BSG Working Paper Series

Providing access to the latest policy-relevant research

BLAVATNIK SCHOOL OF GOVERNMENT

UNIVERSITY OF OXFORD

Variation in government responses to COVID-19

BSG-WP-2020/032

Version 12.0

June 2021

Thomas Hale
Jessica Anania
Noam Angrist
Thomas Boby
Emily Cameron-Blake
Martina Di Folco
Lucy Ellen
Rafael Goldszmidt
Laura Hallas
Beatriz Kira
Maria Luciano
Saptarshi Majumdar
Radhika Nagesh
Anna Petherick
Toby Phillips
Helen Tatlow
Samuel Webster
Andrew Wood
Yuxi Zhang

Variation in government responses to COVID-19

BSG-WP-2020/032 Version 12.0
11 June 2021

This working paper is updated frequently. Check for most recent version here: www.bsg.ox.ac.uk/covidtracker
The most up-to-date version of technical documentation will always be found on the project's GitHub repo: www.github.com/OxCGRT/covid-policy-tracker

Dr Thomas Hale, Associate Professor, Blavatnik School of Government, University of Oxford
Ms Jessica Anania, Research assistant, Blavatnik School of Government, University of Oxford
Dr Noam Angrist, Fellow, Blavatnik School of Government, University of Oxford
Mr Thomas Boby, Senior programmer, University of Oxford
Ms Emily Cameron-Blake, Research assistant, Blavatnik School of Government, University of Oxford
Ms Martina Di Folco, Policy Officer, Blavatnik School of Government, University of Oxford
Ms Lucy Ellen, Research Officer, Centre for Social Research and Methods, The Australian National University
Dr Rafael Goldszmidt, EBAPE-FGV, Rio de Janeiro
Ms Laura Hallas, Research assistant, Blavatnik School of Government, University of Oxford
Ms Beatriz Kira, Senior researcher and policy officer, Blavatnik School of Government, University of Oxford
Ms Maria Luciano, Unaffiliated
Mr Saptarshi Majumdar, Research assistant, Blavatnik School of Government, University of Oxford
Ms Radhika Nagesh, Research assistant, Blavatnik School of Government, University of Oxford
Dr Anna Petherick, Departmental Lecturer, Blavatnik School of Government, University of Oxford
Mr Toby Phillips, Blavatnik School of Government, University of Oxford
Ms Helen Tatlow, Research assistant, Blavatnik School of Government, University of Oxford
Dr Samuel Webster
Mr Andrew Wood, Research assistant, Blavatnik School of Government, University of Oxford
Dr Yuxi Zhang, Postdoctoral researcher, Blavatnik School of Government, University of Oxford

Abstract: COVID-19 has prompted a wide range of responses from governments around the world. There is a pressing need for up-to-date policy information as these responses proliferate, so that researchers, policymakers, and the public can evaluate how best to address COVID-19. We introduce the Oxford COVID-19 Government Response Tracker (OxCGRT), providing a systematic way to track government responses to COVID-19 across countries and sub-national jurisdictions over time. We combine this data into a series of novel indices that aggregate various measures of government responses. These indices are used to describe variation in government responses, explore whether the government response affects the rate of infection, and identify correlates of more or less intense responses.

Recommended citation for this paper: Hale, Thomas, Jessica Anania, Noam Angrist, Thomas Boby, Emily Cameron-Blake, Martina Di Folco, Lucy Ellen, Rafael Goldszmidt, Laura Hallas, Beatriz Kira, Maria Luciano, Saptarshi Majumdar, Radhika Nagesh, Anna Petherick, Toby Phillips, Helen Tatlow, Samuel Webster, Andrew Wood, Yuxi Zhang, "Variation in Government Responses to COVID-19" Version 12.0. *Blavatnik School of Government Working Paper.* 11 June 2021. Available: www.bsg.ox.ac.uk/covidtracker

Recommended citation for the dataset: Thomas Hale, Noam Angrist, Rafael Goldszmidt, Beatriz Kira, Anna Petherick, Toby Phillips, Samuel Webster, Emily Cameron-Blake, Laura Hallas, Saptarshi Majumdar, and Helen Tatlow. (2021). "A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker)." *Nature Human Behaviour*. https://doi.org/10.1038/s41562-021-01079-8

Acknowledgements:
We are grateful to the strong support from students, staff, and alumni of the Blavatnik School of Government, colleagues across the University of Oxford, and partners around the world for contributing time and energy to data collection and the broader development of Oxford COVID-19 Government Response Tracker. We welcome further feedback on this project as it evolves.

