

Leadership Trait Analysis (LTA) of Successful State Leaders in COVID times: Tsai Ing-wen and Jacinda Ardern

Edith Lee

Supervised by Dr Ryan Beasley

School of International Relations, University of St Andrews

Word count: 3138

August 2021

I would like to acknowledge and thank Dr Beasley for guiding and supporting me through this research journey; Lord Laidlaw and members of the Laidlaw Foundation for providing this opportunity and their support to make this project a reality

INTRODUCTION

The COVID-19 pandemic has tested states' ability to endure an incredibly challenging global crisis, not only because of its uniqueness as a public health crisis, but also because of factors encompassing open and unscrutinised data-sharing that facilitated the spread of misinformation (Kupferschmidt, 2020) and difficulty in applying public health policies to heterogenous environments in a globalised world (Bennett, 2021). The way state leaders have responded to the crisis and prioritised issues varied, and this in turn differentially shaped states' performance in COVID management.

Given the role individual state leaders play in wielding states' highest sources of powers, while extraneous actors and circumstances informed the formation of state decisions, it is ultimately the state leader who acts as a conduit for the analysis and interpretation of the factors at play, and shape the intentions, priorities, and the decision-making for the state (Byman & Pollack, 2001). We therefore sought to conduct a leadership trait analysis (LTA) on two state leaders who found exceptional success in the COVID crisis: Tsai Ing-Wen, President of Taiwan, and Jacinda Ardern, Prime Minister of New Zealand. Despite Taiwan and New Zealand's status disparity as semi-state and fully sovereign state, we believe their similar circumstances as island states of small landmass, operating as economically-developed liberal democracies, limits the systemic confounding variables in this LTA comparison. Through this analysis, we hope to identify common traits in leaders as factors that explain the successes these states have found in the COVID-19 pandemic.

TAIWAN AND NEW ZEALAND IN COVID-19

31 December 2019

The local authorities of the Chinese city of Wuhan confirmed outbreak of a novel viral pneumonia. Taiwan's Centres for Disease Control (CDC) activated border epidemic checks, establishing recent travel histories for inbound travellers and locals to determine individuals at high risk of importing the disease, and enforcing symptom checks for passengers boarding direct flights from Wuhan (CDC, 2019)

21 January 2020

First case of COVID-19 found in Taiwan

30 January 2020

The World Health Organisation (WHO) declared the outbreak a Public Health Emergency of International Concern (WHO, 2020)

20 March 2020

Highest number of daily reported cases recorded during Taiwan's initial outbreak: 27 (CDC, 2020b)

10 May 2020

Taiwan marks the 28th consecutive day, the equivalent of two incubation periods for COVID-19, where no indigenous case was found, for the first time since the outbreak (Lee, 2020)

20 January 2020

The CDC established a Central Epidemic Command Centre (CECC), designated to integrate resources from the 'administration, the academic, medical, and private sectors to fight against the 2019 novel coronavirus (COVID-19)' (CDC, 2020a)

22 January 2020

Tsai Ing-wen called a high-level national security meeting and issued disease prevention directives to prevent domestic outbreak and strengthen international cooperation to prevent further spread of the virus (Office of the President, Republic of China (Taiwan), 2020)

11 March 2020

The WHO declared COVID-19 outbreak a pandemic

14 April 2020

Taiwan reports no new cases of COVID-19 found for the first time since its outbreak (CDC, 2020c)

Fig. 1 A timeline showing key events during Taiwan's initial outbreak of COVID-19

Early pre-emptive actions is a hallmark characteristic in Taiwan's COVID strategy, as seen in Figure 1. Tsai's call for a national security meeting the day following Taiwan's first COVID case effectively securitised COVID-19, emphasising the gravity of the situation and her determination to eliminate the virus at a time when the rest of the world treated COVID with relative apathy. Following this outbreak, Taiwan saw to a 255-day run without local transmission (Thornton & Griffiths, 2020), a timeframe within which the world grappled with initial outbreaks, recovery, and subsequent waves. Medical experts cited 'stringent quarantine of all travellers and returning residents to Taiwan, rigorous contact tracing and enforced quarantine of all close contacts and in addition, community-based enforcement of social distancing, hand washing and mandatory use of face masks' as what prevented imported cases from spreading in Taiwan (Dai et al., 2021).

