

# PLANNING FOR THE NEXT PANDEMIC

*Investigating the Initial Response to COVID-19 from Various Regions of the World Using a Comparative Analysis Approach.*



**CANADA:**  
 CASES= 24, 551 PMP  
 DEATHS= 601 PMP  
 RECOVERIES= 23, 091 PMP

**USA:**  
 CASES: 92, 367 PMP  
 DEATHS: 1, 680 PMP  
 RECOVERIES: 69, 780 PMP

**INDIA:**  
 CASES: 8, 267 PMP  
 DEATHS: 115 PMP  
 RECOVERIES: 8, 105 PMP

**TAIWAN:**  
 CASES: 41 PMP  
 DEATHS: 0.4 PMP  
 RECOVERIES: 40 PMP

## INITIAL POLICY RESPONSE TO COVID-19:

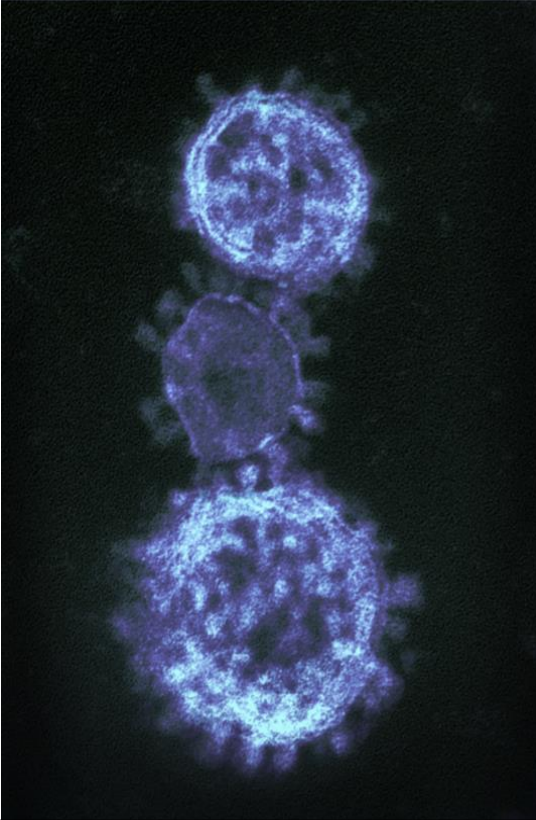
### USA:

The first case in the United States was confirmed on January 21, 2020 in Washington State, after an individual recently returned from Wuhan, China. At this time, the CDC worked closely with the state and the individual to determine contacts and tracing measures, however the case count quickly grew in the US. On February 3rd, the United States declared a public health emergency, which barred foreign nationals from entering into the states, and any American returning from Hubei Province must quarantine for two full weeks. By post-mortem testing, the first covid-19 death was confirmed on February 6th in Santa Clara County, California.

The virus quickly spirals out of control in the United States with 217 cases reported on March 4th jumping to 1,300 in just six days. This likely has to do with the mixed messages coming from Former President Trump. On March 24, 2020 with 65,800 cases in the United States Trump says, "come Easter Sunday there will be packed churches all over the country," (CBS).

Throughout the course of the pandemic, various financial programs were available to the American people. However, many Americans had difficulties accessing these benefits and suffered week-long, or even month-long delays. Throughout the pandemic, various governors and states enacted their own stay-at-home orders, mask mandates and internal travel restrictions.





## CANADA:

Health Canada reported the country's first case of covid-19 on January 25<sup>th</sup>, 2020. Almost immediately, major Canadian airports introduced screening measures on flights returning from China. A lot was still unknown about the virus within its first month in Canada, but its potential for damage was realized quickly and has kept all levels of government busy ever since.

February 2020 was the calm before the storm: Public health began to stress the importance of hand washing, and towards the end of the month, cases began to come in from places other than China.