1. Introduction

The rapid spread of COVID-19 globally has created a wide range of responses from governments. Common measures include school closings, travel restrictions, bans on public gatherings, emergency investments in healthcare facilities, new forms of social welfare provision, contact tracing, vaccination campaigns, and other interventions to contain the spread of the virus, augment health systems, and manage the economic consequences of these actions. However, governments have varied substantially—both across countries, and often within countries—in the measures that they have adopted and how quickly they have adopted them. This variation has created debate as policymakers and publics deliberate over the level of response that should be pursued and how quickly to implement them or roll them back, and as public health experts learn in real time the measures that are more or less effective.

The Oxford COVID-19 Government Response Tracker (OxCGRT) provides a systematic cross-national, cross-temporal measure to understand how government responses have evolved over the full period of the disease's spread. The project tracks governments' policies and interventions across a standardized series of indicators and creates a suite of composites indices to measure the extent of these responses. Data is collected and updated in real time by a team of over one hundred Oxford students, alumni and staff, and project partners.

This working paper briefly describes the data OxCGRT collects and presents some basic measures of variation across governments. It will be updated regularly as the pandemic and governments' responses evolve, and as the technical specifications of the database evolve. However, for the most current and up-to-date technical documentation, please refer to our GitHub repository.[1]

2. Latest additions to the OxCGRT dataset

In order to ensure that our dataset continues to be of value and benefit to the many researchers, governments and public who use it, we continue to adapt and fine-tune our measurements, indicators and indices. With the rapid development and deployment of COVID-19 vaccines, and keeping in line with our goal of collating COVID-19 policy data, we have added three new indicators to the OxCGRT dataset.

V1 – Vaccine prioritisation is a categorical indicator that captures eligible and prioritised groups of people (e.g. profession, age, vulnerability, etc.), and shows the the order in which these groups are prioritised for vaccines by their country/region/territory (*de jure* policy) . **V2 – Vaccine eligibility/availability** (also a categorical indicator) is

[1] https://github.com/OxCGRT/covid-policy-tracker

linked to V1, and indicates which of the prioritised groups are actually eligible to receive the vaccine (de jure policy) and are actively being vaccinated at that time (*de facto* policy) . Unplanned categories can be added to V2 that were not captured or accounted for in V1. **V3 – Vaccine financial support** captures information on whether vaccines are government funded, or otherwise, in an ordinal scale for each category in V2 that is receiving vaccines.

Data for the new Vaccine Policy indicators will be added over time for each country/region/territory in our data set, beginning with the initial release of V1/V2/V3 data for the following 24 countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, India, Ireland, Isreal, Italy, Japan, Netherlands, Norway, Poland, Portugal, Singapore, South Korea, Spain, Sweden, Switzerland, United Kingdom, United States. Please check the project website for additional country data as it is added. Current Vaccine policy data can be found on our GitHub repository.[2]

We are also pleased to announce the addition of sub-national data for all 31 provincial level administrations of China. The data for these 31 provinces (STATE_TOTAL) and central government of China (NAT_TOTAL) can be downloaded from our GitHub repository. [3]

3. Data and measurement

OxCGRT reports publicly available information on 23 indicators (see Table 1) of government response.

The indicators are of four types:

- **Ordinal**: These indicators measure policies on a simple scale of severity / intensity. These indicators are reported for each day a policy is in place.
    - Many have a further flag to note if they are "targeted", applying only to a sub-region of a jurisdiction, or a specific sector; or "general", applying throughout that jurisdiction or across the economy. (Note, the flag for indicators E1 and H7 means something different.)
- **Numeric**: These indicators measure a specific number, typically the value in USD. These indicators are only reported on the day they are announced.
- **Text**: This is a "free response" indicator that records other information of interest.
- **Categorical:** These indicators have a range of eligible categories to select, and in some instances, rank (i.e. vaccine prioritisation/eligibility policies).

