the COVID-19 pandemic suggests that Taiwan is unlikely to face any new surges in the foreseeable future, the extent to which this outcome validates the success of Taiwan's public health measures must be qualified. If, as a hypothetical scenario, pre-symptomatic transmission had occurred prior to the Taiwanese authorities' awareness of the looming pandemic (thence leading to widespread community transmission), it is questionable if Taiwan would still be held up as a model case study in responding to COVID-19. ■

Sabinne Lee, Changho Hwang and M. Jae Moon[10] have characterised the ROK's governance model as being based on 'quadruple-loop learning', a model in which policymaking organs constantly review their performance in the face of new information, whilst tailoring government responses to the specific nature of new crises.[11] It is not enough for organisations to learn from past experiences – they must also acknowledge how each and every context is characterised by unique circumstances, as a result of which policy planning has to constantly revise the assumptions upon which crisis contingencies may occur.[12]

This was evident in 2015, when Article 76-2(2) was added to the Infectious Disease Control and Prevention Act (IDCPA), reflecting lessons learned from the Middle East Respiratory Syndrome outbreak.[13] This granted health authorities access to cellphone GPS signals, credit card transactions and CCTV surveillance without requiring a warrant.[14] Simultaneously, curbs on such wide-ranging powers were built into the IDCPA, including notifying the person under surveillance, and a commitment to destroying private data upon completion of contact-tracing.[15]

These measures enabled Korea to respond rapidly to a 'super-spreader' event in Daegu, involving 'Patient 31', a member of the *Shincheonji* Church.[16] The Korean Centers for Disease Control and Prevention (KCDC) activated the Global Epidemic Prevention Platform (GEPP), a digital platform developed with the cooperation of Korean Telecom (KT) – the ROK's primary telecommunications corporation – to mon-

10 Respectively, from Korea Institute of Public Administration, Dong-A University and Yonsei University.

11 Lee, Sabinne, Changho Hwang and M. Jae Moon. 2020. "Policy learning and crisis policy-making: quadruple-loop learning and COVID-19 responses in South Korea." Policy and Society 39, 3.
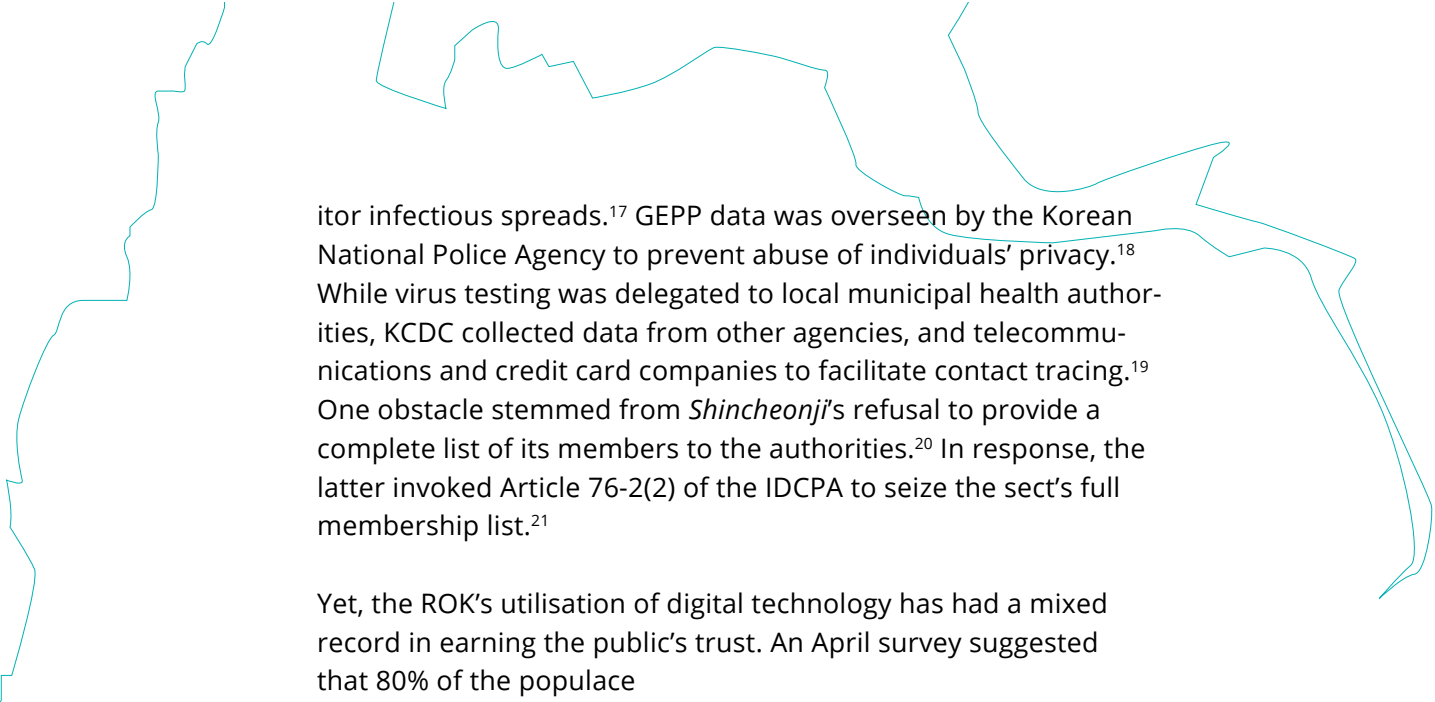
12 Lee, Sabinne Lee, Changho Hwang and M. Jae Moon. 2020., "'Policy learning and crisis policy-making: quadruple-loop learning and COVID-19 responses in South Korea." 367–68.

13 Kim, Brian. 2020. "Lessons for America: How South Korean Authorities Used Law to Fight the Coronavirus."Lawfare Blog, 16 March. (https://www.lawfareblog.com/lessons-america-how-south-korean-authorities-used-law-fight-coronavirus).

14 Edwin O. Reischauer Center for East Asian Studies. 2020. "South Korea's Response To COVID-19: Interview With Wonhyuk Lim." Podcast, 23 April. (https://www.reischauercenter.org/podcasts/south-koreas-response-to-COVID-19-with-wonhyuk-lim/); Korean Legislation Research Institute. 2020. "Enforcement Decree of the Infectious Disease Control and Prevention Act." Amendment by Presidential Decree No. 28070, 29 May. (http://elaw.klri.re.kr/eng_mobile/viewer.do?hseq=43547&type=part&key=36).

15 Kim, Brian. 2020. "Lessons for America: How South Korean Authorities Used Law to Fight the Coronavirus."

16 Park, Nathan S. 2020. "Cults and Conservatives Spread Coronavirus in South Korea." Foreign Policy, 27 February. (https://foreignpolicy.com/2020/02/27/coronavirus-south-korea-cults-conservatives-china/).

itor infectious spreads.[17] GEPP data was overseen by the Korean National Police Agency to prevent abuse of individuals' privacy.[18] While virus testing was delegated to local municipal health authorities, KCDC collected data from other agencies, and telecommunications and credit card companies to facilitate contact tracing.[19] One obstacle stemmed from *Shincheonji*'s refusal to provide a complete list of its members to the authorities.[20] In response, the latter invoked Article 76-2(2) of the IDCPA to seize the sect's full membership list.[21]

Yet, the ROK's utilisation of digital technology has had a mixed record in earning the public's trust. An April survey suggested that 80% of the populace supported a government proposal to mandate use of electronic wristbands to keep track of people under self-quarantine.[22] However, there is a shortfall in the general public's confidence in data privacy protections. This was evident in the ROK's introduction of the Corona100m app. This app used GPS signals from peoples' phones to alert users on potential virus hotspots.[23] It marked an instance of collaboration between the public and private sectors – whilst ROK authorities undertook digital surveillance of peoples' phone signals, the data was processed by TINA3D's development team to provide the public with updated information on potential virus hotspots.[24]

17 *Oh, Juhwan et al. 2020. "National Response to COVID-19 in the Republic of Korea and Lessons Learned for Other Countries." Health Systems and Reform 6, 1.*

18 *ROK Ministry of Economy and Finance. 2020. "Korea Shares COVID-19 Response Strategies with World Bank."' Press Release, 26 March. (http://english.moef.go.kr/pc/selectTbPressCenterDtl.do?boardCd=N0001&seq=4868). 13–14.*

19 *Bhatia, Dominika, et al. 2020. COVID-19 Case and Contact Tracing: Policy Learning from International Comparisons." Rapid Review 25. 4.*

20 *Kim, Hyun-Jung. 2020. "South Korea learned its successful Covid-19 strategy from a previous coronavirus outbreak: MERS." Bulletin of the Atomic Scientists, 20 March. (https://thebulletin.org/2020/03/south-korea-learned-its-successful-covid-19-strategy-from-a-previous-coronavirus-outbreak-mers/).*

21 *"Gov't Takes Follow-up Measures After Securing List of Shincheonji Church Followers." KBS, 26 February 2020. (https://world.kbs.co.kr/service/news_view.htm?lang=e&Seq_Code=151611); Lee, Heesu. 2020. "These Elite Contact Tracers Show the World How to Beat Covid-19." Bloomberg, 26 July. (https://www.bloomberg.com/news/articles/2020-07-25/these-elite-contact-tracers-show-the-world-how-to-beat-covid-19?fbclid=IwAR14ns-B06-rrhbrvfMXESCB-zTR2uSITLA9JwYkzel-DAe__KExTN3q3BNg).*

22 *Yonhap News Agency. 2020. "S. Korea to use electronic wristbands on violators of self-isolation rules: PM." Korea Herald, 11 April. (http://www.koreaherald.com/view.php?ud=20200411000043); Kirk, Donald. 2020. "South Korea is Beating the Coronavirus. Mass Testing is Key. But There's More." The Daily Beast, 13 March. (https://www.thedailybeast.com/south-korea-is-beating-the-coronavirus-mass-testing-is-key-but-theres-more?fbclid=IwAR3ER3FAPgT1NTpYIZV7Xmq-WTNfLwGheGtEq2R60drZqbX-uzF9fvXcRdww).*

23 *Wray, Sarah. 2020. "South Korea to step-up online coronavirus tracking." Smartcitiesworld, 12 March. (https://www.smartcitiesworld.net/news/news/south-korea-to-step-up-online-coronavirus-tracking-5109).*

24 *Interview with Bae Wonseok, Development Director of TINA3D, by email, between 30 October and 4 November 2020.*

Although hailed for keeping the public informed, Corona100m raised concerns over its implications for privacy.[25] In an attempt to protect users' privacy, neither ROK Government agencies, nor TINA3D, were permitted to collect identifying personal information.[26] Yet, although Corona100m did not name any infected persons, the level of detail it provided – for instance, the time and location visited by COVID-19 infected persons – made it possible for them to be 'outed', even when accuracy may have been skewed by technical glitches.[27] Moreover, the government was unable to make it mandatory for citizens to download Corona100m, as access to the app was controlled by Apple and Google.[28] As the app was developed by a private company and not the government, the latter had no authority to order citizens to download Corona100m.[29] Yet, the fact that the download of the app was not mandatory meant that its effectiveness depended on the public's sense of collective responsibility in downloading it. By the time of the discontinuation of the Corona100m app, the app had been downloaded by some 4 million ROK residents,[30] only 8% of the ROK's population, far from the 60% believed to be necessary for meaningful impact.[31]

Further shortfalls blunted the effectiveness of the ROK's Ministry of the Interior and Safety's introduction of the Self-Quarantine Safety Protection app in March in addressing additional COVID-19 outbreaks over the spring and summer.[32] In May, an infected individual visited bars popular with the

25 Klatt, Karola. 2020. "Corona apps: South Korea and the dark side of digital tracking." Brussels Times, 30 April. (https://www.brusselstimes.com/opinion/108594/corona-apps-south-korea-and-the-dark-side-of-digital-tracking/).

26 Interview with Bae.

27 "Coronavirus privacy: Are South Korea's alerts too revealing?" BBC, 5 March 2020. (https://www.bbc.com/news/world-asia-51733145); Kim Nemo. 2020. "More scary than coronavirus': South Korea's health alerts expose private lives." Guardian, 6 March. (https://www.theguardian.com/world/2020/mar/06/more-scary-than-coronavirus-south-koreas-health-alerts-expose-private-lives).

28 Leswing, Kif. 2020. "Apple is rejecting coronavirus apps that aren't from health organizations, app makers say." CNBC, 5 March. (https://www.cnbc.com/2020/03/05/apple-rejects-coronavirus-apps-that-arent-from-health-organizations.html).

29 Wray, Sarah. 2020. "South Korea to step-up online coronavirus tracking."

30 "PrivacyRules exclusive interview with Tina3D, the company that developed the Korean app "Corona 100m" to trace covid-19." Presswire, 30 June 2020. (https://www.einnews.com/pr_news/520660867/privacyrules-exclusive-interview-with-tina3d-the-company-that-developed-the-korean-app-corona-100m-to-trace-covid-19).