In March 2020, Prime Minister Justin Trudeau created a covid-19 committee, assessment centres opened, and travelling Canadians were advised to come home. Additionally, the Quarantine Act was created to fine returning travellers that violated the 2-week self-isolation requirement. Canada and the U.S reached an agreement to suspend non-essential travel across the border. Trudeau announced multiple income support and debt relief initiatives in March, most famously the Covid-19 Emergency Response Act, that provided assistance to many Canadian families, specifically those with children and/or low income. March 2020 also brought the first documented Covid-19 Canadian death.

April tightened public health measures even further. Masks were enforced for everyone with limited exceptions. Many businesses not deemed "essential" were forced to close their doors and capacity restrictions were applied for places that remained open. Health Canada announced that local transmission was the primary source of cases in the country, and lockdowns were implemented across the nation to contain the spread of the virus.

## INDIA:

India has a population of 1.3 billion people. The threat of a communicable disease of this degree in a country with an inherently high population density and a relatively weak health care system is unparalleled. Therefore, the Indian government engaged in an early rigorous attempt to control the pandemic at its inception.

The first case of coronavirus in India was reported on the 27<sup>th</sup> of January in Kerala. With the emergence of the virus, the Ministry of Health and Family Welfare took responsibility for monitoring the spread of the virus. Statistics were updated on the Ministry's website on a daily basis. It was not until mid-March that awareness about the virus gained momentum. Public health interventions focused on massive awareness generation including the implementation of strict social distancing norms, face covering rules, updating clinical guidelines for state governments and local authorities, mobilization of appropriate resources (such as drugs and health care professionals) from the private sector to the public sector, and the implementation of the most severe form of movement restriction; the national lockdown.

On 23<sup>rd</sup> March the country observed a nationwide lockdown which entailed strict school and workplace closures, ban on public gatherings and severe restrictions on public and private transport within and between cities, states and countries. Monetary fines were implemented if regulations were not followed. The nationwide lockdown, appeared to be a favourable initial response to COVID-19 as it suppressed the development of pandemic in early 2020. However, with upliftment of stringent restrictions India saw an increase in cases in late 2020.

major

## TAIWAN:

Taiwanese authorities reported the country's first case of COVID-19 on January 21, 2020. This triggered an immediate, nationwide response, spearheaded by the Taiwan Centers for Disease Control (CDC) and Central Epidemic Command Centre (CECC), as dictated by the government's pandemic action plan created in the wake of the 2003 SARS pandemic. The multi-pronged response began with screening of airline passengers, first those entering the country from Wuhan, China, before progressing to all passengers landing at Taiwanese airports by early February. By March of 2020, entry into the country was restricted for non-citizens or residents. Those allowed into the country were required to undergo a minimum 14-day quarantine if they had travelled from high-risk countries. Additionally, Taiwan's Infectious Disease Control Act granted authorities the ability to link individuals' travel history with their health insurance card, enabling healthcare facilities to track COVID-19 cases in real-time.

Another major feature of Taiwan's initial response to COVID-19 was the early, widespread adoption of mass-masking initiatives. Beginning in February 2020, policies were enacted to ensure adequate distribution and production of, as well as universal access to, masks. Regulations requiring the use of masks indoors were also put in place. Finally, these masking initiatives were aided by the fact that Taiwan has had a well-established culture of public mask-use ever since the 2003 SARS pandemic.

Despite the myriad of actions taken by Taiwanese officials, or perhaps because of it, restrictions on freedom of movement within the country have been relatively relaxed. In February of 2020, the start of the new school semester was briefly delayed, and in March, restrictions were placed on the size of gatherings both indoors and outdoors (100 and 500 respectively), however, no regional or nationwide lockdowns have been implemented anywhere in Taiwan. This strategy appears to be paying off. Since the start of the pandemic, Taiwan has averaged 41.32 total COVID-19 cases, 0.42 deaths and 42.11 recoveries per million people.





### COMPARATIVE ANALYSIS:

We used 10 metrics to evaluate the initial government response to COVID-19 in the 4 countries we've been discussing so far. These criteria were chosen because they entail government policies and regulations that are proven to be appropriate and effective responses to a highly contagious pandemic such as COVID-19.