[2] https://github.com/OxCGRT/covid-policy-tracker
[3] https://github.com/OxCGRT/covid-policy-tracker

All observations also have a "notes" cell that reports sources and comments to justify and substantiate the designation.

Table 1: OxCGRT Indicators
See appendix for detailed descriptions and coding information.)

ID	Name	Type	Targeted/ General?
Containment and Closure			
C1	School closing	Ordinal	Geographic
C2	Workplace closing	Ordinal	Geographic
C3	Cancel public events	Ordinal	Geographic
C4	Restrictions on gathering size	Ordinal	Geographic
C5	Close public transport	Ordinal	Geographic
C6	Stay at home requirements	Ordinal	Geographic
C7	Restrictions on internal movement	Ordinal	Geographic
C8	Restrictions on international travel	Ordinal	No
Economic Response			
E1	Income support	Ordinal	Sectoral
E2	Debt/contract relief for households	Ordinal	No
E3	Fiscal measures	Numeric	No
E4	Giving international support	Numeric	No
Health Systems			
H1	Public information campaign	Ordinal	Geographic
H2	Testing policy	Ordinal	No
H3	Contact tracing	Ordinal	No
H4	Emergency investment in healthcare	Numeric	No
H5	Investment in Covid-19 vaccines	Numeric	No
H6	Facial coverings	Ordinal	Geographic
H7	Vaccination Policy	Ordinal	Cost
H8	Protection of elderly people	Ordinal	Geographic
Vaccine Policies			
V1	Vaccine prioritisation	Categorical	No
V2	Vaccine eligibility/availability	Categorical	No
V3	Vaccine financial support	Categorical	No
Miscellaneous			
M1	Other responses	Text	No

Data is collected from publicly available sources such as news articles and government press releases and briefings. These are identified via internet searches by a team of over one hundred Oxford University students and staff. OxCGRT records the original source material so that coding can be checked and substantiated.

OxCGRT has added new indicators and refined old indicators as the pandemic has evolved.[4] Future iterations may include further indicators or more nuanced versions existing indicators.

4. Relation between national and sub-national data

OxCGRT includes data for nearly all countries, territories, and regions in the world.[5] It also includes subnational-level data for selected countries, currently Brazil[6] (all states, the Federal District, state capitals and the next largest city that is not geographically connected to the state capital), the United States[7] (all states plus Washington, DC and a number of territories), Canada[8] (all provinces and territories), the United Kingdom[9] (the four devolved nations) and China (all provincial level administrations).

OxCGRT data are typically used in three ways. First, and primarily, to describe all government responses relevant to a given jurisdiction. Second, less commonly, to describe policies put in place by a given level and lower levels of government. And third, they are used to compare government responses across different levels of government. To distinguish between these uses, different published versions of OxCGRT data are tagged in the database.

In the main dataset, all observations are tagged with a _TOTAL suffix as they simply represent the total package of policies that apply to residents in that jurisdiction. For example, observations labelled "BRA NAT_TOTAL" describe Brazil as a whole.

The jurisdiction label "WIDE" refers to policies put in place by a given level and lower levels of government. "WIDE" observations therefore do not incorporate general policies from higher levels of government that may supersede local policies. For example, if a country has an international travel restriction that applies country-wide, this would not be registered. Continuing to examine the case of Brazil, the data

[4] For a description of these changes, see this link.
[5] The designations employed and the presentation of the material do not imply the expression of any opinion whatsoever on the part of OxCGRT concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. We code the policies of the de facto controlling authority of a jurisdiction without prejudice to conflicting authority claims.
[6] https://www.bsg.ox.ac.uk/research/publications/brazils-fight-against-covid-19-risk-policies-and-behaviours
[7] https://www.bsg.ox.ac.uk/research/publications/variation-us-states-responses-covid-19
[8] https://www.bsg.ox.ac.uk/research/publications/variation-canadian-provincial-and-territorial-responses-covid-19
[9] https://www.bsg.ox.ac.uk/research/publications/variation-response-covid-19-across-four-nations-united-kingdom

recorded for "BR_SC STATE_WIDE" would include any policies made by the state government of Santa Catarina in Brazil plus policies from municipal governments (eg. cities) within Santa Catarina, but not policies from the Brazilian federal government.