Recognising the interconnectedness between border controls, medical care system, and community protection measures, epidemiology experts warned that compromise in any measures could expose vulnerabilities within the wider system and heighten potential for outbreak (Lin et al., 2020; Su et al., 2020; Hsu et al., 2020). This predicted the onset of the May 2021 wave. Despite border controls remaining largely in place, more complacent attitudes held by the Taiwanese public made community protection measures difficult (Tan, 2021). Low vaccination rate due to limited domestic supply (Davidson, 2021) and Taiwan's pursuit of a 'Covid Zero' strategy, whereby emphasis lies in eliminating local transmission rather than treating the pathogen as endemic (Wang & Marlow, 2021) meant the effort in stamping out more infectious variants relies on Non-Pharmaceutical Interventions (NPI), which requires high attention and strong compliance with individual COVID-safe behaviours (Gozzi et al., 2021) – the social behaviour that was absent in Taiwan in the run-up to May 2021.

However, the Taiwanese government recognised the damages its complacency has done, and brought daily reported cases to a new low of 10 by July 26 (Soon, 2021). This was partially due to successful long-term diplomatic planning by Tsai's administration, which strengthened Taiwan's soft powers. Her donation of over 51 million surgical masks to states struggling with initial outbreaks garnered foreign support for the recognition of Taiwan's position within the global community (Teng, 2020) and later, large vaccine donations at the peak of its second outbreak. Tsai regarded this as a token of friendship between the states, and a product of their

initial goodwill (Office of the President, Republic of China (Taiwan), 2021a, 2021b, 2021c). Tsai’s decision-making process is therefore defined by high efficiency and careful management of the balance between domestic demands and long-term inter-state relations.