1. School closures
2. Workplace closures
3. Cancellation of public events
4. Restrictions on public gatherings
5. International travel controls
6. Restrictions on internal movements
7. Public information campaigns
8. Public transport closures
9. Income Support and Relief
10. Mental Health Aid

### COMPARISON OF OVERALL INITIAL POLICY RESPONSE TO COVID-19:

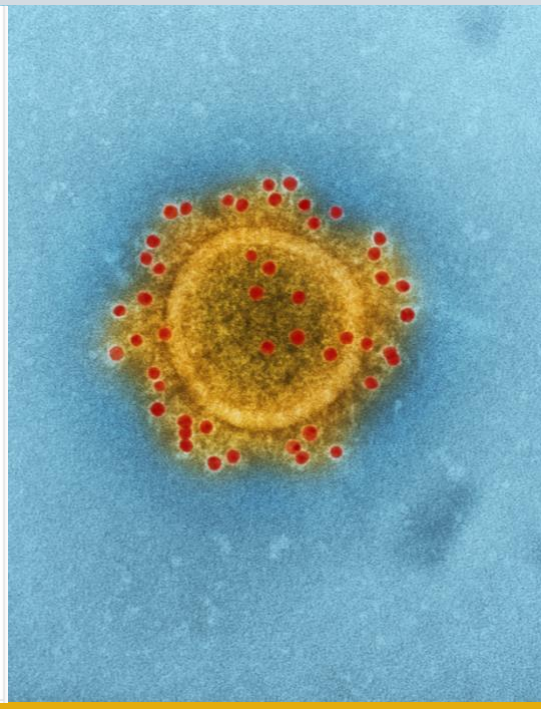
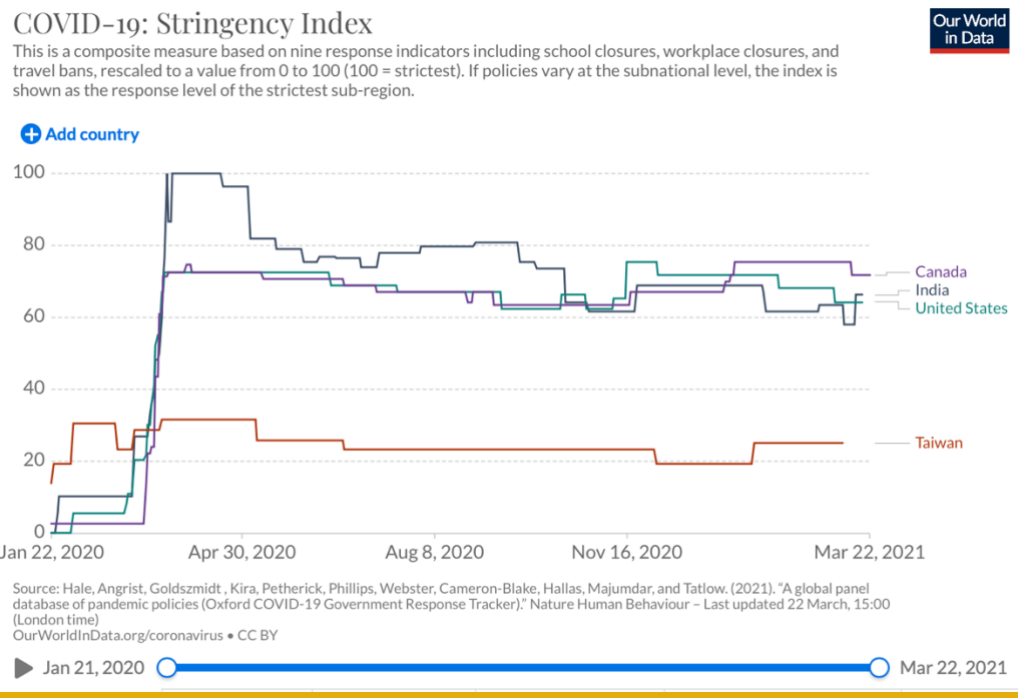
School Closure	✓	✓	✗ 2-week postponement	✓
Workplace Closure	✓	✓	✗	Not uniform (depends on state)
Cancellation of Public Events	✓	✓	✗	✗ (delayed)
Restrictions on Public Gatherings	✓	✓	✓	✗ (delayed)
International Travel Controls	✓	✓	✓	✓
Restrictions on Internal Movements	✓	✓	✗	Not uniform (depends on state)
Public Information Campaigns	✓	✓	✓	✗
Public Transport Closures	✗ (restricted)	✓	✗	✗ (delayed)
Income Support and Relief	✓	✗ (limited)	✓	✓
Mental Health Aid	✓	✓	✓	✓