The jurisdiction label "GOV", indicates that observations include only policies instigated by a particular level of government; higher- or lower-level jurisdictions do not inform this coding.

As noted, in the main OxCGRT dataset, we show the total set of policies that apply to a given jurisdiction: TOTAL. Specifically, in the main dataset, this means that we replace subnational-level responses with relevant national government (NAT_GOV) indicators when the following two conditions are met:

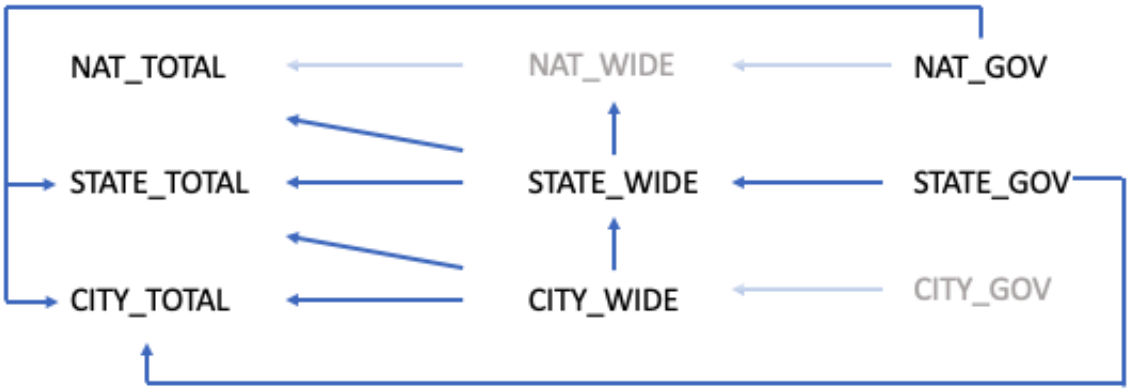
- The corresponding NAT_GOV indicator is general, not targeted, and therefore is applied across the whole country
- The corresponding NAT_GOV indicator is equal to or greater than the STATE_WIDE or STATE_GOV indicator on the ordinal scale for that indicator

In this way, NAT_TOTAL and STATE_TOTAL measures in the core dataset are comparable, in that they show the totality of policies in effect within a given jurisdiction.

Note that STATE_WIDE observations at the subnational level, which code the totality of policies at a given level of government and its sub-levels, also capture policies that the national government may specifically target at a subnational jurisdiction. This is the case, for example, if a national government orders events to close in a particular city experiencing an outbreak. These kinds of policies are not inferred from NAT_GOV but coded directly at the sub-national level.

The logical relationships between TOTAL, WIDE, and GOV observations are summarized in Figure 1, below. From right to left, GOV observations describe only the responses a given level of government takes, and so are not informed by any other types or levels of observations. WIDE observations, which capture all policies at a given level of government and its sub-components, are informed by GOV observations at the same level and WIDE observations at lower levels, with the latter registering as targeted policies (T). TOTAL observations, in turn, capture all policies that apply to a given level of government. As such, they are informed by both GOV and WIDE observations, and by higher and lower levels of government. Lower level TOTAL observations register as targeted policies in higher level TOTAL observations (T), and higher level TOTAL observations only apply to lower level TOTAL observations if they are general (G). Note that CITY_GOV and NAT_WIDE are not typically used, since these are functionally equivalent to CITY_WIDE and NAT_TOTAL, given that we do not consider units below city level or above national level.

Figure 1: Relationship between TOTAL, WIDE, and GOV observations for different levels of government



On our GitHub repositories, these different types of data are available in three groups:

1. Master repository: NAT_TOTAL for all countries and STATE_TOTAL for Brazil, US, Canada, UK and China
2. USA: NAT_GOV and STATE_WIDE
3. Brazil: NAT_TOTAL, NAT_GOV, STATE_TOTAL, STATE_WIDE, STATE_GOV, CITY_TOTAL, and CITY_WIDE (which in Brazil is equal to CITY_GOV)
4. UK: NAT_TOTAL, STATE_TOTAL (for each of the 4 nations, due to the unique nature of the devolved powers of the UK)
5. Canada: NAT_TOTAL and STATE_TOTAL
6. China: NAT_TOTAL and STATE_TOTAL

Table 2: Currently available OxCGRT data across different levels of government and types of observations

	TOTAL[10]	**WIDE**	**GOV**
National	187+ countries	N/A[11]	• USA federal government

[10] This _TOTAL dataset is hand-coded at the national level, and at other subnational levels (ie. STATE_TOTAL and CITY_TOTAL) it combines the other datasets to report the overall policy settings that apply to residents within the jurisdictions.