31 Ferretti, Luca, et al. 2000. "Quantifying SARS-CoV-2 transmission suggests epidemic control with digital contact tracing." Science 368, 6491. (https://science.sciencemag.org/content/368/6491/eabb6936).

32 Kim Min Joo. 2020. "Tracing South Korea's latest virus outbreak shoves LGBTQ community into unwelcome spotlight." Washington Post, 11 May. (https://www.washingtonpost.com/world/asia_pacific/tracing-south-koreas-latest-virus-outbreak-shoves-lgbtq-community-into-unwelcome-spotlight/2020/05/11/0da09036-9343-11ea-87a3-22d324235636_story.html).

Lesbian, Gay, Bisexual and Transgender (LGBT) community.[33] Given conservative disapproval of their lifestyle, LGBT community members provided false phone numbers when visiting clubs to avoid social ostracism. In response, the ROK updated the IDCPA, requiring high-risk public areas to scan QR codes, with names and contact information securely encrypted to prevent loss of privacy.[34] Yet, the efficacy of these measures remains debatable, given the range of entities such as criminals at large, illegal immigrants, the homeless, and buyers and providers of sexual services, who have reasons to evade digital surveillance.[35] Moreover, although the IDCPA included penalties for misuse of confidential data and specified that such information must be destroyed after two weeks,[36] in July it was revealed that, amidst the hasty development of the 'Self-Quarantine Safety Protection' app,[37] several security flaws were overlooked. These included the app's allocation of ID numbers that could be decoded by hackers to reveal private data.[38]

Moreover, the period since August has seen a renewed surge in community transmissions.[39] A pastor at the *Sarang Jeil* Church staged a demonstration, deliberately flouting public health advice to wear face masks.[40] The resulting COVID-19 resurgence left the ROK with a difficult choice. Although KCDC is empowered to ban social gatherings of more than 10 people as part of a Level 3 lockdown, such measures would have

33 Kim Min Joo. 2020. "Tracing South Korea's latest virus outbreak shoves LGBTQ community into unwelcome spotlight."

34 Kan Hyeong-woo. 2020. "S. Korea introduces QR entry log system." Korea Herald, 17 June. (http://www.koreaherald.com/view.php?ud=20200617000718&fbclid=IwAR27G8hj_ArSwyoo3HziSCMyzMoUEvHnZmH-D5pT5cWh44n4TGirez72pHTY).

35 Sturmer, Jake and Rebecca Armitage. 2020. "South Korea's coronavirus outbreak in Seoul's club scene shows the dangers of stigma during a pandemic." ABC News, 15 May. (https://www.abc.net.au/news/2020-05-16/how-a-few-nightclubs-in-seoul-saw-a-new-coronavirus-outbreak/12249842); Ock Hyun-Ju. 2020. "Seoul to plug undocumented migrants loophole in COVID-19 efforts." Korea Herald, 29 April. (http://www.koreaherald.com/view.php?ud=20200429000769).

36 "South Korea's Response To COVID-19: Interview With Wonhyuk Lim."

37 ROK Ministry of Health and Welfare. "Korean government's response system." (http://ncov.mohw.go.kr/en/baroView.do?brdId=11&brdGubun=111).

38 Choe Sang-Hun, Aaron Krolik, Raymond Zhong and Natasha Singer. 2020. "Major Security Flaws Found in South Korea Quarantine App." New York Times, 21 July. (https://www.nytimes.com/2020/07/21/technology/korea-coronavirus-app-security.html).

39 Choi Ha-yan. 2020. "Transmission clusters of COVID-19 involving small groups and gatherings on the rise." Hankyoreh, 30 June. (http://english.hani.co.kr/arti/english_edition/e_national/951634.html?fbclid=IwAR1fyIRr58lZOd9ObyusuDtZNeCPFg3exXdTj-LrlblgU3jHRjNcvSUpw_E).

40 Seo, Jian and David Tizzard. 2020. 'Korea, religion and the coronavirus.", Korea Times, 30 August (https://www.koreatimes.co.kr/www/opinion/2020/08/715_295165.html?fbclid=IwAR3XZZnSeU5qWPZtxM6CcFCHowWL-3WV5iizVLDQU3XY_PelaVeVKQ6j5K6k).

been deeply unpopular.[41] Instead, the ROK instituted a 'Level 2.5' lockdown, requiring all restaurant patrons to provide their phone numbers for contact-tracing.[42] Elsewhere, in response to the public outcry over the 'superspreader' events of 2020, the authorities arrested the leaders of the *Shincheonji* and *Sarang Jeil* churches, for failing to cooperate with the authorities' contact-tracing, and for wilful violation of public health guidelines, respectively.[43]

Yet, the fact remains that these law enforcement measures were implemented only after infections had already surged.[44] Had the ROK been willing to face criticism for pre-emptive activation of firmer law enforcement measures, the necessity of Level 2.5 measures might have been avoided altogether. Even prior to the Sarang Jeil Church demonstration on 15 August, the ROK had already legislated a ban on demonstrations and other large gatherings. This included a ban on demonstrations by the Sarang Jeil Church in March.[45] Given that the pastor of the Sarang Jeil Church had announced his intention of holding this demonstration as early as May, the Government should have, in retrospect, acted pre-emptively by authorising law enforcement to intervene in accordance with existing legislation in order to avert the COVID-19 summer resurgence.[46] A similarly belated measure was the 5 October 2020 amendment to the IDCPA, authorizing local municipal government offices to impose fines of ROK Won 100,000 (US$ 86) for failures to wear protective face masks in crowded areas.[47] Such measures, however, are

41 Hlasny, Vladimir. 2020. "How COVID-19 Wreaked Havoc on South Korea's Labor Market." The Diplomat, 28 August. (https://thediplomat.com/2020/08/how-covid-19-wreaked-havoc-on-south-koreas-labor-market/).

42 "Upgraded social distancing level 2.5 is needed to reduce impact on businesses." Donga Ilbo, 12 September 2020. (https://www.donga.com/en/article/all/20200912/2178901/1/Upgraded-social-distancing-level-2-5-is-needed-to-reduce-impact-on-businesses).

43 "South Korean sect leader arrested for obstructing Covid-19 investigation." Guardian, 1 August 2020. (https://www.theguardian.com/world/2020/aug/01/south-korean-sect-leader-arrested-for-obstructing-covid-19-investigation); "Sarang Jeil Church Members Indicted for Holding Offline Services." KBS News, 23 September 2020. (http://world.kbs.co.kr/service/news_view.htm?lang=e&Seq_Code=156471).

44 "Police on standby to deter illegal rallies on national holiday amid virus outbreak." Yonhap News Agency, 3 October 2020. (https://en.yna.co.kr/view/AEN20201003001200320).

45 Choi He-suk. 2020. "Government cracks down on church for violating anti-outbreak measures." Korea Herald, 23 March. (http://www.koreaherald.com/view.php?ud=20200323000769).

46 Lee Ga-Ram and Sarah Kim. 2020. "Pastor blamed for virus surge draws scrutiny over politics, education." Korea Joongang Daily, 19 August. (https://koreajoongangdaily.joins.com/2020/08/19/national/socialAffairs/Jung-Kwanghun-Covid19-coronavirus/20200819192200390.html).

47 Choi Ha-yan. 2020. "People without masks in public to face fines up to US$86 starting Nov. 16." Hankyoreh, 5 October. (http://english.hani.co.kr/arti/english_edition/e_national/964481.html?fbclid=IwAR11nKZw8X5hkiwd-FR5ka5RO5KNonDRu1RoKB8jwQhpiIaVLp3yETHy4M-4).

a case of 'too little, too late',[48] inasmuch as the failure to nip the pandemic in the bud, by creating 'seeds' of asymptomatic cases scattered in communities across the country, has undermined longer-term efforts to contain the virus, thence resulting in the third wave of infections in December 2020.[49]

Criticism of the ROK's stepped-up law enforcement measures and their implications for civil and political rights[50] underscores the necessity of higher levels of government engagement with the public in emphasising the rationale for such measures. The ROK case study illustrates the utility of the Agile Governance model in empowering cooperation between the government, the IT sector, civil society and other stakeholders as an active partnership. However, the continued outbreaks of COVID-19 highlight the concurrent necessity of imposing tough law enforcement measures against scofflaws willing to defy public health measures, or who refuse to cooperate with the authorities' contact-tracing. ∎

48 Kim Arin. 2020. "Winter did not have to be this bad." Korea Herald, 13 December. (http://m.koreaherald.com/view.php?ud=20201213000190).

49 Choe Sang-Hun. 2020. "Each Day Is Critical': South Korea's 11th-Hour Battle With Covid." New York Times, 22 December. (https://www.nytimes.com/2020/12/22/world/asia/korea-covid-infections-level-3.html?smid=fb-share&fbclid=IwAR2Jy-6DCoi_Db-AU9b_-Wy8y9ovgJI2P7yJBTC1iFDwytFxU-jB60ac1s-5Q).
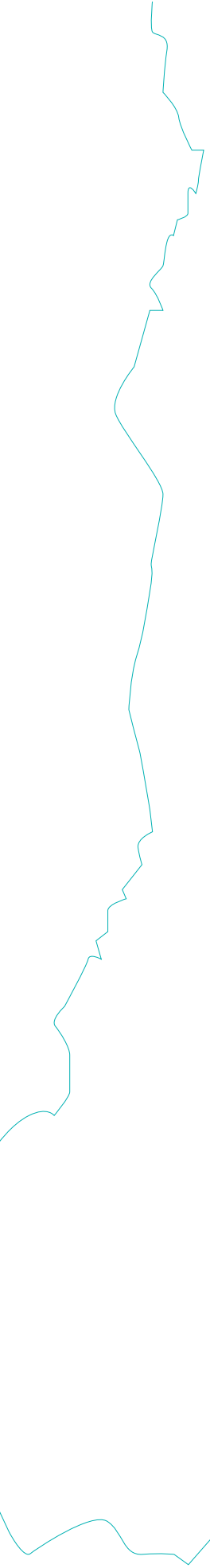
50 Kang Tae-Jun. 2020. "South Korea Baffled by Stop-and-Search, Police Bus Walls During Protests." The Diplomat, 5 October. (https://thediplomat.com/2020/10/south-korea-baffled-by-stop-and-search-police-bus-walls-during-protests/?fbclid=IwARoknjWokT-jrUSEz24lk5HUX-puBjyiibYmQrrZOcBotL_cN-3Xht7LQYDw); "Stop-and-frisk and bus walls remind us of dictatorship." Dong-A Ilbo, 5 October 2020. (https://www.donga.com/en/article/all/20201005/2200920/1/Stop-and-frisk-and-bus-walls-remind-us-of-dictatorship).

CASE STUDY: SINGAPORE

Singapore incorporated elements of the Agile Governance model into government-coordinated actions from March onwards as part of the 'circuit breaker'[51] strategy, based on tough penalties to enforce a stay-at-home quarantine.[52]

As part of its contact-tracing strategy, Singapore unveiled the TraceTogether app, which used Bluetooth signals between mobile phones to provide users with information on proximity to known infections.[53] Although TraceTogether facilitated identification of local transmissions during the initial stages of the outbreak,[54] download of the app was voluntary for most of 2020.[55] These limitations blunted TraceTogether's effectiveness. Whilst TraceTogether saw 1.1 million downloads after its launch, the rest of Singapore's population of 5.6 million did not download it, over data privacy concerns,[56] even though a download rate of 60% within the populace was necessary for the app's effectiveness.[57]

51 Yue, Ng How. 2020. "COVID-19 (TEMPORARY MEAS-URES) ACT 2020." Singapore Statutes Online, 7 April. (https://sso.agc.gov.sg/SL-Supp/S254-2020/Published/20200407?DocDate=20200407).

52 "PM Lee Hsien Loong on the COVID-19 situation in Singapore on 3 April 2020." Office of the Prime Minister of Singapore, 3 April 2020. (https://www.pmo.gov.sg/Newsroom/PM-Lee-Hsien-Loong-on-the-COVID19-situation-in-Singapore-on-3-April-2020); Carroll, Aaron E. 2020. "Lesson From Singapore: Why We May Need to Think Bigger." New York Times, 14 April. (https://www.nytimes.com); "Coronavirus: Singapore bans Britons for lockdown 'bar crawl.'" BBC, 26 June 2020. (https://www.bbc.co.uk/news/world-asia-53188941).