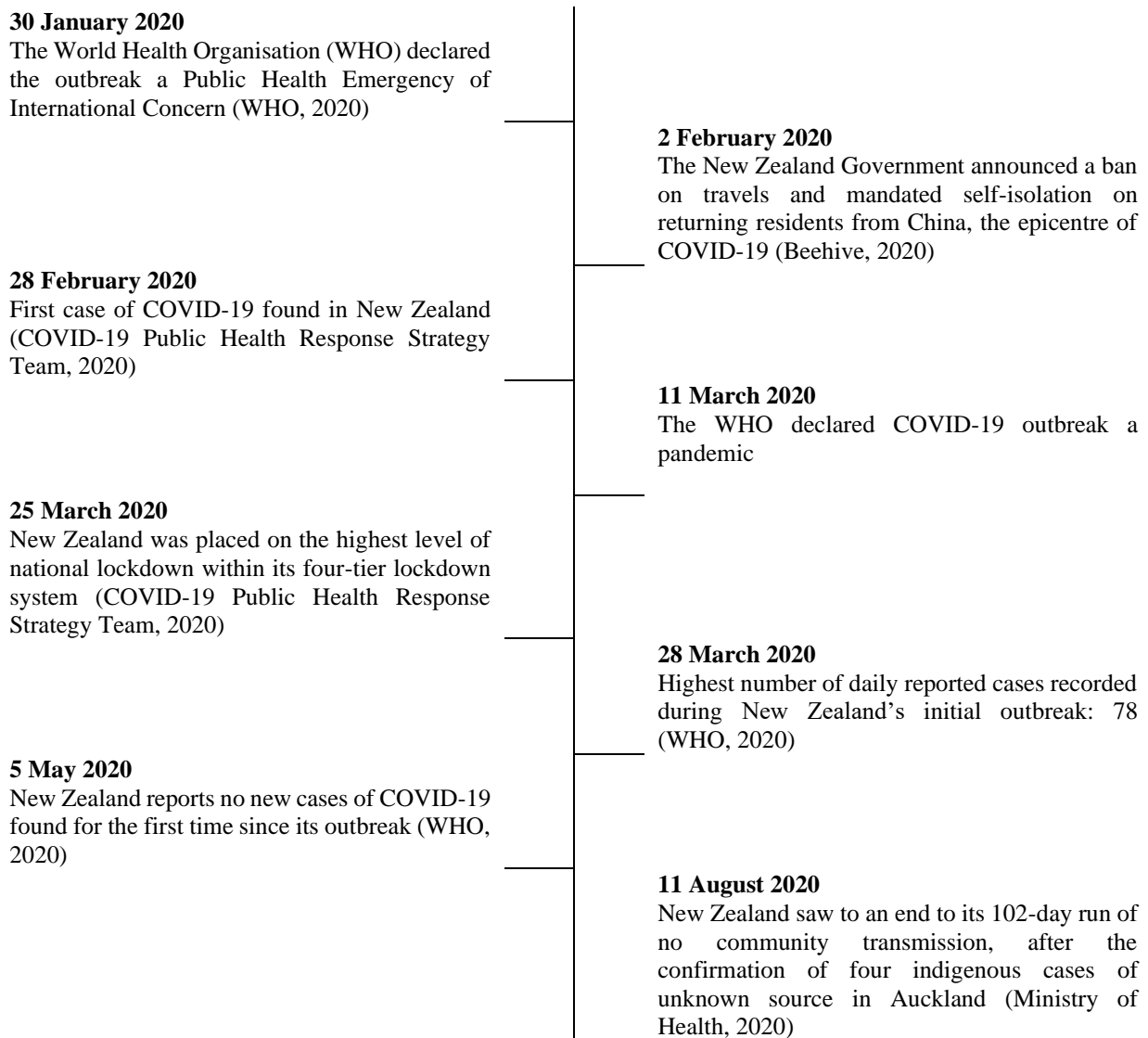


Fig. 2 A timeline showing key events during New Zealand’s initial outbreak of COVID-19

While it didn’t take pre-emptive action near as early, New Zealand hails a similar COVID success story based on swift and responsive actions, as seen in Figure 2. This saw to New Zealand keeping the outbreak under control within the span of two to three months. Its choice to adopt an elimination strategy meant subsequent cases were mostly found at the border of New Zealand by May 2020 and were prevented from transmitting into New Zealand

communities. Even where cases had been found in the community, they rarely amounted to an outbreak on or beyond the scale of its first wave under its consistently robust NPI programme, as exemplified by the state's decision to enter lockdowns over any reported COVID cases found within the community (Menon, 2021) – until August 2021, which, at the time of writing this paper, saw to New Zealand's daily infection numbers approaching the scale of its initial outbreak for the first time. Such resolute response imposed right when reproduction number is rising is an indication that New Zealand rarely, if ever, struggled with intervention fatigue – a factor which served as the catalyst for a strong secondary wave, as demonstrated by Europe's struggle with COVID in November 2020 (Rypdal et al., 2020).

Throughout the pandemic, Ardern adapted her communication to the demands in the moment. Early on, her broadcasts and announcements regarding the pandemic were highly informational, focusing on the facts known about the coronavirus, economic, social and health impacts likely to be associated with the pandemic, and reassurance that proactive decisiveness and expert advice had been taken (McGuire et al., 2020:368). Following New Zealand's move into lockdown, her communication became more empathetic. Retaining the emphasis on decisive action prior to lockdown, she began to stress the importance of unity and communitarian values which drove her government's decisions, in a mix of formal press conferences for informative purposes and informal Facebook live streams (McGuire et al., 2020:370-371). Ardern's leadership and communication styles adopted in COVID times enabled the presentation of a public, transparent, personal and honest presence to the New Zealand public (Dyer, 2021:15). Coupled with an active responsiveness to the evolving situation by prioritising the public health of New Zealand, Ardern's hands-on approach has been manifested in almost all sectors of the New Zealand government, thereby giving it all a distinctly empathetic yet effective characteristic – another hallmark of New Zealand success in managing the COVID crisis.

METHODS

The LTA of Tsai Ing-wen and Jacinda Ardern was conducted through an at-a-distance methodology. Using transcripts of press conferences and interviews with these political leaders, personality profiles of Tsai and Ardern are generated through ProfilerPlus (version 7.3.17), a software developed by Levine and Young (2014), which analyses the seven traits of Hermann's (2003) LTA model (Table 1):

Trait	Description
Belief in ability to control events (BACE)	A view of the world in which leaders perceive some degree of control over situations in which they find themselves, and the perception of how far one can influence what happens
Need for Power (PWR)	A concern for establishing, maintaining, or restoring one's power; the desire to control, influence, or have an impact on other persons or groups
Self-confidence (SC)	One's sense of self-importance, an individual's image of his or her ability to cope adequately with objects and persons in the environment
Conceptual complexity (CC)	The degree of differentiation that an individual shows in describing or discussing other people, places, policies, ideas, or things, which indicates willingness to entertain possibility of ambiguity in environment, and flexibility in reacting to objects or ideas
Task focus (TASK)	The relative emphasis a leader places in interactions with others on dealing with the problems that face the government over feelings and needs of constituents
In-group bias (IGB)	A view of the world in which one's own group (ethnic, social, political etc.) holds centre stage
Distrust of others (DIS)	A general feeling of doubt, uneasiness, misgiving, and weariness about others, which leads to an inclination to suspect the motives and actions of others