[11] NAT_WIDE does not exist. The "WIDE" label refers to data that ignores policies implemented by higher levels of government (eg. reporting policies that apply to a state without including federal government

			• Brazilian federal government • Canada federal government • UK central government • China central government
State/province	• USA: 50 states and Washington DC • Brazil: 26 states and the Federal District • UK: 4 devolved nations • Canada: 13 provinces and territories • China: 31 provinces	• USA: 50 states and Washington DC • Brazil: 26 states and the Federal District	• Brazil: 26 states and the Federal District
City	• Brazil: 27 state capital cities and 27 second cities	• Brazil: 26 state capital cities, Brasilia, and 26 second cities	N/A[12]

5. Policy indices of COVID-19 government responses

Governments' responses to COVID-19 exhibit significant nuance and heterogeneity. Consider, for example, C1, school closing: in some places, all schools have been shut; in other places, universities closed on a different timescale than primary schools; in other places still, schools remain open only for the children of essential workers. Moreover, like

policies). There are no higher levels of government above National, so any NAT_WIDE record would simply duplicate NAT_TOTAL.

[12] In practice, we would not record CITY_GOV. The data recorded as CITY_WIDE would include only decisions made by city governments and any lower level governments (if they existed), while ignoring policies from state and national governments.

any policy intervention, their effect is likely to be highly contingent on local political and social contexts. These issues create substantial measurement difficulties when seeking to compare national responses in a systematic way.

Composite measures – which combine different indicators into a general index – inevitably abstract away from these nuances. This approach brings both strengths and limitations. Helpfully, cross-national measures allow for systematic comparisons across countries. By measuring a range of indicators, they mitigate the possibility that any one indicator may be over- or mis-interpreted. However, composite measures also leave out much important information, and make strong assumptions about what kinds of information "counts." If the information left out is systematically correlated with the outcomes of interest, or systematically under- or overvalued compared to other indicators, such composite indices may introduce measurement bias.

Broadly, there are three common ways to create a composite index: a simple additive or multiplicative index that aggregates the indicators, potentially weighting some; Principal Component Analysis (PCA), which weights individual indicators by how much additional variation they explain compared to the others; Principal Factor Analysis (PFA), which seeks to measure an underlying unobservable factor by how much it influences the observable indicators.

Each approach has advantages and disadvantages for different research questions. In this paper we rely on simple, additive unweighted indices as the baseline measure because this approach is most transparent and easiest to interpret. PCA and PFA approaches can be used as robustness checks.

This information is aggregated into a series of four policy indices, with their composition described the appendix.