53 "TraceTogether: Not Easy to Verify the State's Privacy Claims." Digital Reach, 2 April 2020. (https://digitalreach.asia/tracetogether-disas-sembling-it-wasnt-easy-to-confirm-the-govern-ments-claims-on-privacy/); Tay, Simon and Kevin Chen. 2020. "Singapore and COVID-19: Strengths, Shifts, and Limits of National Response." Council on Foreign Relations, 21 April. (https://www.cfr.org/).

54 Wells, Spencer. 2020. "Singapore is the model for how to handle the coronavirus." MIT Technology Review, 12 March. (https://www.technologyreview.com/2020/03/12/905346/singapore-is-the-model-for-how-to-handle-the-coronavirus/).

55 Chik, Warren. 2020. "Changes to the Singapore Personal Data Protection Act and implications in the pandemic context." Academia, 25 June. (https://www.academia.sg/academic-views/changes-to-the-singapore-personal-da-ta-protection-act-and-implications-in-the-pandem-ic-context/?fbclid=IwAR0vemOc9gOjz111YEeJWyn1pn-mnMBMnlTeVGuFiZoWDA-dfl60UnKe6rFg). In seeking to address these concerns, in June 2020, an amendment was made to the Personal Data Protection Act, stipulating increased protections and transparency to accompany updating of Tracetogether, as well as introduction of the newer SafeEntry national digital check-in system. See "Personal Data Protection Act 2012." Singapore Statutes Online, 7 December 2012. (https://sso.agc.gov.sg/Act/PDPA2012).

56 Bhatia, Dominika, et. al. 2020. "COVID-19 Case and Contact Tracing." 54. In the case of Singapore, concerns over online privacy are particularly sensitive at the present moment due to a 2018 foreign hacking of the country's health database. See "Singapore personal data hack hits 1.5m, health authority says." BBC, 20 July 2018. (https://www.bbc.com/news/world-asia-44900507).

57 Francis, et. al. "Digital Contact Tracing." 19; "Data privacy, 'unexciting' interface and battery-draining issue are reasons why Singaporeans are not downloading TraceTogether app." Online Citizen, 20 May 2020. (https://www.theonlinecitizen.com).

To address this gap, in May, Singapore introduced the SafeEntry system, requiring people to scan personalised QR codes encrypted with their Identification Numbers and phone numbers before accessing public transport and other public venues.[58] Likewise, in August, Singapore introduced free TraceTogether Tokens for the public, as well as mandating their use by newly-arrived persons.[59] Recognising concerns over privacy, the tokens use only Bluetooth signals, users' randomised ID numbers, and a timestamp, omitting users' mobile numbers.[60] In October, with plans in place for a Phase 3 relaxation of circuit-breaker measures, Singapore announced that the use of TraceTogether tokens would be made mandatory for people visiting public areas by the end of 2020.[61] In other words, although use of TraceTogether was not explicitly mandatory, relaxation of social distancing measures was tacitly contingent on the public's consent to digital surveillance via TraceTogether and SafeEntry.

Yet, Warren Chik[62] has noted that these measures continue to leave shortfalls in data protection, as the regulations for ensuring transparency and accountability are applicable only to the private sector, but not to public agencies.[63] Given that SafeEntry scans people's personal data, the absence of regulations for ensuring transparency and accountability on the part of the public sector leads to the possibility for abuse of peoples' privacy.

Inasmuch as these measures were focused on identifying virus hotspots, such powers

58 "FAQ page of the Website of SafeEntry." Singapore government, 2020. (https://support.SafeEntry.gov.sg/hc/en-us).

59 Zhuo, Tee. 2020. "Coronavirus: Tracking workers' health with mobile apps, wearable devices." Straits Times, 12 August. (https://www.straitstimes.com/singapore/manpower/tracking-workers-health-with-tech-help); Since 11 August, Singapore has mandated that international travellers choosing home quarantine rather than a government-provided quarantine facility will be required to wear an electronic monitoring device for the duration of their quarantine. See "COVID-19: Travellers who serve stay-home notice outside of facilities after entering Singapore must wear electronic device." Channelnewsasia, 3 August 2020. (https://www.channelnewsasia.com); Singapore distributes Covid contact-tracing tokens." BBC, 14 September 2020, (https://www.bbc.com/news/business-54143015).

60 "Improving Tracetogether through community engagement." GovTech, 6 July 2020, (https://www.tech.gov.sg/media/technews/2020-07-06-tracetogether-token-teardown).

61 Wong, Lester. 2020. "Use of TraceTogether app or token mandatory by end Dec." Straits Times, 21 October. (https://www.straitstimes.com/singapore/use-of-tracetogether-app-or-token-mandatory-by-end-dec).

62 Singapore Management University.

63 Chik, Warren. 2020. "Changes to the Singapore Personal Data Protection Act."

of surveillance found broad support following the surge in infections in the transient worker community in April. In May, a study by the Institute of Policy Studies (IPS) in Singapore found that more than 80% of the public supported intrusive surveillance measures,[64] whilst 78% of respondents were willing to report violations of social distancing guidelines to the authorities.[65] Such results are consistent with Singapore's prioritisation of government access to big data over individual privacy rights.[66]

Yet, such levels of support for intrusive measures do not tell the whole story. If Singapore's implementation of the Agile Governance model is assessed, it falls short on its level of civic engagement, as far as a demographically inclusive, 'whole of society' approach embodied in the Agile Governance model is concerned.[67] Following the April surge in infections in the transient worker community, Singapore's online forums saw a rise in xenophobic scapegoating of this community, while turning a blind eye to the crowded, unhygienic accommodations that these workers have been forced to live in, a condition which led to the spike in infections.[68] Moreover, the IPS Survey found that Singapore's populace was less enthusiastic about surveillance measures that directly impacted their personal lives. 49% of respondents were agreeable to having their phone data being tracked without their consent, and 58% were agreeable to the use of CCTV to monitor people leaving their homes during the circuit-breaker.[69]

64 Mathews, Mathew, Alex Tan and Syafiq Suhaini. 2020. "Attitudes towards the use of surveillance technologies in the fight against COVID-19." Institute of Policy Studies, Lee Kuan Yew School of Public Policy, 24 May. (https://lkyspp.nus.edu.sg/docs/default-source/ips/ips-report-on-attitudes-towards-the-use-of-surveillance-technologies-in-the-fight-against-covid-19-240520.pdf). 3.
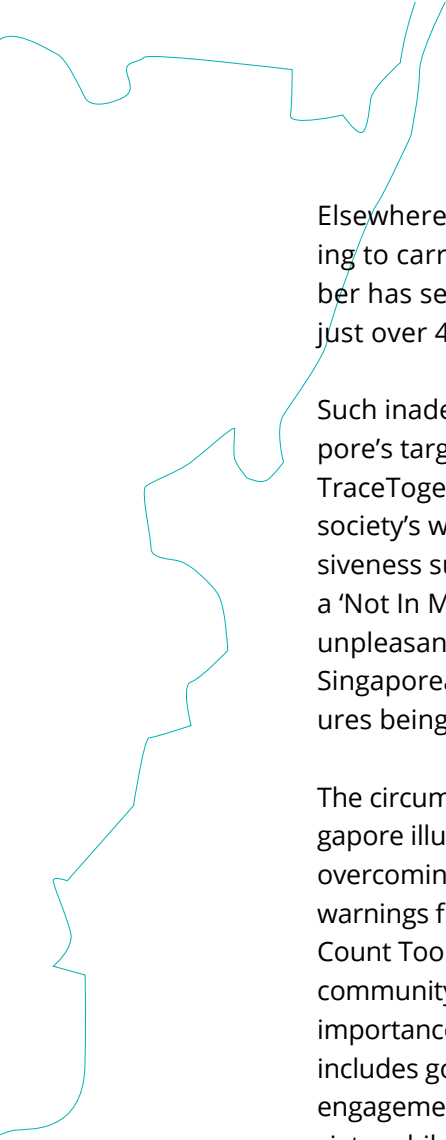
65 Mathews, Mathew, et. al. 2020. "Attitudes towards the use of surveillance technologies." 4.

66 Fumiko Tay, Tiffany. 2020. "Singaporeans accept some privacy loss in Covid-19 battle but surveillance method matters: IPS study." Straits Times, 25 May. (https://www.straitstimes.com/singapore/singaporeans-accept-some-privacy-loss-in-covid-19-battle-but-surveillance-method-matters); Lammertink, Jonas P. 2020. "Responding to COVID-19 with Tech in Singapore', In Schneider and Creemers. (eds.) How Asia Confronts COVID-19 through Technology. 26.

67 Bhadra Haines, Monamie and Hallam Stevens. 2020. "Does Singapore need mandatory contact tracing apps?" Academia, 18 May. (https://www.academia.sg/academic-views/does-singapore-need-mandatory-contact-tracing-apps/).

68 Kaur Jaswal, Balli. 2020. Rise in coronavirus cases brings to light Singaporeans' racist attitudes towards foreign workers." South China Morning Post, 23 April. (https://www.scmp.com/comment/opinion/article/3080987/rise-coronavirus-cases-brings-light-singaporeans-racist-attitudes).

69 Mathews, Mathew, et. al. 2020. "Attitudes towards the use of surveillance technologies." 3.

Elsewhere, a June poll found that 57% of the population was willing to carry a TraceTogether token at all times,[70] whereas September has seen a total of 2.4 million downloads of TraceTogether – just over 40% of the population.[71]

Such inadequate levels of public participation run counter to Singapore's target of seeking 70% of the population's participation in the TraceTogether program.[72] Moreover, the dichotomy of Singapore society's willingness to accept differing levels of surveillance intrusiveness suggests that significant numbers of Singaporeans have a 'Not In My Backyard' (NIMBY) mentality.[73] Although they oppose unpleasant measures that inconvenience them personally, many Singaporeans evidently have no objections to those same measures being implemented against others.[74]

The circumstances that surrounded the COVID-19 outbreak in Singapore illustrate that the NIMBY mentality is counter-productive to overcoming COVID-19. In February, the authorities had downplayed warnings from the migrant rights advocacy group Transient Workers Count Too (TWC2) of the danger of infections in the transient worker community until it was too late.[75] This shortfall demonstrates the importance of ensuring that adoption of the Agile Governance model includes government engagement with civil society, whilst undertaking demographically inclusive public policies. Had the Singapore Government heeded calls from TWC2 and civil society to address the unhygienic living conditions of the

70 Yong, Janelle. 2020. "Wearable TraceTogether token: 57% willing to wear it. You leh?" Asia One, 19 June. (https://www.asiaone.com/digital/wearable-tracetogether-token-57-willing-wear-it-you-leh).

71 Tan, Bryan. 2020. "Commentary: Singapore's almost in our new normal. Don't be the dud who jeopardises that." Channelnewsasia, 16 September. (https://www.channelnewsasia.com/news/commentary/covid-19-singapore-new-normal-tracetogether-SafeEntry-13112428).

72 Baharudin, Hariz. 2020. "Distribution of TraceTogether tokens starts; aim is for 70% participation in contact tracing scheme." Straits Times, 14 September. (https://www.straitstimes.com/singapore/government-aiming-for-70-participation-in-tracetogether-programme-says-vivian-on-first-day).

73 Sin, Yuen. 2020. "Covid-19 outbreak brings migrant workers from margin to centre of Singapore's attention." Straits Times, 30 April. (https://www.straitstimes.com/opinion/migrant-workers-from-margin-to-centre-of-spores-attention).

74 "Walking the talk on being inclusive." Straits Times, 3 June 2020. (https://www.straitstimes.com/opinion/st-editorial/walking-the-talk-on-being-inclusive).

75 Ratcliffe, Rebecca. 2020. "Singapore's cramped migrant worker dorms hide Covid-19 surge risk." Guardian, 17 April. (https://www.theguardian.com/world/2020/apr/17/singapores-cramped-migrant-worker-dorms-hide-covid-19-surge-risk); Bautista, Julius. 2020. "COVID-19 in Singapore: Confronting the truth of Intertwined Interests." COVID-19 Chronicles, 11 May. (https://covid-19chronicles.cseas.kyoto-u.ac.jp/post-031-html/).

transient worker community, the need for the circuit-breaker might have been obviated entirely.[76]

Increased incorporation of the principles of Agile Governance in the Singapore context could result in a more efficient model of governance. Tan Ming Hui[77] referenced Nassim Nicholas Taleb's[78] 2012 *Antifragile* as a lens through which Singapore can respond to COVID-19. Taleb defined Antifragility as a situation in which an entity can proactively respond to a 'source of harm', as a result of which it emerges from a crisis even stronger than ever.[79] Taleb argued that, in times of strife, antifragile societies are not merely resilient, but can even thrive. Tan extends Taleb's analysis to argue that antifragile societies based on 'an ecosystem of small and self-sufficient entities … [and] a distribution of power, diversified knowledge gathering and decision-making' are better placed to withstand the governance challenges of the future.[80] Although Tan's analysis does not specifically cite Agile Governance, there are clear commonalities between the two concepts for Singapore to contemplate increased assimilation of the principles of Agile Governance into its policymaking capacity.