## STRINGENCY INDEX:

Upon combining the 10 metrics, when a composite measure of the first 8 metrics is calculated, it produces a Stringency Index, or in simple terms an index that records the strictness of government policies.

A higher score on the index indicates stricter implementation of government policies, i.e., a 100 on the index indicates the strictest implementation whereas a 0 indicates a very lenient approach to policy implementation.

The graph below (left) indicates the stringency index of Canada, India, US and Taiwan, and from Jan 2020 to March 2021.

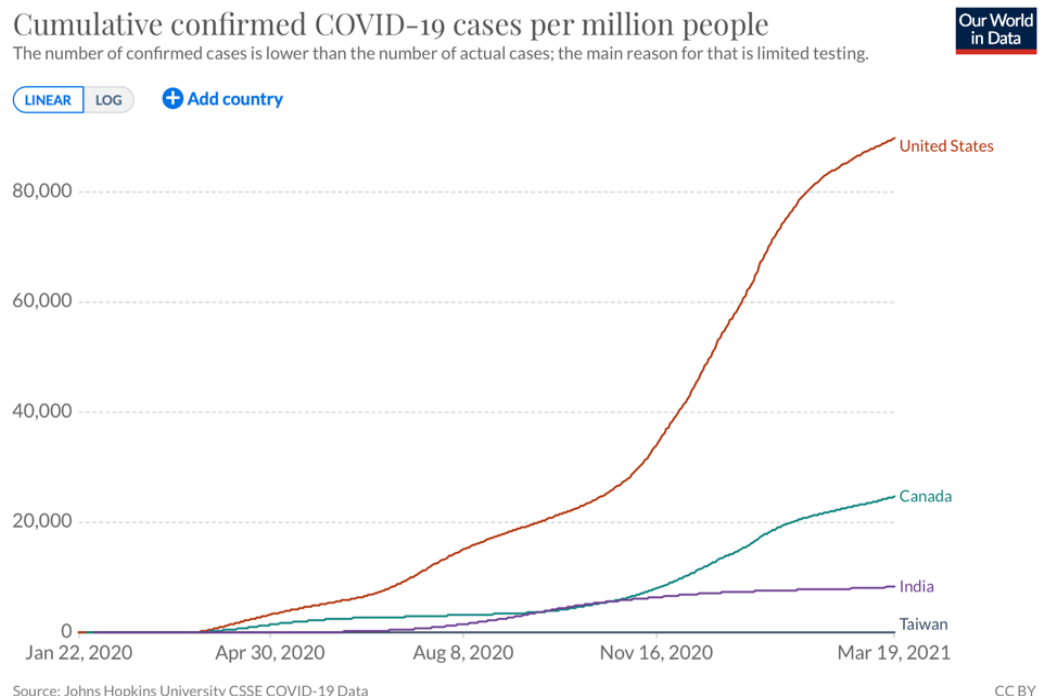


## CUMULATIVE CASES PER MILLION PEOPLE:

The number of confirmed cases of COVID-19 per million people is an important statistic to note because it demonstrates the extent to which the pandemic has spread and provides a rough idea of how efficiently the pandemic is contained.

The number of confirmed cases is lower than the level of actual cases due to testing limitations.