Source: Hermann (2003)

Combinations of the above-mentioned traits can generate further conclusions on leadership motives and behaviours, including:

Constraint challenger or constraint respecter: leaders' responses towards structural and contextual constraints are assessed by their PWR and BACE. Leaders scoring low in both PWR and BACE tend to respect constraints; otherwise they would challenge constraints, to varying extents.

Given the exceptional circumstances of COVID, traditional political values and systems have been challenged. Understanding leaders' attitudes towards constraints can help assess their efficiency in decision-making, and the reception they gain from their populations.

Openness to contextual information: leaders' willingness to accept input, critically analyse, and make decisions based on multiple sources of information is assessed by their CC and SC. Leaders with greater CC than SC are pragmatists, open to contextual information and guided by a need to be responsive to others' interests, needs, and ideas. Those who possess high CC and high SC tend to also be open to information, but more strategically and contextually. Those with greater SC than CC are be closed to contextual information: they are ideologues, principled and cause-driven, therefore tend to reinterpret the environment to accommodate their existing worldview. Those who demonstrate low SC and CC remain closed to information, as they usually reflect views of those around themselves, or lock themselves into positions most likely to succeed.

Understanding leaders' openness to information helps understanding how they handled the COVID crisis, given that scientific advisors, political advisors, the economy, and inter-state relations all informed priorities and how decisions should be made. Leaders who are open to contextual information are most likely capable of navigating these factors and the volatile conditions of COVID-19, which demands responsive actions to developments, locally and abroad.

Motivations for seeking office: leaders' pursuit for public office are generally motivated by two factors: problem-solving and building relationships. This is measured by a leaders' TASK: leaders who score high on TASK are motivated by problem-solving and are goal-driven, seeing the world in terms of problem and their job to solve problems. Those who score low on TASK are driven to establish relationships: maintaining loyalty and high morale in individuals involved in the decision-making process is the prime focus. Those who score moderately are both problem- and relationship-motivated, reacting to situations based on what they think is required of them.

Understanding a leader's personal drives helps understand the directions they take, especially in making decisions where the need for achievement and affiliations are in conflict. In the context of COVID-19, where there is a great interplay between interests concerning both motivators, leaders' motivations to seek office can determine the sources of information that has the greatest impact on their decision-making.

Motivation toward world: the way by which leaders perceive world affairs, choose to position the states they govern in inter-state relations, and the forms of diplomacy they've chosen in both domestic affairs and interstate relations can be interpreted using their DIS and IGB scores. Leaders who score low on both categories tend to perceive the world on agreeable terms, where conflict arises contextually. Those who are high in DIS but low in IGB share broadly the same focus, but remain vigilant in their actions. Those who demonstrate low DIS and high IGB, while perceiving the international system as a zero-sum game, adheres to a specific set of norms and clear self-other distinctions. Leaders who are high in both DIS and IGB take a more Hobbesian worldview and more cynical approach towards world affairs, whereby focus lies with eliminating potential threats and problems.

Understanding a leader's motivation towards the world can help make sense of the degree of strictness in border control policies that often feature in COVID management strategies.

Hypotheses

Based on this framework, our understanding of COVID-19, and its management by Taiwan and New Zealand, this study hypothesised that Tsai and Ardern:

- Possess shared traits that are beyond world leaders' average range
- Demonstrate one or more of the following traits: high CC, high TASK, openness to information, and low DIS

RESULTS

Tables 1 and 2 below display Tsai and Ardern's scores on each of the seven personality traits and their Z-scores compared to the means for a norming group of 284 world leaders. The low, high, and moderate categories are allocated based on the Z-scores. If the Z-score is more than or equal to +1.0, the leader is categorised as high on the trait (Hermann, 2003). If the Z-score is less than or equal to -1.0, then leader is categorised as low on the trait (Hermann, 2003). The lean high is employed when the Z-score ranges between 0.5 and 1.0, the lean low category employed when it ranges between -0.5 and -1.0.