Singapore's response to COVID-19, including the utilisation of social media to counter misinformation, suggests appreciation of the principles of Agile Governance within policymaking organs. As Tan noted, however, such capacity is lacking in Singapore's civil society and private sector,[81] with the bulk of the population often deferring to government-led initiatives.[82] Conversely, given that the Singapore Government has often placed itself in the policymaking driver's seat with comparatively

76 Tan, Yvette. 2020. "Covid-19 Singapore: A 'pandemic of inequality' exposed." BBC, 18 September. (https://www.bbc.com/news/world-asia-54082861); Holden, Philip. 2020. "A Conversation with Debbie Fordyce, TWC2 President." Academia, 14 May. (https://www.academia.sg/academic-views/a-conversation-with-debbie-fordyce-twc2-president/?fbclid=IwAR2KFGsb8ASLh045UN-npdw4X-CkcoTax6uXQaEF0orJZm5W38Gs3cYu7OkE).

77 Nanyang Technological University.

78 New York University.

79 Taleb, Nassim Nicholas. 2012. Antifragile: Things that Gain from Disorder. New York: Random House.

80 Tan Ming Hui. 2020. "Living with Uncertainty: A Whole of Society Approach to Pandemics." RSIS Policy Report. (https://www.rsis.edu.sg/rsis-publication/rsis/living-with-uncertainty-a-whole-of-society-approach-to-pandemics/). 10.

81 Tan Ming Hui. 2020. "Living with Uncertainty." 7.

82 Ho, Grace. 2020. "Emerging Stronger Conversations: Bringing together voices to build more resilient society." Straits Times, 28 September. (https://www.straitstimes.com/politics/bringing-together-voices-to-build-more-resilient-society).

few opportunities for civil society to contribute, the end-result are policies which, although effective and efficient from the perspective of the government, have fallen short of the overall objective of overcoming COVID-19. This gap emphasises the necessity of a closer partnership between the government and civil society. Such an approach would not only mitigate the likelihood of policy blind spots – such as Singapore's overlooking of the plight of the transient worker community amidst the pandemic – but also ensure that the populace has more direct involvement in addressing a shared challenge.[83] ■

83 *Tan Ming Hui. 2020. "Living with Uncertainty."11.*

CASE STUDY: TAIWAN

Taiwan has operated on the principle that no one single entity has the capacity to manage such complex challenges as pandemics, instead stressing a whole-of-society approach that involves the population's whole-hearted participation.[84] Following the 2003 SARS outbreak, Taiwan passed the Communicable Disease Control (CDC) Act,[85] establishing the National Health Command Center (NHCC).[86] In 2014, the National Health Insurance (NHI) Health Cloud program was established, providing the authorities with access to residents' medical histories.[87]

In March, following the COVID-19 outbreak, Taiwan's Central Epidemic Command Center (CECC) implemented an 'electronic fence'[88] which combined Taiwan's health insurance, immigration and customs databases. By scanning airline passengers' QR codes, CECC was able to review peoples' travel histories.[89] Newly-arrived persons faced mandatory two-week quarantines, during which health authorities undertook twice-daily monitoring.[90] Underpinning these measures was the 2015 Personal Data Protection Act (PDPA), which permitted the government to access individuals' data in times of emergency.[91] To prevent breaches of privacy, the PDPA explicitly distinguishes between telecommunications companies' collection of data on the one hand, and processing such data on the other, which comes under the purview of the government.[92] This

84 Schwartz, Jonathan and Muh-Yong Yen. 2017. "Toward a collaborative model of pandemic preparedness and response: Taiwan's changing approach to pandemics." Journal of Microbiology, Immunology and Infection 50. 127.

85 Lin Ching-Fu; Wu Chien-Huei, and Wu Chuan-Feng. 2020. "Reimagining the Administrative State in Times of Global Health Crisis: An Anatomy of Taiwan's Regulatory Actions in Response to the COVID-19 Pandemic." European Journal of Risk Regulation. (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7156569/).

86 McGregor, Grady. 2020. "SARS taught Taiwan how to contain the coronavirus outbreak." Fortune, 15 March. (https://fortune.com/2020/03/15/coronavirus-taiwan-cases-response/).

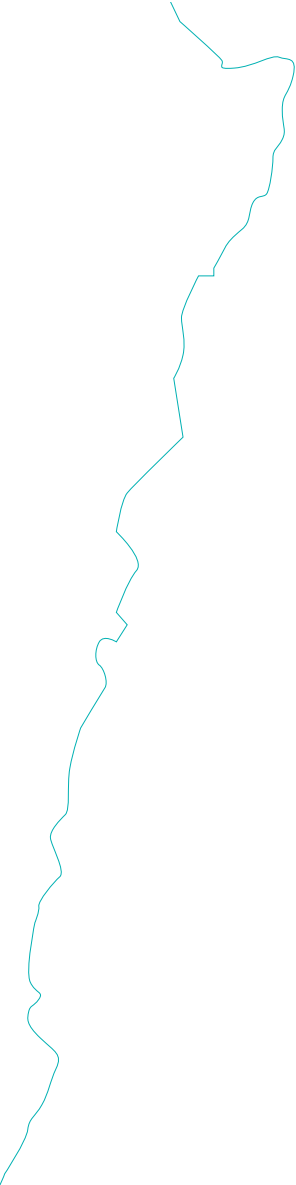87 Bhatia, Dominika, et. al. 2020. "COVID-19 Case and Contact Tracing." 11.

88 Claburn, Thomas. 2020. "Taiwan collars coronavirus quarantine scofflaws with smartphone geo-fences. So, which nation will be next?" The Register, 24 March. (https://www.theregister.com/2020/03/24/coronavirus_quarantine_cellphone/).

89 Wang, C. Jason, Chun Y. Ng and Robert H. Brook. 2020. "Response to COVID-19 in Taiwan: Big Data Analytics, New Technology, and Proactive Testing." RAND, 1 April. (https://www.rand.org/pubs/external_publications/EP68123.html); Di Paolo Emilio, Maurizio. 2020. "Taiwan's Electronic Fence System Draw Global Attention." Electronic Engineering Times Asia, 3 July. (https://www.eetasia.com/taiwans-electronic-fence-system-draw-global-attention/).

90 Bhatia, Dominika, et. al. 2020. "COVID-19 Case and Contact Tracing." 61.

91 "Personal Data Protection Act 2015." (Taiwan), "Laws and Regulations Database of the Republic of China."30 December 2015. (https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=I0050021).

92 Goldwasser, Shafi and Audrey Tang. "The Digital Fence: Taiwan's Response to COVID-19." Simons Institute Polylogues Series, 6 April. (https://simons.berkeley.edu/news/simons-institute-polylogues-digital-fence-taiwan-response-covid-19).

is buttressed by Article 6 of the PDPA, reinforcing that the government will not collect individuals' personal data except in times of public emergency.[93] The PDPA restricts the government in the types of private data it can access, as well as specifying that such data may not be used to reveal individuals' identities.[94] The data recorded through Taiwan's digital fence was not directly shared with the government. Instead, whilst Taiwanese telecommunications corporations undertook the task of digital monitoring, authorities and law enforcement were notified only when there was non-compliance with quarantine measures.[95] Furthermore, while the health authorities and police monitored quarantined persons via Smart Care Management – a portal combining facial recognition technology and GPS tracking – the system is designed to ensure that people's private data cannot be recorded beyond the duration of their quarantine, but will be automatically deleted.[96]

Where Taiwan differed from the ROK and Singapore in contact-tracing was an increased emphasis on the human element. Instead of phone apps, Taiwan used peoples' phone signals for contact-tracing.[97] This was combined with the Police Cloud Computing Plan, first established in 2012, combining data from nation-wide law enforcement agencies to provide a comprehensive database for contact-tracing. Such data enabled teams of law enforcement and health authorities to pinpoint the locations of quarantined persons who had turned their phones off to evade surveillance.[98]

Yet, the hastiness with which Taiwan responded to COVID-19 by adopting enhanced surveillance measures has resulted in debate over their legitimacy.[99] After the 2003 SARS outbreak, the Constitutional Court ruled that imposition of emergency measures must be limited to the duration of the crisis.[100]

93 *"Personal Data Protection Act 2015" (Taiwan).*

94 *"Personal Data Protection Act 2015" (Taiwan).*

95 *Zhang. 2020. "Enforcing quarantine with digital technologies in Taiwan." 44.*

96 *Martin, Nicholas. 2020. "The Role of Digital Tools in Taiwan's Response to COVID-19." Fraunhofer Institute, 1 May. (https://corona.forum-privatheit.de/ the-role-of-digital-tools-in-taiwans-response-to-COV-ID-19/?fbclid=IwAR1S-uCtjo4FMl76YLvWEXeKncOvJ8b-fqxJ1HKb45TMSknRO716eMijYM7g); Bhatia, Dominika, et al. 2020. "Digital Contact Tracing." 20; Francis, et. al. "Digital Contact Tracing."*

97 *Zhang. 2020. "Enforcing quarantine with digital technologies in Taiwan." 47.*

98 *Bhatia, Dominika, et. al. 2020. "COVID-19 Case and Contact Tracing." 62–63; "Coronavirus: Under surveillance and confined at home in Taiwan." BBC, 24 March 2020. (https://www.bbc.com/news/technolo-gy-52017993).*

99 *Lin, Wu, and Wu. 2020. "Reimagining the Administrative State in Times of Global Health Crisis." 12–13.*

100 *Chang. 2020. "Taiwan's Fight against COVID-19."*

In spite of this ruling, further revisions to the CDC Act have continued to give the authorities significant powers to apply restrictive measures.[101] The fact that the public health measures passed by Taiwan following the COVID-19 outbreak were passed in less than three weeks aroused concern over potential abuses of power.[102] In order to allay these concerns, Taiwan's increased surveillance measures incorporated provisions that explicitly spelled out their necessity.[103] Further assuaging public concerns, the Taiwanese Government has avoided issuing emergency decrees or shutting down state and legislative organs.[104] Competent technocrats with appropriate levels of experience in managing public health disasters were appointed, thereby reinforcing the public's trust that the authorities would act efficiently in serving the public's interests.[105]

Taiwan's success in civic engagement was reflected in the public's trust in government institutions, and the corresponding consent for the authorities' access to people's data, in the knowledge that such powers would not be abused.[106] Over the course of its implementation prior to COVID-19, the Police Cloud Computing Plan had been used only for data-gathering in tracking criminal activity, generating a track record of trustworthiness reflected in 73.7% of the public approving of the system.[107] The pre-COVID-19 credentials of transparency thus functioned as an additional assurance to the public that their private data would not be abused.[108]

Public engagement with the populace and the strong sense of shared civic responsibility

101 Wen-Chen Chang. 2020. "Taiwan's Fight against COVID-19: Constitutionalism, Laws, and the Global Pandemic." Center for Global Constitutionalism, 21 March. (https://verfassungsblog.de/taiwans-fight-against-covid-19-constitutionalism-laws-and-the-global-pandemic/).

102 Lin, Wu and Wu. 2020. "Reimagining the Administrative State in Times of Global Health Crisis." 12–13.

103 Lin, Wu and Wu. 2020. "Reimagining the Administrative State in Times of Global Health Crisis." 7.

104 Lee, Chien-Liang. 2020. "Taiwan's Proactive Prevention of COVID-19 under Constitutionalism." Center for Global Constitutionalism, 22 April. (https://verfassungsblog.de/taiwans-proactive-prevention-of-covid-19-under-constitutionalism/).

105 Lin, Wu and Wu. 2020. "Reimagining the Administrative State in Times of Global Health Crisis." 13, 16.

106 Lee, Yimou. 2020. "Taiwan's new 'electronic fence' for quarantines leads wave of virus monitoring." Reuters, 20 March. (https://www.reuters.com/article/us-health-coronavirus-taiwan-surveillanc-idUSKBN2170SK); Yen, Wei-Ting. 2020. "Taiwan's COVID-19 Management: Developmental State, Digital Governance, and State-Society Synergy." Asian Politics and Policy 12,3: 463–465; Lin, Wu and Wu. 2020. "Reimagining the Administrative State in Times of Global Health Crisis." 8.

107 "Police Cloud – M-Police Mobile Computer System." Taiwan Smart City Online Portal. (https://en.smartcity.org.tw/index.php/en-us/component/k2/item/47-police-cloud-m-police-mobile-computer-system).