The graph below (right) shows that USA has the highest number of cumulative cases per million people, followed by Canada and then India. Taiwan has the lowest highest number of cumulative cases per million people in the same time duration.





# COMPARATIVE ANALYSIS & DISCUSSION:

When comparing both the graphs simultaneously, we can see that India observes a high level of stringency in policies between March and June 2020. During the same time period we can note that covid-19 cases in India were very low. Later, as the stringency around policies decreases, the number of cases start increasing. Although, it should be noted that these results are based on available data and testing limitations in India need to be acknowledged.

As the focus shifts towards Taiwan, we recognize a steadily low stringency index from the beginning of 2020. Yet there is no escalation in the number of cases, in contrast to what was observed in India.

USA and Canada, recorded similar trends and levels on the stringency index; exhibiting no prominent variations in stringency yet cases per million, in both countries increased with time.

## SUMMARY OF DISCUSSION:



HIGH STRINGENCY INDEX = # OF CASES ↓  
 LOW STRINGENCY INDEX = # OF CASES ↑



LOW STRINGENCY INDEX +  
 NO PROMINENT VARIATION IN INDEX = # OF CASES  
 CONSTANTLY LOW



AVERAGE STRINGENCY INDEX +  
 NO PROMINENT VARIATION IN INDEX = # OF CASES ↑

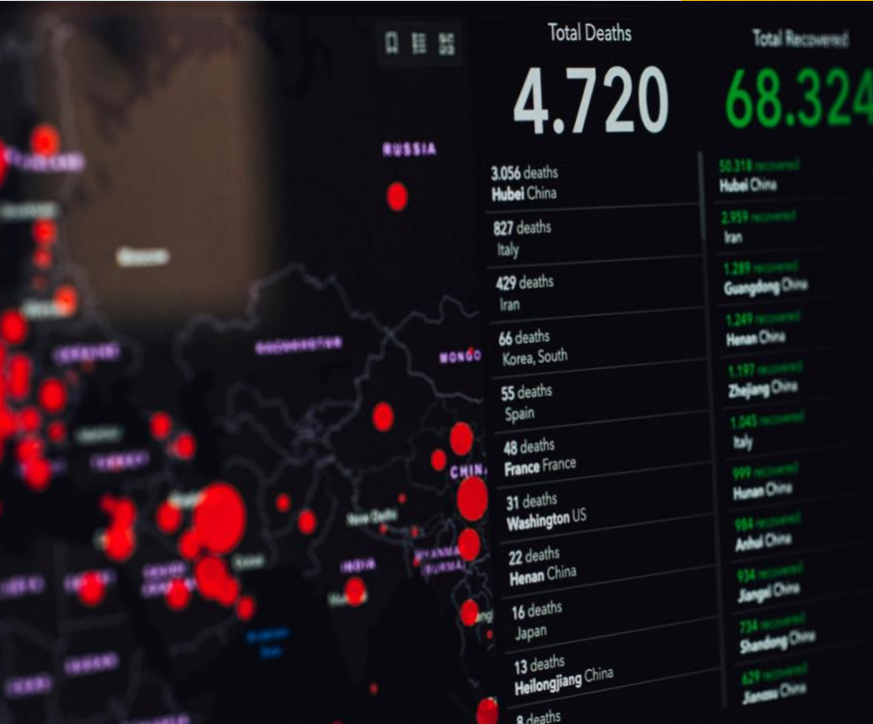
## RESULTS & RECOMMENDATIONS:

In conclusion, with evidence from the comparative analysis, research and discussion we recommend;

For less populated countries like Canada and Taiwan, some leniency around policy enforcement, as was seen in Taiwan but not in Canada, may be favourable. The presented evidence indicates that such an approach can keep cumulative cases per million relatively low.

Secondly, for highly populated countries like the US and India, stricter enforcement of pandemic related government policies, as was seen in India but not the US, may be beneficial to contain the spread of disease for the next pandemic.