Table 2: Tsai Ing-wen's LTA Scores

Trait	LTA Scores	World Leaders' Mean (SD), n=284	Z-scores	Category
BACE	0.34	0.35 (0.05)	-0.25	Average
PWR	0.29	0.26 (0.05)	0.58	Lean high
SC	0.46	0.36 (0.10)	1.01	High
CC	0.61	0.59 (0.06)	0.31	Average
TASK	0.65	0.63 (0.07)	0.31	Average
IGB	0.17	0.15 (0.05)	0.33	Average
DIS	0.20	0.13 (0.06)	1.21	High

Word count: 22,465

Table 3: Jacinda Ardern's LTA Scores

Trait	LTA Scores	World Leaders Means (SDs), n=284	Z-scores	Category
BACE	0.36	0.35 (0.05)	0.27	Average
PWR	0.24	0.26 (0.05)	-0.36	Average
SC	0.41	0.36 (0.10)	0.52	Lean high
CC	0.60	0.59 (0.06)	0.24	Average
TASK	0.71	0.63 (0.07)	1.17	High
IGB	0.09	0.15 (0.05)	-1.15	Low
DIS	0.16	0.13 (0.06)	0.55	Lean high

Word count: 55,830

Overall, both leaders' profiles lie broadly within the average range of world leaders. They share an average BACE and CC. They also demonstrate a shared limited *openness to information*: given both leaders demonstrated a stronger SC over the average world leader and their own CC, they are more immune to incoming information – in Hermann's (2003) words, they are

not subject to the whims of contextual contingencies, neither the victim of events nor compelled to adapt to the nature of the situation, favouring consistency in behaviour over the demands of the moment. Likewise, whilst the relevant scores have been categorised differently, they both demonstrated a relatively stronger DIS over their IGB. This suggests that their *motivation towards the world* is focused on taking advantage of opportunities and building relationships, while remaining vigilant (Hermann, 2003:200).

However, the traits categorised outwith the average demonstrate key differences between the two leaders. Where Ardern demonstrated a high TASK, Tsai's was average. This suggests that while Ardern's *motivation for office* is problem-solving-oriented, Tsai is driven by both the need to solve problems and building relationships, responding to the situation contextually (Hermann, 2003). Where Tsai demonstrated high SC, Ardern's was a lean high. With both displaying relatively greater SC than CC, they both tend to be *closed to contextual information*, with the much stronger contrast between Tsai's SC and CC scores than Ardern's suggesting that Tsai is less receptive to contextual information than Ardern. And while both Tsai and Ardern demonstrated average ranges for BACE and PWR, comparisons in their Z-scores demonstrated that they tend to *challenge constraints* differently: whereas Tsai's higher PWR than BACE suggests she challenges constraints less directly, Ardern's higher BACE over PWR means she does so more openly, but potentially less successfully, since she focuses less on manipulating people and setting behind the scenes for the desired influence she seeks.

DISCUSSION

While Tsai and Ardern displayed commonalities in leadership traits, the two state leaders are generally different characters. This is highlighted in their attitudes towards constraints. Tsai's subtlety in challenging structural constraints is influenced by the need to balance the Taiwanese population's growing nationalism, demand for her Democratic Progress Party government to reform failing Kuomintang establishment, coinciding with the surmounting geopolitical pressure from neighbouring China. Tsai's character as a 'restrained but precise operative' (Rauhala, 2015) is what necessitated her finding this delicate balance, and in turn, draw success and support from the electorate without inciting disaster. In other words, her character is more sensitive and receptive to external circumstances.

Ardern's open willingness to challenge constraints, on the other hand, reflects New Zealand's objective ability to control more events than Taiwan as a sovereign state, and smaller geopolitical concern for survival. Her personal and instinctive conduct as PM is what most exemplified the rhetoric of her government as 'transformative', 'hopeful, optimistic and inspiring' (Chapman, 2020:161-162). While she faced occasional setbacks and concessions to election pledges, her standing as a 'pragmatic idealist' (Chapman, 2020:153) and a refreshing, unapologetically empathetic approach gave rise to some of the most sweepingly effective policies in New Zealand, such as comprehensive gun reforms following the Christchurch attack. In other words, her character is more internally driven, her actions more instinctive and empathetic by nature.