108 Yen. 2020. "Taiwan's COVID-19 Management."

facilitated these efforts.[109] Yang Wan-Ying and Tsai Chia-hung[110] emphasise the strong sense of collective responsibility for society, with 68.2% of their research respondents placing a higher priority on public safety than individual privacy.[111] Such trust facilitated the public's voluntary cooperation in accepting the high level of intrusive measures necessary for efficient surveillance and contact tracing.[112]

Furthermore, the presence of a strong multi-stakeholder system fortified the Agile Governance model against online misinformation. Particularly significant was the role of the Taiwanese online community that, within days of the outbreak, began the development of a full range of apps to provide the public with information on the availability of face-masks, hand sanitisers and other necessities.[113] This was aided by the close levels of collaboration between the online community and the government, a factor facilitated by the background of the country's Digital Minister, Audrey Tang, as a former hacktivist.[114] The success of such collaboration was evident in the extent to which the Taiwanese authorities designed public health policies based on high levels of civic engagement and demographic inclusiveness.[115]

Andreas Kluth[116] referred to the Taiwanese approach as 'participatory self-surveillance', in which the populace actively engaged with the government, enabling 'information flows both from the bottom up and from the top down',[117] a process facilitated by the vTaiwan online portal.

109 *Hsu Chin-Hsien, Lin Hsiao-Hsien Lin, Wang Chun-Chih and Jhang Shangwun. 2020. "How to Defend COVID-19 in Taiwan? Talk about People's Disease Awareness, Attitudes, Behaviors and the Impact of Physical and Mental Health." International Journal of Environmental Research and Public Health 17, 13.*

110 *(both) National Chengchi University.*

111 *Yang and Tsai. 2020. "Democratic Values, Collective Security, and Privacy: Taiwan People's Response to COVID-19." Asian Journal for Public Opinion Research 8, 3. 230.*

112 *Yang and Tsai. 2020. Democratic Values, Collective Security, and Privacy." 236.*

113 *Chou, Christine and Steven O. Kimbrough. 2020. "Not All Heroes Wear Capes: The Contributors Behind the Battle Against the Coronavirus Outbreak in Taiwan." The Wharton School of the University of Pennsylvania, 27 July. (https://knowledge.wharton.upenn.edu/article/taiwans-tech-savvy-citizens-helped-flatten-covid-19-curve/). 17–18.*

114 *Chou and Kimbrough. 2020. "Not All Heroes Wear Capes." 5–8.*

115 *"Taiwan's Strong COVID-19 Response."*

116 *Author for Bloomberg Opinion.*

117 *Kluth, Andreas. 2020. "If We Must Build a Surveillance State, Let's Do It Properly." Bloomberg, 22 April. 2020. (https://www.bloomberg.com/opinion/articles/2020-04-22/taiwan-offers-the-best-model-for-coronavirus-data-tracking).*

VTaiwan, first unveiled by Tang in 2016,[118] was designed to function as an instrument of civic engagement with the populace. The portal consists of a multi-stage process, including an 'objective stage' involving crowdsourcing facts related to societal challenges; this is followed by a 'reflective' stage via the *Pol.is* online portal that seeks to build a nation-wide consensus, from which key stakeholders are able to draw up specific recommendations for government policy.[119]

Tang emphasised the trust between the government and populace. She argued that by empowering the island's online community to have a high level of public buy-in on the shared goal of suppressing the virus, it was the 'first time hackers have really felt that they are like the designers of civil engineering projects … Because we trust the people … the people trust back.'[120] Responding to the threat of disinformation and rumour-mongering, the Taiwanese authorities adopted the '2-2-2' rule, which operates on a strategy of 'humour over rumour', requiring government ministries to clarify false reports within 20 minutes, in 200 words and with two humorous images to outpace the spread of misinformation.[121] Elsewhere, the Taiwan Fact Check Center, first established in 2018, used WhatsApp to launch a chatbot to assist the public in fact-checking to expose fake news.[122] Furthermore, the transparency of Taiwan's online community has added resilience to the threat posed by fake news, with Taiwan's internet users reporting suspicious-looking online posts to the Cofacts chatbot and the Taiwan FactCheck Center for verification.[123]

Yet, the extent to which these measures address the aforementioned blind spots mentioned in

118 Horton, Chris. 2018. "The simple but ingenious system Taiwan uses to crowdsource its laws." MIT Technology Review, 21 August. (https://www.technologyreview.com/2018/08/21/240284/the-simple-but-ingenious-system-taiwan-uses-to-crowdsource-its-laws/).

119 "How it works." vTaiwan. (https://info.vtaiwan.tw/); "vTaiwan." Nesta. (https://www.nesta.org.uk/feature/six-pioneers-digital-democracy/vtaiwan/).

120 Silva, Shiroma. 2020. "Coronavirus: How map hacks and buttocks helped Taiwan fight COVID-19." BBC, 7 June. (https://www.bbc.com/news/technology-52883838).

121 Bondaz, Antoine. 2020. "The Use of the Digital Fence system is a crucial part of Taiwan's current epidemic prevention measures: A Conversation with Audrey Tang." Fondation Recherche Strategique. (https://www.frstrategie.org/sites/default/files/documents/publications/autres/2020/Interview%20Audrey%20Tang.pdf).

122 Wong, Carlson. 2020. "IFCN's chatbot to curb COVID-19 infodemic." Radio Taiwan International, 7 May. (https://en.rti.org.tw/radio/programMessageView/id/102962).

123 Walter Kerr and Macon Phillips. 2020. 'Taiwan Is Beating Political Disinformation. The West Can Too.' Foreign Policy, 11 November. (https://foreignpolicy.com/2020/11/11/political-disinformation-taiwan-success/).

the ROK and Singapore case studies remains debatable. Caution is necessary in prematurely drawing research conclusions, particularly in attempting to prove a negative (for instance, an absence of further COVID-19 outbreaks in Taiwan within the kind of marginalised communities discussed in the Korean and Singapore case studies). Chen Mei-Hua[124] noted that, even if hostess bars are closed, many 'sex workers are the breadwinners for their families, thus they quickly turn to social media such as WeChat or LINE in seeking clients.'[125] Likewise, although the Taiwanese authorities made efforts to provide hand sanitisers and health education to the country's homeless and undocumented workers,[126] the likelihood that such marginalised communities have been undercounted creates an opening through which a resurgence of the virus may occur, if Taiwan were to prematurely lower its guard against imported infections.[127] Such a case in point was illustrated in December, when an airline pilot failed to abide by Taiwan's virus prevention measures, leading to a series of cases in the country.[128] ∎

124   *National Sun Yat-Sen University.*

125   *Chen Mei Hua. 2020. "Taiwanese Sex Workers Amid the COVID-19 Pandemic." Taiwan Insight, 25 May. (https:// taiwaninsight.org/2020/05/25/taiwanese-sex-workers-amid-the-covid-19-pandemic/).*

126   *Shapiro, Don. 2020. "Taiwan shows its mettle in coronavirus crisis, while the WHO is MIA." Brookings Institution, 19 March. (https://www.brookings.edu/ blog/order-from-chaos/2020/03/19/taiwan-shows-its-mettle-in-coronavirus-crisis-while-the-who-is-mia/).*

127   *Chang, Cindy, 2020. "Taipei's homeless are few but desperate." Los Angeles Times, 25 June. (https://www. latimes.com/world-nation/story/2020-06-25/taipeis-homeless-are-few-but-desperate).*

128   *"Airline fires pilot blamed for Taiwan's first Covid case in months." BBC, 24 December 2020. (https://www.bbc. com/news/world-asia-55433588).*

CONCLUSION: POLICY IMPLICATIONS

Since the COVID-19 pandemic is ongoing, it is important to not draw premature research conclusions; however this comparative study of the ROK, Singapore and Taiwan suggests the following four conclusions as a basis for policy efforts to suppress the virus and to build a more resilient post-pandemic world.

Adaptable Pre-Crisis Preparation

The rapidity with which the ROK, Singapore and Taiwan activated plans to cope with COVID-19 attests to the importance of comprehensive preparation.[129] This, in conjunction with the incorporation of devils' advocates into policymaking bodies to identify possible future crises and eliminate policy blind spots, provides policymakers with an early-warning capacity to respond to emergencies.[130] The overlap between the Agile Governance model, the ROK's quadruple learning model, and Taleb's Anti-Fragile model highlights the potential for further comparative study.

With its emphasis on human-centered, socially inclusive public policies, the Agile Governance model can contribute to this by facilitating channels through which governments can crowdsource innovative problem-solving approaches from civil society and NGOs, targeting policy blind spots missed by government bureaucrats. The ROK's quadruple learning model, as a specific illustration of Agile Governance, demonstrates that government organs should not merely learn from past successes and failures but should go a step further in identifying plausible contingencies that may arise, and ensuring that emergency plans can be reconfigured to changing circumstances at short notice. Similarly, the Anti-Fragile model, by envisioning multiple lines of defense against unconventional threats like pandemics, strengthens social resilience, thereby enhancing the capacity of a population to cope with unanticipated threats that may still occur in spite of the best-possible pre-crisis contingency plans.

129 Braw, Elizabeth, 2020. "Want to Avoid the Next Pandemic? Hire a Devil's Advocate." Foreign Policy, 6 May. (https://foreignpolicy.com/2020/05/06/want-to-avoid-the-next-pandemic-hire-a-devils-advocate/).

130 Harjani, Manoj. 2020. "Global Health Security: COVID-19 and Its Impacts – Early Warning Systems: Stumbling Blocks Post-Pandemic." RSIS Commentary, 16 June. (https://www.rsis.edu.sg/rsis-publication/rsis/global-health-security-covid-19-and-its-impacts-early-warning-systems-stumbling-blocks-post-pandemic/#.Xv7bDqEzbcs).

Digital Surveillance as a Tool, Not a Panacea

The three case studies reflect that whilst digital technology is an important tool in contact-tracing, it should not be seen as a substitute for the human element. Although the ROK and Singapore relied heavily on digital technology in their pandemic responses, the fact that both continued to face additional outbreaks within marginalised communities indicates that technology should not be considered a panacea. Rather, the circumstances surrounding these newer outbreaks show that demographic inclusiveness is a crucial part of a long-term strategy of suppressing the virus.

Conversely, Taiwan's approach to contact-tracing, by placing heavier emphasis on the human element, underscores the importance of establishing and sustaining a relationship of trust and transparency between a government and its populace. Even so, the replicability of the Taiwanese model of Agile Governance to other countries needs to be qualified, for two reasons. The first of these stems from the difficulty of fine-tuning the Agile Governance model to ensure that virus countermeasures reach marginalised communities. Whilst Taiwan has thus far been spared, and also has a largely more progressive societal outlook compared to the ROK and Singapore, it should be recalled that correlation (Taiwan's progressive policies) does not necessarily imply causation (absence of virus outbreaks in Taiwan). Even within Taiwan, marginalised communities face overall public ostracism. If Taiwan or other countries that have officially 'eliminated' the virus within their territory were to face new infections, either from asymptomatic cases, or imported infections resulting from diminished vigilance at points of entry, such demographic gaps could see resurgent outbreaks.[131]

Second, the success of Taiwan's model of Agile Governance has rested on the high level of trust between the Government and the populace, as well as the public's willingness to sacrifice personal liberties in pursuit of a long-term collective benefit. By comparison, it is difficult to imagine the Taiwanese model succeeding in the present-day United States, with its high political polarisation and

---

131 *This has been reflected in the experience of Vietnam and New Zealand, which went for several months in 2020 without any new COVID-19 infections, only for both countries to see new outbreaks in July and August respectively.*

prioritisation of individual liberties at the expense of the collective good, and a notion of freedom of speech so sacrosanct as to accept conspiracy theories as part of the mainstream narrative.[132] The efficacy of the Taiwanese model of Agile Governance is dependent on a clearly established relationship of trust between a well-informed public, competent and transparent government authorities, the mass media, civil society, and other stakeholders.