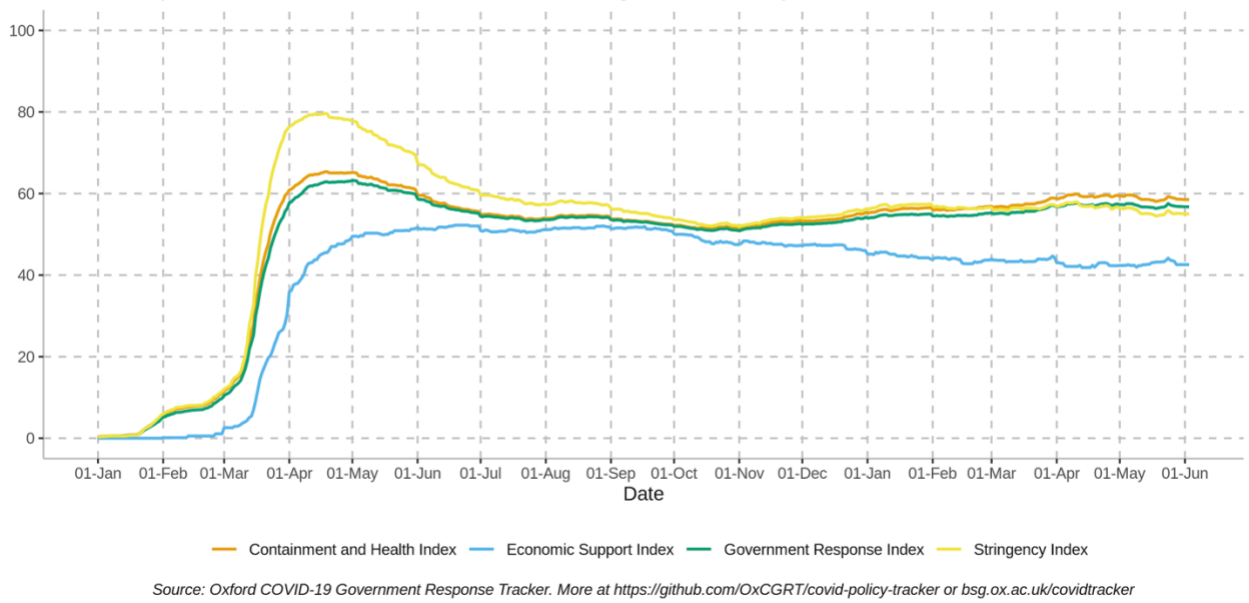
- Overall government response index
- Stringency index
- Containment and health index
- Economic support index

Each index is composed of a series of individual policy response indicators. For each indicator, we create a score by taking the ordinal value and subtracting an extra half-point if the policy is general rather than targeted, if applicable. We then rescale each of these by their maximum value to create a score between 0 and 100, with a missing value contributing 0.[13] These scores are then averaged to get the composite indices (Figure 1).

[13] We use a conservative assumption to calculate the indices. Where data for one of the component indicators are missing, they contribute "0" to the Index. An alternative assumption would be to not count missing indicators in the score, essentially assuming they are equal to the mean of the indicators for

Importantly, the indices should not be interpreted as a measure of the appropriateness or effectiveness of a government's response. They do not provide information on how well policies are enforced, nor does it capture demographic or cultural characteristics that may affect the spread of COVID-19. Furthermore, they are not comprehensive measures of policy. They only reflect the indicators measured by the OxCGRT (see Table 1), and thus will miss important aspects of a government response. For instance, the "economic support index" does not include support to firms or businesses, and does not take into account the total fiscal value of economic support. The value and purpose of the indices is instead to allow for efficient and simple cross-national comparisons of government interventions. Any analysis of a specific country should be done on the basis of the underlying policy, not on an index alone.

Figure 2: Global mean index values for over 180 countries over time



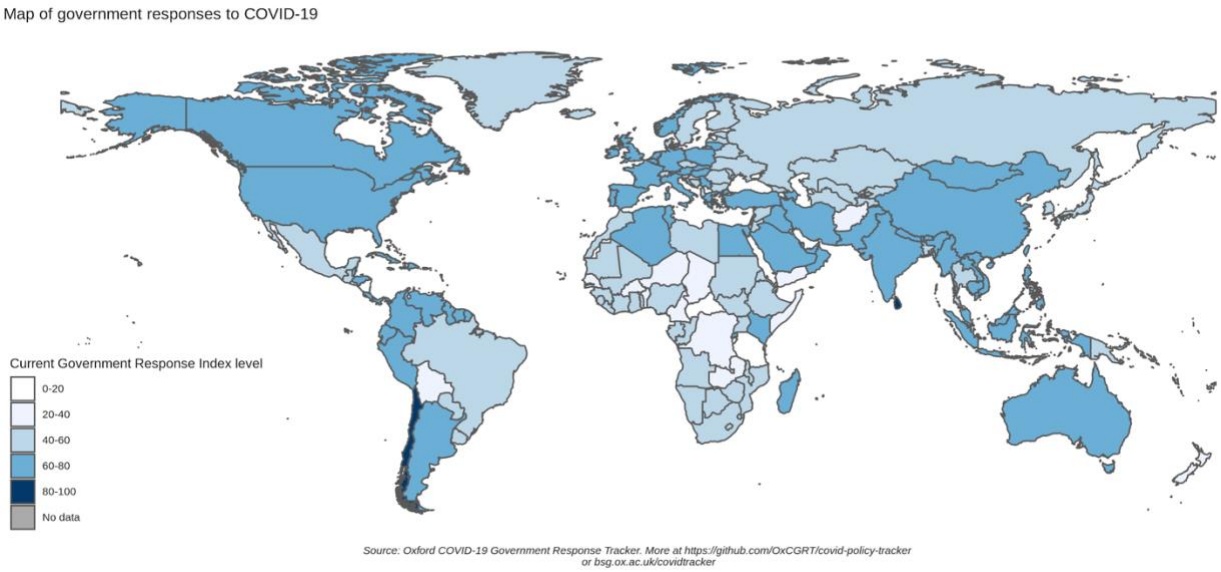
Source: Oxford COVID-19 Government Response Tracker. More at https://github.com/OxCGRT/covid-policy-tracker or bsg.ox.ac.uk/covidtracker