Used in conjunction with our LTA results, the first hypothesis that the leaders possess shared traits beyond the average should be rejected. Both Tsai and Ardern have only displayed two traits leaning away from averages of world leaders, out of seven, and each for different traits – none of which deviating from the mean by a drastic extent in the form of Z-scores over +1.5 or under -1.5. It demonstrates that, despite the unique nature of their success in a crisis the world struggled to contain, Tsai and Ardern are leaders with few exceptional personality traits. Their success is not necessitated by an extraordinary character; neither are their characters homogenous.

The second hypothesis has also been challenged. Tsai's result suggested that we should refute the hypothesis given her average CC, TASK, high DIS and closed attitude towards contextual information. Ardern's results met our prediction of high TASK and low DIS, but failed to meet our predictions on CC and openness to information.

Their shared average CC and relative closed attitude towards contextual information seemed counterintuitive on the surface, given the multiple dimensions of concerns arising from the pandemic. However, it may also reveal a common anxiety: the need to combat false information that has dominated much of the COVID crisis. Tsai and Ardern needed to establish a sense of leadership within their respective societies, and politically, centralise information, to prevent unverified sources from informing governmental decisions. This makes sense as they fit into Hermann's (2003) archetype of an ideologue, where they are willing to reinterpret the environment in a way that fit into their internal, pre-established worldviews. Their closed attitude towards contextual information has worked in their favour in establishing COVID-free zones for the bulk of the pandemic. Recent outbreaks of the more contagious Delta variant in both countries, however, may be a symptom of their lack of adaptiveness, towards a fast-evolving virus and receding public morale following a year of NPI success.

The findings of this paper carry significant implications for our understanding of leadership personality in the COVID-19 crisis. Firstly, we acknowledge that the quality of analysis requires refinement. Given the bulk of speeches of Tsai had been conducted in Mandarin, and translated into English for the LTA by the author of this paper, who is not experienced in professional translation, nuances in language critical to the analysis may have been overlooked. This created a significant disparity in both the quantity and quality of spoken content analysed between our two subjects, with Ardern's content doubling that of Tsai's, and Ardern's exact words analysed where semi-professionally translated speeches of Tsai's has been analysed. This weakened the validity of results in Tsai's LTA, and the comparison between the two. We urge for the development of LTA tools in a wider array of languages. Given the rise and growing impact of East Asian influence on international relations, especially, there exists great potential for LTA research on leaders in this region, which yields greatest validity and reliability when conducted in these cultures' native languages.

Secondly, we recommend that comparative research across differing domains should be conducted. This research of Tsai and Ardern is intended for looking for commonalities in leadership traits that may have facilitated their successes in the COVID crisis; comparisons with state leaders who found lesser success in similar geopolitical positions, such as Japan and the UK, for example, can give a more three-dimensional analysis of what facilitates perceived successes and failures.

LTA research should also be extended to key advisors and officials who has input on COVID management and publicity. During the crisis, Tsai and Ardern have both delegated significant powers to their public health ministers: Chen Shih-chung, Minister of Health and Welfare of Taiwan, and Ashley Bloomfield, chief executive of the Ministry of Health of New Zealand, to convene daily COVID press conferences during significant outbreaks, and advise their respective cabinets on behalf of the public health sector. An understanding of these advisors' levels and fields of expertise, the influence they hold, and their personal dedications towards their office can help understand the circumstances under which advices are taken more seriously as a variable to the decision-making process.