Oversight of Digital Technology

The three case studies also underscore that the efficacy of digital contact-tracing is dependent on trust between policymakers and the populace. This has been most clearly evident in Taiwan and the ROK (during the early stages of its COVID-19 outbreak), where an established track record of transparency in public institutions' handling of private data contributed to public confidence in cooperating with government measures for combating the virus. Whether the more recent revelation of the ROK's gaps in data protection have undermined public trust will require follow-up evaluation. Meanwhile, the Taiwanese case illustrates that trust is the social bond underpinning the Agile Governance model. Yang and Tsai describe two types of trust: social trust, the sense of social solidarity towards the shared objective of overcoming COVID-19, and political trust in democratic institutions.[133] The Taiwanese public's acknowledgment that the collective safety of society as a whole is a higher priority than individual privacy rights, in conjunction with trust that their democratically accountable institutions will not abuse personal data, was reflected in broad public cooperation with the authorities in consenting to the high level of intrusiveness that facilitated efficient contact-tracing.[134]
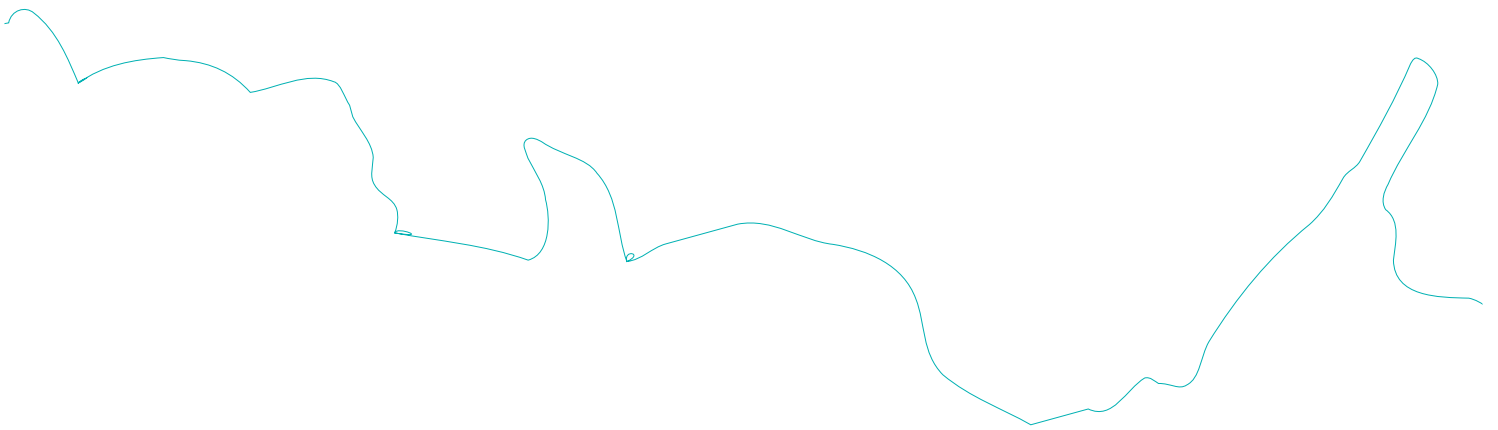
132 Mitchell, Amy, Mark Jurkowitz, J Baxter Oliphant and Elisha Shearer. 2020. "Three Months in, Many Americans See Exaggeration, Conspiracy Theories and Partisanship in COVID-19 News." Pew Research Center, 29 June. (https://www.journalism.org/2020/06/29/three-months-in-many-americans-see-exaggeration-conspiracy-theories-and-partisanship-in-covid-19-news/).

133 Yang and Tsai. 2020. "Democratic Values, Collective Security, and Privacy." 237.

134 Yang and Tsai. 2020. "Democratic Values, Collective Security, and Privacy." 237.

Enforcement Action

It is also necessary to recognise the presence of societal scofflaws that may opt out of efforts by the rest of the community to participate in the collective measures needed to suppress COVID-19. These may range from entities that refuse to cooperate with the authorities in providing information for contact-tracing, to those with a wilful disregard of public health guidelines. In order to send a signal to the rest of society that such actions contravene the public good, it would be necessary for the authorities to undertake legal action against them. At the same time, however, in order to ensure that authorities do not overreach in the exercise of power, it is necessary for states' law statutes to be specific in outlining the circumstances under which such actions constitute a wilful defiance, endangering the public good. ■

The Author

Er-Win Tan holds the position of Associate Professor at the Graduate School of International and Area Studies, Hankuk University of Foreign Studies. His research interests include security dilemma theory, security and diplomacy in the Indo-Pacific region, strategic culture, and North Korea. He was a POSCO Visiting Research Fellow at the East West Center (2016).

List of Author's Fieldwork Interviews:

Interview with Bae Wonseok, Development Director of TINA3D, by email, between 30 October and 4 November 2020.

References

"Airline fires pilot blamed for Taiwan's first Covid case in months." BBC, 24 December 2020. *(https://www.bbc.com/news/world-asia-55433588).*

Aron, Ravi. 2020. "Combating COVID-19: Lessons from Singapore, South Korea and Taiwan." The Wharton School of the University of Pennsylvania, 21 April. *(https://knowledge.wharton.upenn.edu/article/singapore-south_korea-taiwan-used-technology-combat-covid-19/).*

Asquith, James. 2020. "Encouraging Outlook–In Taiwan, Singapore And South Korea Life Is Continuing Without Lockdowns." Forbes, 1 April. *(https://www.forbes.com/sites/jamesasquith/2020/04/01/positive-outlook-in-taiwan-singapore-and-south-korea-life-is-continuing-with-relative-normality/#5562add67335).*

Baharudin, Hariz. 2020. "Distribution of TraceTogether tokens starts; aim is for 70% participation in contact tracing scheme." Straits Times, 14 September.
(https://www.straitstimes.com/singapore/government-aiming-for-70-participation-in-tracetogether-programme-says-vivian-on-first-day).

Bautista, Julius. 2020. "COVID-19 in Singapore: Confronting the truth of Intertwined Interests." COVID-19 Chronicles, 11 May.
(https://covid-19chronicles.cseas.kyoto-u.ac.jp/post-031-html/).

Bhatia, Dominika, et al. 2020. "COVID-19 Case and Contact Tracing: Policy Learning from International Comparisons." Rapid Review 25.

Bondaz, Antoine. 2020. "The Use of the Digital Fence system is a crucial part of Taiwan's current epidemic prevention measures: A Conversation with Audrey Tang." Fondation Recherche Strategique.
(https://www.frstrategie.org/sites/default/files/documents/publications/autres/2020/Interview%20Audrey%20Tang.pdf).

Braw, Elizabeth. 2020. "Want to Avoid the Next Pandemic? Hire a Devil's Advocate." Foreign Policy, 6 May.
(https://foreignpolicy.com/2020/05/06/want-to-avoid-the-next-pandemic-hire-a-devils-advocate/).

Carroll, Aaron E. 2020. "Lesson From Singapore: Why We May Need to Think Bigger." New York Times, 14 April.
(https://www.nytimes.com/2020/04/14/upshot/coronavirus-singapore-thinking-big.html?referringSource=articleShare&fbclid=IwAR3OGlVGgjp8q2Cu-JDSn0TxWzbo_c5tuQE7dM9UjwXyJdtMSb3EjBOhKz0).

Chang, Cindy. 2020. "Taipei's homeless are few but desperate." Los Angeles Times, 25 June.
(https://www.latimes.com/world-nation/story/2020-06-25/taipeis-homeless-are-few-but-desperate).

Chang, Wen-Chen. 2020. "Taiwan's Fight against COVID-19: Constitutionalism, Laws, and the Global Pandemic." Center for Global Constitutionalism, 21 March.
(https://verfassungsblog.de/taiwans-fight-against-covid-19-constitutionalism-laws-and-the-global-pandemic/).

Chen, Mei Hua. 2020. "Taiwanese Sex Workers Amid the COVID-19 Pandemic." Taiwan Insight, 25 May.
(https://taiwaninsight.org/2020/05/25/taiwanese-sex-workers-amid-the-covid-19-pandemic/).

Chik, Warren. 2020. "Changes to the Singapore Personal Data Protection Act and implications in the pandemic context." Academia, 25 June. *(https://www.academia.sg/academic-views/changes-to-the-singapore-personal-data-protection-act-and-implications-in-the-pandemic-context/?fbclid=IwAR0ve mOc9gOjz111YEeJWyn1pnmnMBMnlTeVGuFiZoWDA-dfl60UnKe6rFg).*

Choe, Sang-Hun. 2020. "Each Day Is Critical': South Korea's 11th-Hour Battle With Covid." New York Times, 22 December. *(https://www.nytimes.com/2020/12/22/world/asia/korea-covid-infections-level-3.html?smid=fb-share&fbclid=IwAR2Jy6DCoi_Db-AU9b_-Wy8y9ovgJI2P7yJBTC1iFDw ytFxUjB6oac1s-5Q).*

Choe, Sang-Hun, et al. 2020. "Major Security Flaws Found in South Korea Quarantine App." New York Times, 21 July. *(https://www.nytimes.com/2020/07/21/technology/korea-coronavirus-app-security.html).*
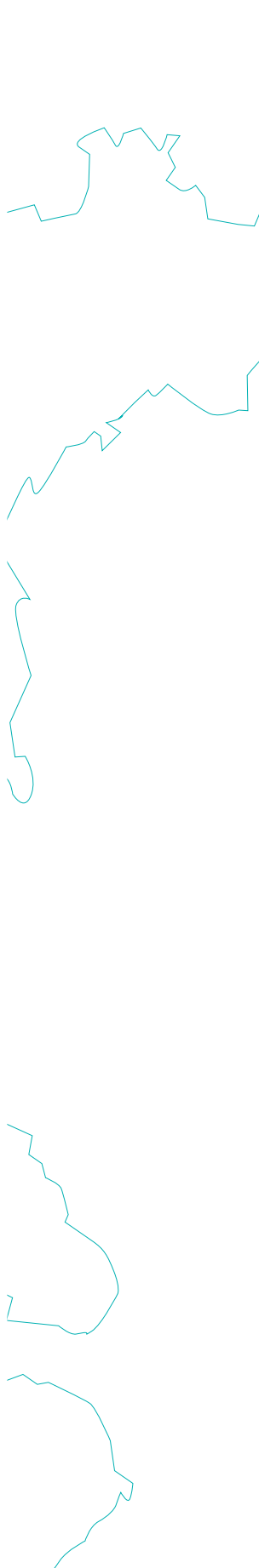
Choi, Ha-Yan. 2020. "People without masks in public to face fines up to US$86 starting Nov. 16." Hankyoreh, 5 October. *(http://english.hani.co.kr/arti/english_edition/e_national/964481.html?fbclid=I-wAR11nKZw8X5hkiwdFR5ka5RO5KNonDRu1R0KB8jwQhpiIaVLp3yETHy4M-4).*

Choi, Ha-Yan. 2020. "Transmission clusters of COVID-19 involving small groups and gatherings on the rise." Hankyoreh, 30 June. *(http://english.hani.co.kr/arti/english_edition/e_national/951634.html?fbclid=I-wAR1fyIRr58lZOd9ObyusuDtZNeCPFg3exXdTj-LrlblgU3jHRjNcvSUpw_E).*

Choi, He-Suk. 2020. "Government cracks down on church for violating anti-outbreak measures." Korea Herald, 23 March. *(http://www.koreaherald.com/view.php?ud=20200323000769).*

Chou, Christine, and Steven O. Kimbrough. 2020. "Not All Heroes Wear Capes: The Contributors Behind the Battle Against the Coronavirus Outbreak in Taiwan." The Wharton School of the University of Pennsylvania, 27 July. *(https://knowledge.wharton.upenn.edu/article/taiwans-tech-savvy-citizens-helped-flatten-covid-19-curve/).*

Claburn, Thomas. 2020. "Taiwan collars coronavirus quarantine scofflaws with smartphone geo-fences. So, which nation will be next?" The Register, 24 March. *(https://www.theregister.com/2020/03/24/coronavirus_quarantine_cellphone/).*

"COVID-19: Travellers who serve stay-home notice outside of facilities after entering Singapore must wear electronic device." Channelnewsasia, 3 August 2020. *(https://www.channelnewsasia.com/news/singapore/electronic-device-travellers-enter-singapore-stay-home-notice-12985052?cid=FBcna&fbclid=IwAR0iFZu43ubosKnd4TsHMRW0ofFdqjv8rDScUlN2gaWdUYCfhoIbQa_mTTU).*

"Coronavirus: Singapore bans Britons for lockdown 'bar crawl.'" BBC, 26 June 2020. *(https://www.bbc.co.uk/news/world-asia-53188941).*

"Coronavirus: Under surveillance and confined at home in Taiwan." BBC, 24 March 2020. *(https://www.bbc.com/news/technology-52017993).*

"Coronavirus privacy: Are South Korea's alerts too revealing?" BBC, 5 March 2020. *(https://www.bbc.com/news/world-asia-51733145).*

"Data privacy, 'unexciting' interface and battery-draining issue are reasons why Singaporeans are not downloading TraceTogether app." Online Citizen, 20 May 2020., *(https://www.onlinecitizenasia.com/2020/05/20/data-privacy-unexciting-interface-and-battery-draining-issue-are-reasons-why-singaporeans-are-not-downloading-tracetogether-app/).*

Elmi, Nima. 2018. "Agile Governance Reimagining Policy-making in the Fourth Industrial Revolution." World Economic Forum. *(http://www3.weforum.org/docs/WEF_Agile_Governance_Reimagining_Policy-making_4IR_report.pdf).*

Emilio, Maurizio Di Paolo. 2020. "Taiwan's Electronic Fence System Draw Global Attention." Electronic Engineering Times Asia, 3 July. *(https://www.eetasia.com/taiwans-electronic-fence-system-draw-global-attention/).*

Ferretti, Luca, et al. 2000. "Quantifying SARS-CoV-2 transmission suggests epidemic control with digital contact tracing." Science 368, 6491. *(https://science.sciencemag.org/content/368/6491/eabb6936).*

Francis, Gregory. 2020. "Digital Contact Tracing: A Comparative Global Study Access Partnership 2020." Access Partnership. *(https://www.accesspartnership.com/cms/access-content/uploads/2020/07/AP-Special-Report-Global-Contact-Tracing-Study.pdf).*

"FAQ page of the Website of SafeEntry." Singapore Government, 2020.
(https://support.SafeEntry.gov.sg/hc/en-us).