Lastly, for highly populated countries, a nation-wide lockdown approach (again as was seen in India but not in the US) may be more beneficial than state/provincial lockdowns.



## SUMMARY OF RECOMMENDATIONS:



HIGHLY POPULATED COUNTRIES = HIGH STRINGENCY OF POLICIES + NATION-WIDE LOCKDOWN



LESS POPULATED COUNTRIES = LOW STRINGENCY OF POLICIES

## WORKS CITED:

- Canadian Healthcare Network. (2020, April 8). COVID-19: A Canadian timeline. Retrieved from <https://www.canadianhealthcarenetwork.ca/covid-19-a-canadian-timeline>
- Statistics Canada, Government of Canada. (2020, April 03). March 2020 special edition. Retrieved from <https://www.statcan.gc.ca/eng/dai/btd/cen/mar2020>
- Canadian Medical Association Journal. (2020, June 12). COVID-19: A timeline of Canada's first-wave response. Retrieved from <https://cmajnews.com/2020/06/12/coronavirus-1095847/>
- "A Timeline of COVID-19 Developments in 2020." *AJMC*, [www.ajmc.com/view/a-timeline-of-covid19-developments-in-2020](http://www.ajmc.com/view/a-timeline-of-covid19-developments-in-2020).
- Center for Devices and Radiological Health. *Policy for Coronavirus Disease-2019 Tests During the Public Health Emergency (Revised)*. May 2020, [www.fda.gov/regulatory-information/search-fda-guidance-documents/policy-coronavirus-disease-2019-tests-during-public-health-emergency-revised](http://www.fda.gov/regulatory-information/search-fda-guidance-documents/policy-coronavirus-disease-2019-tests-during-public-health-emergency-revised).
- Chappell, Bill. "1st Known U.S. COVID-19 Death Was Weeks Earlier Than Previously Thought." *NPR*, NPR, 22 Apr. 2020, [www.npr.org/sections/coronavirus-live-updates/2020/04/22/840836618/1st-known-u-s-covid-19-death-was-on-feb-6-a-post-mortem-test-reveals](http://www.npr.org/sections/coronavirus-live-updates/2020/04/22/840836618/1st-known-u-s-covid-19-death-was-on-feb-6-a-post-mortem-test-reveals).
- "Contact Tracing Resources." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, [www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/contact-tracing-resources.html?CDC\\_AA\\_refVal=http://www.cdc.gov/coronavirus/2019-ncov/php/open-america/contact-tracing-resources.html](http://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/contact-tracing-resources.html?CDC_AA_refVal=http://www.cdc.gov/coronavirus/2019-ncov/php/open-america/contact-tracing-resources.html).
- "COVID-19 GOVERNMENT RESPONSE TRACKER." *Blavatnik School of Government*, University of Oxford, [www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker](http://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker).
- "COVID-19 Vaccine Distribution: The Process." *HHS.gov*, 17 Mar. 2021, [www.hhs.gov/coronavirus/covid-19-vaccines/distribution/index.html](http://www.hhs.gov/coronavirus/covid-19-vaccines/distribution/index.html).
- Gershman, Jacob. "A Guide to State Coronavirus Reopenings and Lockdowns." *The Wall Street Journal*, Dow Jones & Company, 20 May 2020, [www.wsj.com/articles/a-state-by-state-guide-to-coronavirus-lockdowns-11584749351](http://www.wsj.com/articles/a-state-by-state-guide-to-coronavirus-lockdowns-11584749351).
- "Guidance for Healthcare Workers about COVID-19 (SARS-CoV-2) Testing." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, [www.cdc.gov/coronavirus/2019-ncov/hcp/testing.html](http://www.cdc.gov/coronavirus/2019-ncov/hcp/testing.html).