6. Variation in government responses

How have governments' responses varied? In general, government responses have become stronger over the course of the outbreak, particularly ramping up over the month of March (see Figure 2). However, variation can be seen across countries (Figure 3). This variation is becoming less pronounced over time as more countries implement comprehensive suites of measures.

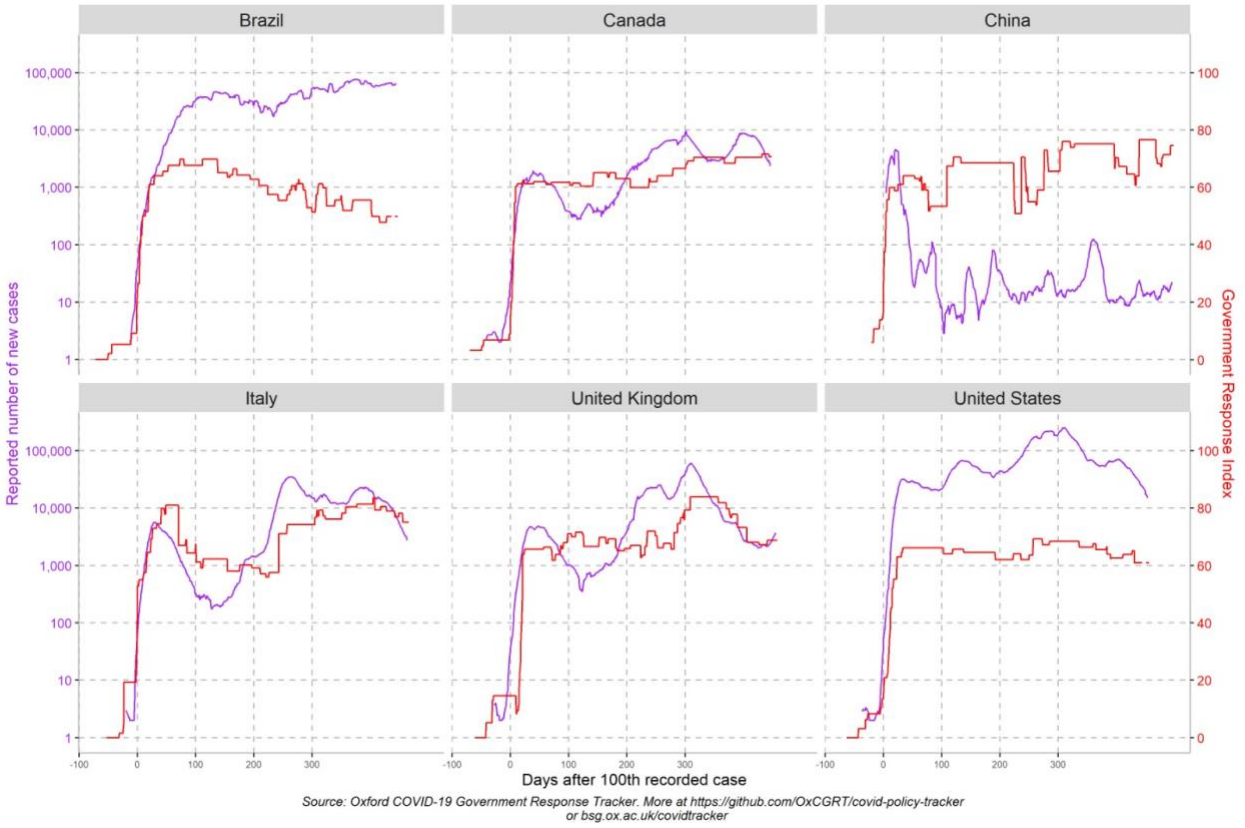
Figure 3: COVID-19 Government Response Index by country, 4 June 2021

which we have data for. Our conservative approach therefore "punishes" countries for which less information is available, but also avoids the risk of over-generalizing from limited information.