"Gov't Takes Follow-up Measures After Securing List of Shincheonji
Church Followers." KBS, 26 February 2020.
(https://world.kbs.co.kr/service/news_view.htm?lang=e&Seq_Code=151611).

Goldwasser, Shafi, Interview with Audrey Tang. 2020. "The Digital Fence:
Taiwan's Response to COVID-19." Simons Institute Polylogues Series, 6 April.
*(https://simons.berkeley.edu/news/simons-institute-polylogues-digital-fence-
taiwan-response-covid-19).*

Haines, Monamie Bhadra and Hallam Stevens. 2020.
"Does Singapore need mandatory contact tracing apps?" Academia, 18 May.
*(https://www.academia.sg/academic-views/does-singapore-need-mandatory-
contact-tracing-apps/).*

Harjani, Manoj. 2020. "Global Health Security: COVID-19 and Its
Impacts – Early Warning Systems: Stumbling Blocks Post-Pandemic."
RSIS Commentary, 16 June.
*(https://www.rsis.edu.sg/rsis-publication/rsis/global-health-security-covid-19-
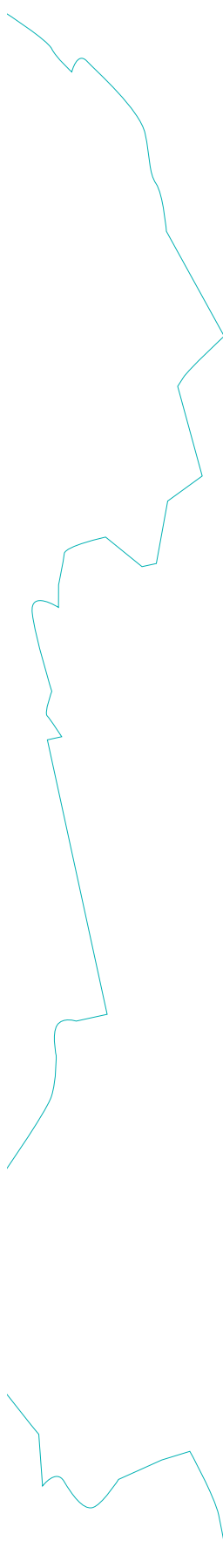and-its-impacts-early-warning-systems-stumbling-blocks-post-pandemic/#.
Xv7bDqEzbcs).*

Hlasny, Vladimir. 2020. "How COVID-19 Wreaked Havoc on
South Korea's Labor Market." The Diplomat, 28 August.
*(https://thediplomat.com/2020/08/how-covid-19-wreaked-havoc-on-south-
koreas-labor-market/).*

Ho, Grace. 2020. "Emerging Stronger Conversations: Bringing together
voices to build more resilient society." Straits Times, 28 September.
*(https://www.straitstimes.com/politics/bringing-together-voices-to-build-more-
resilient-society).*

Holden, Philip. 2020. "A Conversation with Debbie Fordyce,
TWC2 President." Academia, 14 May.
*(https://www.academia.sg/academic-views/a-conversation-with-debbie-fordyce-
twc2-president/?fbclid=IwAR2KFGsb8ASLho45UNnpdw4X-CkcoTax6uXQaEF00rJZ
m5W38Gs3cYu7OkE).*

Horton, Chris. 2018. "The simple but ingenious system Taiwan uses
to crowdsource its laws." MIT Technology Review, 21 August.
*(https://www.technologyreview.com/2018/08/21/240284/the-simple-but-
ingenious-system-taiwan-uses-to-crowdsource-its-laws/).*

"How it works." Homepage of vTaiwan.
(https://info.vtaiwan.tw/).

Hsu, Chin-Hsien, et al. 2020. "How to Defend COVID-19 in Taiwan? Talk about People's Disease Awareness, Attitudes, Behaviors and the Impact of Physical and Mental Health." International Journal of Environmental Research and Public Health 17, 13.

"Improving Tracetogether through community engagement." GovTech, 6 July 2020.
(https://www.tech.gov.sg/media/technews/2020-07-06-tracetogether-token-teardown).

"Is TraceTogether mandatory?"
FAQ Page of the TraceTogether Programme, 2020.
(https://support.tracetogether.gov.sg/hc/en-sg/articles/360048800974-Is-TraceTogether-mandatory-#:~:text=From%202%20June%202020%2C%20dormitory,version%20of%20the%20TraceTogether%20App).

Janssen, Marijn and Haikovan der Voort. 2020. "Agile and adaptive governance in crisis response: Lessons from the COVID-19 pandemic." International Journal of Information Management.

Jaswal, Balli Kaur. 2020. "Rise in coronavirus cases brings to light Singaporeans' racist attitudes towards foreign workers."
South China Morning Post, 23 April.
(https://www.scmp.com/comment/opinion/article/3080987/rise-coronavirus-cases-brings-light-singaporeans-racist-attitudes).

Kan, Hyeong-Woo. 2020. "S. Korea introduces QR entry log system."
Korea Herald, 17 June.
(http://www.koreaherald.com/view.php?ud=20200617000718&fbclid=I-wAR27G8hj_ArSwy003HziSCMyzMoUEvHnZmHD5pT5cWh44n4TGirez72pHTY).

Kang, Tae-Jun. 2020. 'South Korea Baffled by Stop-and-Search, Police Bus Walls During Protests." The Diplomat, 5 October.
(https://thediplomat.com/2020/10/south-korea-baffled-by-stop-and-search-police-bus-walls-during-protests/?fbclid=IwAR0knjW0kT-jrUSEz24lk5HUXpuBjyiibYmQrrZOcBotL_cN-3Xht7LQYDw).

Kim, Brian. 2020. "Lessons for America: How South Korean Authorities Used Law to Fight the Coronavirus." Lawfare Blog, 16 March.
(https://www.lawfareblog.com/lessons-america-how-south-korean-authorities-used-law-fight-coronavirus).

Kim, Hyun-bin. 2020. "Naver collects sensitive private data without user consent." Korea Times, 24 July.
(https://www.koreatimes.co.kr/www/tech/2020/07/133_293187.html?fbclid=IwAR1-opkBtOd9jVXgoaM2fHEjrPOMSYvvV0AmTQuMZBTzwGtO_pfn07hP97Q).

Kim, Hyun-Jung. 2020. "South Korea learned its successful Covid-19 strategy from a previous coronavirus outbreak: MERS." Bulletin of the Atomic Scientists, 20 March. *(https://thebulletin.org/2020/03/south-korea-learned-its-successful-covid-19-strategy-from-a-previous-coronavirus-outbreak-mers/).*

Kim, Min Joo. 2020. "Tracing South Korea's latest virus outbreak shoves LGBTQ community into unwelcome spotlight." Washington Post, 11 May. *(https://www.washingtonpost.com/world/asia_pacific/tracing-south-koreas-latest-virus-outbreak-shoves-lgbtq-community-into-unwelcome-spotlight/2020/05/11/0da09036-9343-11ea-87a3-22d324235636_story.html).*

Kim, Nemo. 2020. "More scary than coronavirus': South Korea's health alerts expose private lives." Guardian, 6 March. *(https://www.theguardian.com/world/2020/mar/06/more-scary-than-coronavirus-south-koreas-health-alerts-expose-private-lives).*

Kirk, Donald. 2020. "South Korea is Beating the Coronavirus. Mass Testing is Key. But There's More." The Daily Beast, 13 March. *(https://www.thedailybeast.com/south-korea-is-beating-the-coronavirus-mass-testing-is-key-but-theres-more?fbclid=IwAR3ER3FAPgT1NTpYIZV7Xmq-WTNfLwGheGtEq2R60drZqbXuzF9fvXcRdww).*

Klatt, Karola. 2020. "Corona apps: South Korea and the dark side of digital tracking." Brussels Times, 30 April. *(https://www.brusselstimes.com/opinion/108594/corona-apps-south-korea-and-the-dark-side-of-digital-tracking/).*

Kluth, Andreas. 2020. "If We Must Build a Surveillance State, Let's Do It Properly." Bloomberg, 22 April. *(https://www.bloomberg.com/opinion/articles/2020-04-22/taiwan-offers-the-best-model-for-coronavirus-data-tracking).*

Korea Legislation Research Institute. 2017. "Enforcement Decree of the Infectious Disease Control and Prevention Act." Korea Legislation Research Institute, most recent Amendment by Presidential Decree No. 28070, 29 May 2017. *(http://elaw.klri.re.kr/eng_mobile/viewer.do?hseq=43547&type=part&key=36).*

"'Korea Shares COVID-19 Response Strategies with World Bank." ROK Ministry of Economy and Finance, 26 March 2020. *(http://english.moef.go.kr/pc/selectTbPressCenterDtl.do?boardCd=N0001&seq=4868).*

"Korean government's response system." ROK Ministry of Health and Welfare. *(http://ncov.mohw.go.kr/en/baroView.do?brdId=11&brdGubun=111).*

Lammertink, Jonas P. 2020. "Responding to COVID-19 with Tech in Singapore.'" In Schneider and Creemers (eds.). *How Asia Confronts COVID-19 through Technology.*

Lee, Chien-Liang. 2020. "Taiwan's Proactive Prevention of COVID-19 under Constitutionalism." Center for Global Constitutionalism, 22 April. *(https://verfassungsblog.de/taiwans-proactive-prevention-of-covid-19-under-constitutionalism/).*

Lee, Ga-Ram and Sarah Kim. 2020. "Pastor blamed for virus surge draws scrutiny over politics, education." Korea Joongang Daily, 19 August. *(https://koreajoongangdaily.joins.com/2020/08/19/national/socialAffairs/Jung-Kwanghun-Covid19-coronavirus/20200819192200390.html).*

Lee, Heesu. 2020. "These Elite Contact Tracers Show the World How to Beat Covid-19." Bloomberg, 26 July. *(https://www.bloomberg.com/news/articles/2020-07-25/these-elite-contact-tracers-show-the-world-how-to-beat-covid-19?fbclid=IwAR14ns-Bo6-rrhbrvfMXESCB-zTR2uSITLA9JwYkzelDAe_KExTN3q3BNg).*

Lee, Sabinne, Changho Hwang and M. Jae Moon. 2020. "Policy learning and crisis policy-making: quadruple-loop learning and COVID-19 responses in South Korea." Policy and Society 39, 3.