- Naylor, Brian. "Fact Check: A Blanket National Quarantine Is Likely Not Legal." *NPR*, NPR, 2 Apr. 2020, [www.npr.org/2020/04/02/825293201/a-president-is-not-able-to-order-a-national-quarantine-experts-say](http://www.npr.org/2020/04/02/825293201/a-president-is-not-able-to-order-a-national-quarantine-experts-say).
- Our World in Data*, [ourworldindata.org/coronavirus](http://ourworldindata.org/coronavirus).
- Panchal, Nirmita, et al. "The Implications of COVID-19 for Mental Health and Substance Use." *KFF*, 10 Feb. 2021, [www.kff.org/coronavirus-covid-19/issue-brief/the-implications-of-covid-19-for-mental-health-and-substance-use/](http://www.kff.org/coronavirus-covid-19/issue-brief/the-implications-of-covid-19-for-mental-health-and-substance-use/).
- Practical Law Real Estate. "COVID-19: Select State and Local Business Closures and Reopenings Tracker (US)." *Practical Law US Signon*, Thomson Reuters Practical Law, [content.next.westlaw.com/w-024-7550?isplc=true&transitionType=Default&contextData=\(sc.Default\)&firstPage=true](http://content.next.westlaw.com/w-024-7550?isplc=true&transitionType=Default&contextData=(sc.Default)&firstPage=true).
- Renton, Adam, et al. "February 3, 2020 Coronavirus News." *CNN*, Cable News Network, 4 Feb. 2020, [edition.cnn.com/asia/live-news/coronavirus-outbreak-02-03-20-intl-hnk/index.html](http://edition.cnn.com/asia/live-news/coronavirus-outbreak-02-03-20-intl-hnk/index.html).
- Ritchie, Hannah, et al. "Coronavirus (COVID-19) Cases - Statistics and Research." *Our World in Data*, [ourworldindata.org/covid-cases](http://ourworldindata.org/covid-cases).
- Roll, Stephen, and Michal Grinstein-Weiss. "Did CARES Act Benefits Reach Vulnerable Americans? Evidence from a National Survey." *Brookings*, Brookings, 25 Aug. 2020, <https://www.brookings.edu/research/did-cares-act-benefits-reach-vulnerable-americans-evidence-from-a-national-survey/#:~:text=Of%20the%20%24560%20billion%20allocated,benefits%20for%20households%20were%20substantial>
- Staff, Investopedia. "Coronavirus Aid, Relief, and Economic Security (CARES) Act." *Investopedia*, Investopedia, 17 Feb. 2021, [www.investopedia.com/coronavirus-aid-relief-and-economic-security-cares-act-4800707](http://www.investopedia.com/coronavirus-aid-relief-and-economic-security-cares-act-4800707).
- Summers, Jennifer, et al. "Potential Lessons from the Taiwan and New Zealand Health Responses to the COVID-19 Pandemic." *The Lancet Regional Health Western Pacific*, 1 Nov. 2020, [www.thelancet.com/journals/lanwpc/article/PIIS2666-6065\(20\)30044-4/fulltext](http://www.thelancet.com/journals/lanwpc/article/PIIS2666-6065(20)30044-4/fulltext).
- Watson, Kathryn. "A Timeline of What Trump Has Said on Coronavirus." *CBS News*, CBS Interactive, [www.cbsnews.com/news/timeline-president-donald-trump-changing-statements-on-coronavirus/](http://www.cbsnews.com/news/timeline-president-donald-trump-changing-statements-on-coronavirus/).
- Centre for Addiction and Mental Health. *Camh.ca*, 2021, Retrieved from <https://www.camh.ca/-/media/files/pdfs---public-policy-submissions/covid-and-mh-policy-paper-pdf.pdf>.
- Roy, Adrija et al. "Mental Health Implications Of COVID-19 Pandemic And Its Response In India". *International Journal Of Social Psychiatry*, 2020, p. 002076402095076. SAGE Publications, doi:10.1177/0020764020950769
- Andrews, MA et al. "First Confirmed Case Of COVID-19 Infection In India: A Case Report". *Indian Journal Of Medical Research*, vol 151, no. 5, 2020, p. 490. Medknow, doi:10.4103/ijmr.ijmr\_2131\_20.