BIBLIOGRAPHY

- Beehive (2020, February 2). *New Zealand to restrict travel from China to protect against coronavirus* [Press Release]. Retrieved <https://www.beehive.govt.nz/release/new-zealand-restrict-travel-china-protect-against-coronavirus>
- Bennett, M. (2021). All things equal? Heterogeneity in policy effectiveness against COVID-19 spread in Chile. *World Development*, 137. doi: 10.1016/j.worlddev.2020.105208
- Byman, D., & Pollack, K. M. (2001). Let Us Now Praise Great Men: Bringing the Statesman Back In. *International Security*, 25(4), 107-146. Retrieved <https://www.muse.jhu.edu/article/14338>
- CDC. (2019, December 31). *Yinying zhongguo dalu Wuhan fasheng feiyan yiqing, ji guan shu chixu luoshi bianjing jianyi ji zhixing Wuhan rujing banji zhi deng ji jianyi [In response to the outbreak of pneumonia in Wuhan, Mainland China, the Centres for Disease Control continues to implement border quarantine and implement boarding health checks for inbound flights from Wuhan]* [Press Release]. Retrieved <https://www.cdc.gov.tw/Category/ListContent/EmXemht4IT-IRAPrAnyG9A?uaid=zicpvVIBKj-UVeZ5yWBrLQ>
- CDC. (2020a, January 20). *Ji guan shu xuanbu chengli 'yanzhong teshu chuanran xing feiyan zhongyang liuxing yiqing zhihui zhongxin', quanmian fangfan zhongguo dalu xinxing guanzhuang bingdd feiyan yiqing, quebao woguo fangyi anquan [The Taiwan Centres for Disease Control announces the establishment of the 'Central Epidemic Command Centre for Severe Special Infectious Pneumonia' to comprehensively prevent the new coronavirus pneumonia epidemic in Mainland China and ensure the security of our nation's epidemic defence]* [Press Release]. Retrieved <https://www.cdc.gov.tw/Bulletin/Detail/32NPG1QXFhAmaOLjDOpNmg?typeid=9>

CDC. (2020b, March 20) *CECC confirms a total of 27 more COVID-19 cases, including 24 imported cases* [Press Release]. Retrieved <https://www.cdc.gov.tw/En/Bulletin/Detail/gpQ2wZ5l2v9kVANW-a1p7A?typeid=158>

CDC. (2020c, April 14). *CECC reports no new confirmed cases; 124 patients released from isolation* [Press Release]. Retrieved https://www.cdc.gov.tw/En/Bulletin/Detail/15r4Y3UwN8olhvJ_pqk-zQ?typeid=158

Chapman, M. (2020). *Jacinda Ardern: A New Kind of Leader*. Gloucestershire: The History Press.

COVID-19 Public Health Response Strategy Team (2020, March 30). *Background and overview of approaches to COVID-19 pandemic control in Aotearoa/New Zealand*. Retrieved <https://www.health.govt.nz/system/files/documents/publications/background-overview-approaches-covid-19-pandemic-contro-aotearoa-new-zealand-30mar20.pdf>

Dai, C. Y., Dai, T. H., Sheng, W. H., & Ho, C. K. (2021). 222 days without COVID in Taiwan: what are the reasons for this success?. *Journal of travel medicine*, 28(2). doi: 10.1093/jtm/taaa225

Davidson, H. (2021, June 14). How Taiwan's struggle for Covid vaccines is inflaming tensions with China. *The Guardian*. Retrieved <https://www.theguardian.com/world/2021/jun/14/how-taiwan-struggle-for-covid-vaccines-is-inflaming-tensions-with-china>

Dyer, P. (2021). Policy and institutional responses to COVID-19: New Zealand. *Brookings Doha Center*. Retrieved <https://www.brookings.edu/wp-content/uploads/2021/01/MENA-COVID-19-Survey-New-Zealand-.pdf>

Gozzi, N., Bajardi, P., & Perra, N. (2021). *The importance of non-pharmaceutical interventions during the COVID-19 vaccine rollout*. Retrieved <https://doi.org/10.1101/2021.01.09.21249480>

Hermann, M. (2003). Assessing Leadership Style: Trait Analysis. In J. M. Post (Ed.), *The Psychological Assessment of Political Leaders*, pp. 178–212. Ann Arbor: The University of Michigan Press.

Hsu, C.-Y., Chen, H.-T., Wang, E.-T., Liu, H.-R., & Yang, C.-H. (2020). The Measures and Achievement of Community Epidemic Prevention against COVID-19 in Taiwan. *Taiwan Epidemiology Bulletin*, 36(15), 234-244. doi: 10.6525/TEB.202008_36(15).0003

Kupferschmidt, K. (2020). Preprints bring ‘firehose’ of outbreak data. *Science*, 367(6481), 963-964. doi: 10.1126/science.367.6481.963

Lee, I.-C. (2020, May 10). Virus Outbreak: No new COVID-19 cases: CECC. *Taipei Times*. Retrieved <https://www.taipeitimes.com/News/taiwan/archives/2020/05/10/2003736143>

Levine N., & Young, M. D. (2014). “Leadership Trait Analysis and Threat Assessment with Profiler Plus”. Proceedings of ILC 2014 on 8th International Lisp Conference, Montreal, QC, Canada — August 14 - 17, 2014. Association for Computing Machinery.