Lee, Yimou. 2020. "Taiwan's new 'electronic fence' for quarantines leads wave of virus monitoring." Reuters, 20 March. *(https://www.reuters.com/article/us-health-coronavirus-taiwan-surveillanc-idUSKBN2170SK).*

Leswing, Kif. 2020. "Apple is rejecting coronavirus apps that aren't from health organizations, app makers say." CNBC, 5 March. *(https://www.cnbc.com/2020/03/05/apple-rejects-coronavirus-apps-that-arent-from-health-organizations.html).*

Lin, Ching-Fu, Wu Chien-Huei, and Wu Chuan-Feng. 2020. "Reimagining the Administrative State in Times of Global Health Crisis: An Anatomy of Taiwan's Regulatory Actions in Response to the COVID-19 Pandemic." European Journal of Risk Regulation. *(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7156569/).*

Martin, Nicholas. 2020 "The Role of Digital Tools in Taiwan's Response to COVID-19." Fraunhofer Institute, 1 May. *(https://corona.forum-privatheit.de/the-role-of-digital-tools-in-taiwans-response-to-COVID-19/?fbclid=IwAR1S-uCtjo4FMl76YLvWEXeKncOvJ8bfqxJ1HKb45TMSknR O716eMijYM7g).*

Mathews, Mathew, AlexTan and Syafiq Suhaini. 2020. "Attitudes towards the use of surveillance technologies in the fight against COVID-19." Institute of Policy Studies, Lee Kuan Yew School of Public Policy. *(https://lkyspp.nus.edu.sg/docs/default-source/ips/ips-report-on-attitudes-towards-the-use-of-surveillance-technologies-in-the-fight-against-covid-19-240520.pdf).*

McGregor, Grady. 2020. "SARS taught Taiwan how to contain the coronavirus outbreak." Fortune, 15 March. *(https://fortune.com/2020/03/15/coronavirus-taiwan-cases-response/).*

Mitchell, Amy, et al. 2020. "Three Months in, Many Americans See Exaggeration, Conspiracy Theories and Partisanship in COVID-19 News." Pew Research Center, 29 June. *(https://www.journalism.org/2020/06/29/three-months-in-many-americans-see-exaggeration-conspiracy-theories-and-partisanship-in-covid-19-news/).*

Moon, Myung-Jae. 2020. "Fighting COVID-19 with Agility, Transparency, and Participation: Wicked Policy Problems and New Governance Challenges." Public Administration Review 80, 4.
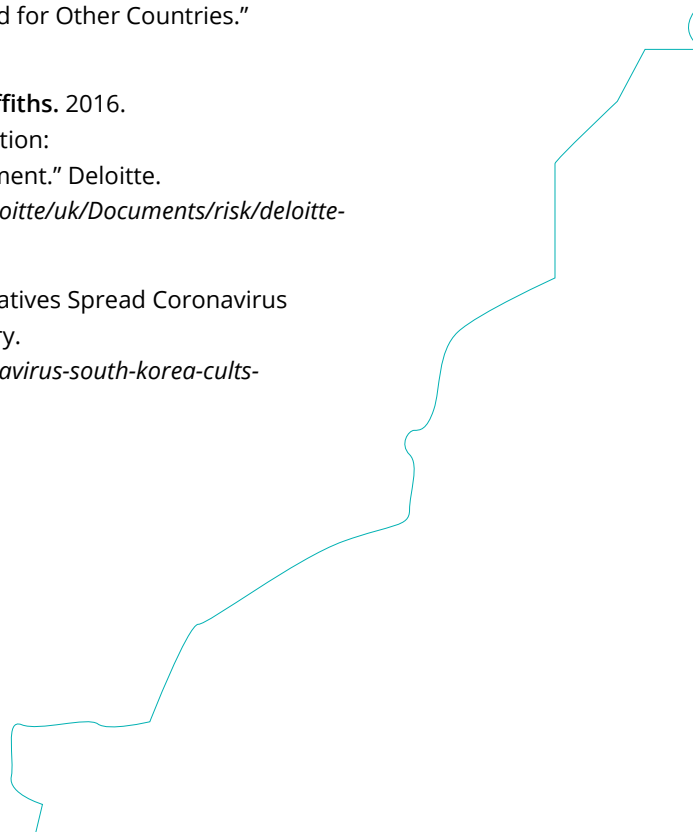
Ng, How Yue. 2020. "COVID-19 (TEMPORARY MEASURES) ACT 2020.'" Singapore Statues Online, 7 April. *(https://sso.agc.gov.sg/SL-Supp/S254-2020/Published/20200407?DocDate=20200407).*

Ock, Hyun-Ju. 2020. "Seoul to plug undocumented migrants loophole in COVID-19 efforts." Korea Herald, 29 April. *(http://www.koreaherald.com/view.php?ud=20200429000769).*

Oh, Juhwan, et al. 2020. "National Response to COVID-19 in the Republic of Korea and Lessons Learned for Other Countries." Health Systems and Reform 6, 1.

Park, Kristian, Sanjoy Sen and Danny Griffiths. 2016. "Addressing the challenges of decentralisation: Third Party Governance and Risk Management." Deloitte. *(https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/risk/deloitte-uk-tpr-decentralisation.pdf).*

Park, S. Nathan. 2020. "Cults and Conservatives Spread Coronavirus in South Korea." Foreign Policy, 27 February. *(https://foreignpolicy.com/2020/02/27/coronavirus-south-korea-cults-conservatives-china/.*

"PM Lee Hsien Loong on the COVID-19 situation in Singapore on 3 April 2020." Office of the Prime Minister of Singapore, 3 April 2020. *(https://www.pmo.gov.sg/Newsroom/PM-Lee-Hsien-Loong-on-the-COVID19-situation-in-Singapore-on-3-April-2020).*

"Personal Data Protection Act 2012." Singapore Statutes Online, 7 December 2012. *(https://sso.agc.gov.sg/Act/PDPA2012).*

"Personal Data Protection Act 2015." Laws and Regulations Database of Taiwan, 30 December 2015. *(https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=I0050021).*

"Police Cloud – M-Police Mobile Computer System." Taiwan Smart City Online Portal, *(https://en.smartcity.org.tw/index.php/en-us/component/k2/item/47-police-cloud-m-police-mobile-computer-system).*

"Police on standby to deter illegal rallies on national holiday amid virus outbreak." Yonhap News Agency, 3 October 2020. *(https://en.yna.co.kr/view/AEN20201003001200320).*

"PrivacyRules exclusive interview with Tina3D, the company that developed the Korean app "Corona 100m" to trace covid-19." Presswire, 30 June 2020. *(https://www.einnews.com/pr_news/520660867/privacyrules-exclusive-interview-with-tina3d-the-company-that-developed-the-korean-app-corona-100m-to-trace-covid-19).*

Ratcliffe, Rebecca. 2020. "Singapore's cramped migrant worker dorms hide Covid-19 surge risk." Guardian, 17 April. *(https://www.theguardian.com/world/2020/apr/17/singapores-cramped-migrant-worker-dorms-hide-covid-19-surge-risk).*

Schwartz, Jonathan, and Muh-Yong Yen. 2017. "Toward a collaborative model of pandemic preparedness and response: Taiwan's changing approach to pandemics." Journal of Microbiology, Immunology and Infection 50.

Seo, Jian, and David Tizzard. 2020. "Korea, religion and the coronavirus." Korea Times, 30 August. *(https://www.koreatimes.co.kr/www/opinion/2020/08/715_295165. html?fbclid=IwAR3XZZnSeU5qWPZtxM6CcFCHowWL3WV5iizVLDQU3XY_PelaVeVKQ6j5K6k).*

Shapiro, Don. 2020. "Taiwan shows its mettle in coronavirus crisis, while the WHO is MIA." Brookings Institution, 19 March. *(https://www.brookings.edu/blog/order-from-chaos/2020/03/19/taiwan-shows-its-mettle-in-coronavirus-crisis-while-the-who-is-mia/).*

"Sarang Jeil Church Members Indicted for Holding Offline Services."
KBS News, 23 September 2020.
(http://world.kbs.co.kr/service/news_view.htm?lang=e&Seq_Code=156471).

"Singapore distributes Covid contact-tracing tokens."
BBC, 14 September 2020.
(https://www.bbc.com/news/business-54143015).

"Singapore personal data hack hits 1.5m, health authority says."
BBC, 20 July 2018.
(https://www.bbc.com/news/world-asia-44900507).

"South Korea's Response To COVID-19: Interview With Wonhyuk Lim." Podcast
by The Edwin O. Reischauer Center for East Asian Studies, 23 April 2020.
(https://www.reischauercenter.org/podcasts/south-koreas-response-to-COVID-19-with-wonhyuk-lim/).

"South Korean sect leader arrested for obstructing Covid-19 investigation."
Guardian, 1 August 2020.
(https://www.theguardian.com/world/2020/aug/01/south-korean-sect-leader-arrested-for-obstructing-covid-19-investigation).

"Stop-and-frisk and bus walls remind us of dictatorship."
Dong-A Ilbo, 5 October 2020.
(https://www.donga.com/en/article/all/20201005/2200920/1/Stop-and-frisk-and-bus-walls-remind-us-of-dictatorship).

Silva, Shiroma. 2020. "Coronavirus: How map hacks and buttocks
helped Taiwan fight COVID-19." BBC, 7 June.
(https://www.bbc.com/news/technology-52883838).

Sturmer, Jake, and Rebecca Armitage. 2020. "South Korea's coronavirus
outbreak in Seoul's club scene shows the dangers of stigma during a
pandemic." ABC News, 15 May.
(https://www.abc.net.au/news/2020-05-16/how-a-few-nightclubs-in-seoul-saw-a-new-coronavirus-outbreak/12249842).

Taleb, Nassim Nicholas. 2012. *Antifragile: Things that Gain from Disorder.*
New York: Random House.

Tan, Bryan. 2020. "Commentary: Singapore's almost in our new normal.
Don't be the dud who jeopardises that." Channelnewsasia, 16 September.
(https://www.channelnewsasia.com/news/commentary/covid-19-singapore-new-normal-tracetogether-SafeEntry-13112428).

Tan, Ming Hui. 2020. "Living with Uncertainty: A Whole of Society Approach to Pandemics."

RSIS Policy Report.
(https://www.rsis.edu.sg/rsis-publication/rsis/living-with-uncertainty-a-whole-of-society-approach-to-pandemics/).

Tan, Yvette. 2020. "Covid-19 Singapore: A 'pandemic of inequality' exposed." BBC, 18 September.
(https://www.bbc.com/news/world-asia-54082861).

Tay, Simon, and Kevin Chen. 2020. "Singapore and COVID-19: Strengths, Shifts, and Limits of National Response." Council on Foreign Relations, 21 April.
(https://www.cfr.org/blog/singapore-and-COVID-19-strengths-shifts-and-limits-national-response?fbclid=IwAR3mnyjCdrd_I6wNYQo6Kz6ziZQqmR1jrZjyQHMbNuZJclFVmKLEBFZiU5Y).

Tay, Tiffany Fumiko. 2020. "Singaporeans accept some privacy loss in Covid-19 battle but surveillance method matters: IPS study." Straits Times, 25 May.
(https://www.straitstimes.com/singapore/singaporeans-accept-some-privacy-loss-in-covid-19-battle-but-surveillance-method-matters).

"TraceTogether: Not Easy to Verify the State's Privacy Claims." Digital Reach, 2 April 2020.
(https://digitalreach.asia/tracetogether-disassembling-it-wasnt-easy-to-confirm-the-governments-claims-on-privacy/).

"Upgraded social distancing level 2.5 is needed to reduce impact on businesses." Donga Ilbo, 12 September 2020.
(https://www.donga.com/en/article/all/20200912/2178901/1/Upgraded-social-distancing-level-2-5-is-needed-to-reduce-impact-on-businesses).

"vTaiwan." Nesta.
(https://www.nesta.org.uk/feature/six-pioneers-digital-democracy/vtaiwan/).

"Walking the talk on being inclusive." Straits Times, 3 June 2020.
(https://www.straitstimes.com/opinion/st-editorial/walking-the-talk-on-being-inclusive).

Wang, C. Jason, Chun Y. Ng and Robert H. Brook. 2020.
"Response to COVID-19 in Taiwan: Big Data Analytics, New Technology, and Proactive Testing." RAND, 1 April.
(https://www.rand.org/pubs/external_publications/EP68123.html).

Wells, Spencer. 2020. "Singapore is the model for how to handle the coronavirus." MIT Technology Review, 12 March. *(https://www.technologyreview.com/2020/03/12/905346/singapore-is-the-model-for-how-to-handle-the-coronavirus/).*

Wong, Carlson. 2020. "IFCN's chatbot to curb COVID-19 infodemic." Radio Taiwan International, 7 May. *(https://en.rti.org.tw/radio/programMessageView/id/102962).*

Wong, Lester. 2020. "Use of TraceTogether app or token mandatory by end Dec." Straits Times, 21 October. *(https://www.straitstimes.com/singapore/use-of-tracetogether-app-or-token-mandatory-by-end-dec).*

Wray, Sarah. 2020. "South Korea to step-up online coronavirus tracking." Smartcitiesworld, 12 March. *(https://www.smartcitiesworld.net/news/news/south-korea-to-step-up-online-coronavirus-tracking-5109).*

Yang, Wan-Ying, and Tsai, Chia-hung Tsai. 2020. "Democratic Values, Collective Security, and Privacy: Taiwan People's Response to COVID-19." Asian Journal for Public Opinion Research 8, 3.

Yen, Wei-Ting. 2020. "Taiwan's COVID-19 Management: Developmental State, Digital Governance, and State-Society Synergy." Asian Politics and Policy 12, 3.

Yong, Janelle. 2020. "Wearable TraceTogether token: 57% willing to wear it. You leh?" Asia One, 19 June. *(https://www.asiaone.com/digital/wearable-tracetogether-token-57-willing-wear-it-you-leh).*

Yonhap News Agency. 2020. "S. Korea to use electronic wristbands on violators of self-isolation rules: PM." Korea Herald, 11 April. *(http://www.koreaherald.com/view.php?ud=20200411000043).*

Yuen, Sin. 2020. "Covid-19 outbreak brings migrant workers from margin to centre of Singapore's attention." Straits Times, 30 April. *(https://www.straitstimes.com/opinion/migrant-workers-from-margin-to-centre-of-spores-attention).*

Zhuo, Tee. 2020. "Coronavirus: Tracking workers' health with mobile apps, wearable devices." Straits Times, 12 August. *(https://www.straitstimes.com/singapore/manpower/tracking-workers-health-with-tech-help).*