Lin, Y.-H., Huang, J.-Y., Yu, K.-D., Lu, C.-M., Lee, W.-P., Huang, J.-J., ... Ho., L.-L. (2020). Border Quarantine Measures and Achievement of COVID-19 Control in Taiwan. *Taiwan Epidemiology Bulletin*, 36(15), 225-233. doi: 10.6525/TEB.202008_36(15).0002

McGuire, D., Cunningham, J. E. A., Reynolds, K., & Smith, G. M. (2020). Beating the virus: an examination of the crisis communication approach taken by New Zealand Prime Minister Jacinda Ardern during the Covid-19 pandemic. *Human Resource Development International*, 23(4), 361-379. doi: 10.1080/13678868.2020.1779543

Menon, P. (2021, August 18). New Zealanders begin life in lockdown as Delta COVID-19 cases edge up. *Reuters*. Retrieved <https://www.reuters.com/world/asia-pacific/new-zealand-reports-4-more-covid-19-cases-delta-variant-spreads-2021-08-17/>

Ministry of Health (2020, August 11). *4 cases of COVID-19 with unknown source* [Press Release]. Retrieved <https://www.health.govt.nz/news-media/media-releases/4-cases-covid-19-unknown-source>

Office of the President, Republic of China (Taiwan) (2020, January 22). *President Tsai responds to Wuhan coronavirus outbreak, convenes high-level national security meeting to issue disease prevention directives* [Press Release]. Retrieved <https://english.president.gov.tw/NEWS/5967>

Office of the President, Republic of China (Taiwan) (2021a, June 6). *President Tsai meets US Senate delegation* [Press Release]. Retrieved <https://english.president.gov.tw/NEWS/6128/covid>

Office of the President, Republic of China (Taiwan) (2021b, July 8). *Presidential Office thanks Japan for second COVID-19 vaccine donation* [Press Release]. Retrieved <https://english.president.gov.tw/NEWS/6135/covid>

Office of the President, Republic of China (Taiwan) (2021c, July 31). *Presidential Office thanks Lithuania for vaccine donation* [Press Release]. Retrieved <https://english.president.gov.tw/NEWS/6144/covid>

- Rauhala, E. (2015, June 18). 'Reunification Is a Decision to Be Made By the People Here:' Breakfast With Taiwan's Tsai Ing-Wen. *TIME*. Retrieved <https://time.com/3926330/taiwan-tsai-ing-wen-china-reunification-phone-call-donald-trump/>
- Rypdal, K., Bianchi, F. M., & Rypdal, M. (2020). Intervention Fatigue is the Primary Cause of Strong Secondary Waves in the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 17(24), 9592. doi: 10.3390/ijerph17249592
- Soon, W. (2021, July 29). Why Taiwan is Beating COVID-19 Again. *The Diplomat*. Retrieved <https://thediplomat.com/2021/07/why-taiwan-is-beating-covid-19-again/>
- Su, C.-H., Lo, Y.-C., Shih, C.-L., Lee, P.-C., Wang, P.-S., & Hsueh, J.-Y. (2020). Preparedness and Contingency Responses of Healthcare System to COVID-19 in Taiwan, 2020. *Taiwan Epidemiology Bulletin*, 36(16), 250-257. doi: 10.6525/TEB.202008_36(16).0001
- Tan, Y. (2021, May 20). Covid-19: What went wrong in Singapore and Taiwan? *BBC*. Retrieved <https://www.bbc.co.uk/news/world-asia-57153195>
- Teng, S. (2020, August 11). Taiwan has donated 51 million surgical masks worldwide amid coronavirus pandemic. *Taiwan News*. Retrieved <https://www.taiwannews.com.tw/en/news/3984834>
- Thornton, C., & Griffiths, J. (2020, December 23). Taiwan reports first local Covid-19 case in more than 250 days. *CNN*. Retrieved <https://edition.cnn.com/2020/12/22/asia/taiwan-coronavirus-intl-hnk/index.html>

Wang, C., & Marlow, I. (2021, July 25). An Unusually Deadly Outbreak in Taiwan Was Driven By Complacency. *Bloomberg*. Retrieved <https://www.bloomberg.com/news/articles/2021-07-25/an-unusually-deadly-outbreak-in-taiwan-was-driven-by-complacency>

WHO (2020). *WHO Coronavirus (COVID-19) Dashboard*. Retrieved <https://covid19.who.int/>