We expect the response measures to broadly track the spread of the disease. However, the rate at which such measures are adopted plays a critical role in stemming the infection. Relying on data primarily collated by the European Centre for Disease Control, Figure 4 compares the rate of confirmed cases (the purple line, note the logarithmic nature of the scale) since the first reported death to changes in a country's government response index (the red line). Some governments immediately ratchet up measures as an outbreak spreads, while in other countries the increase in the stringency of responses lags the growth in new cases.

Figure 4: Reported COVID-19 cases and government response index, selected countries

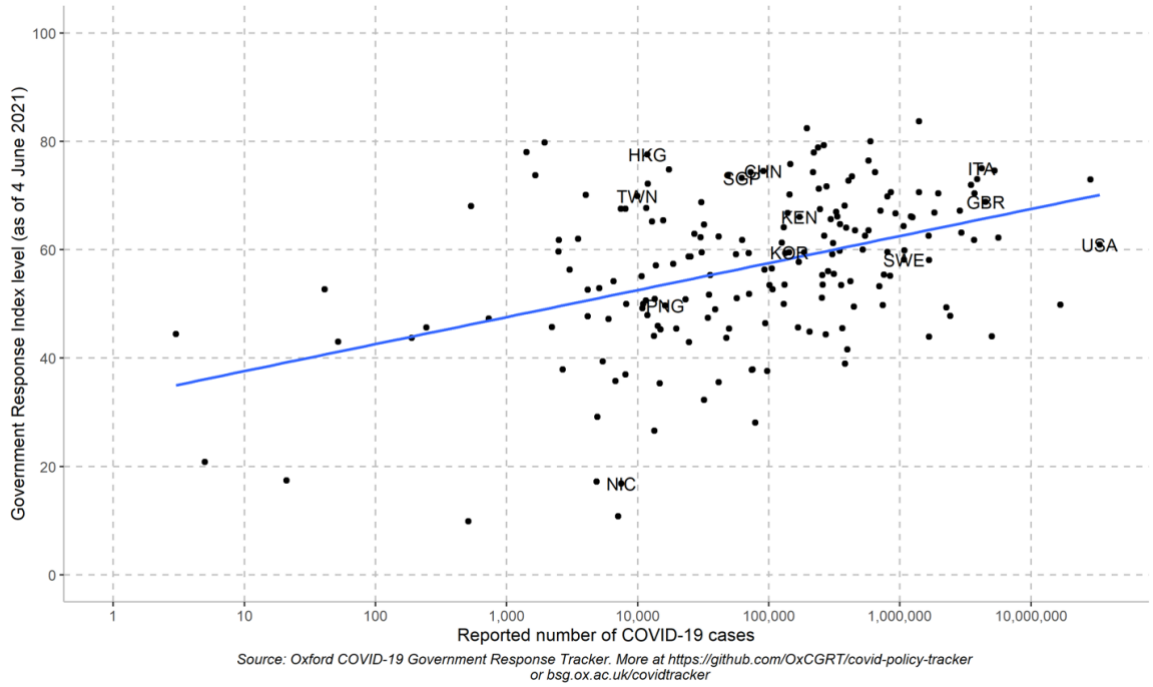


Differential responses can also be seen across the entire period. One measure of interest is the Response-Risk Ratio, which compares a government's response to the risk it faces. Risk is difficult to measure, since the number of cases recorded is in part a function of how much testing is carried out, which itself is a measure that will co-vary to some extent with the overall government's response index (being that testing is reflected in indicator H2). The number of deaths is less correlated with testing regime (but still dependent on how each country defines COVID-19 deaths).

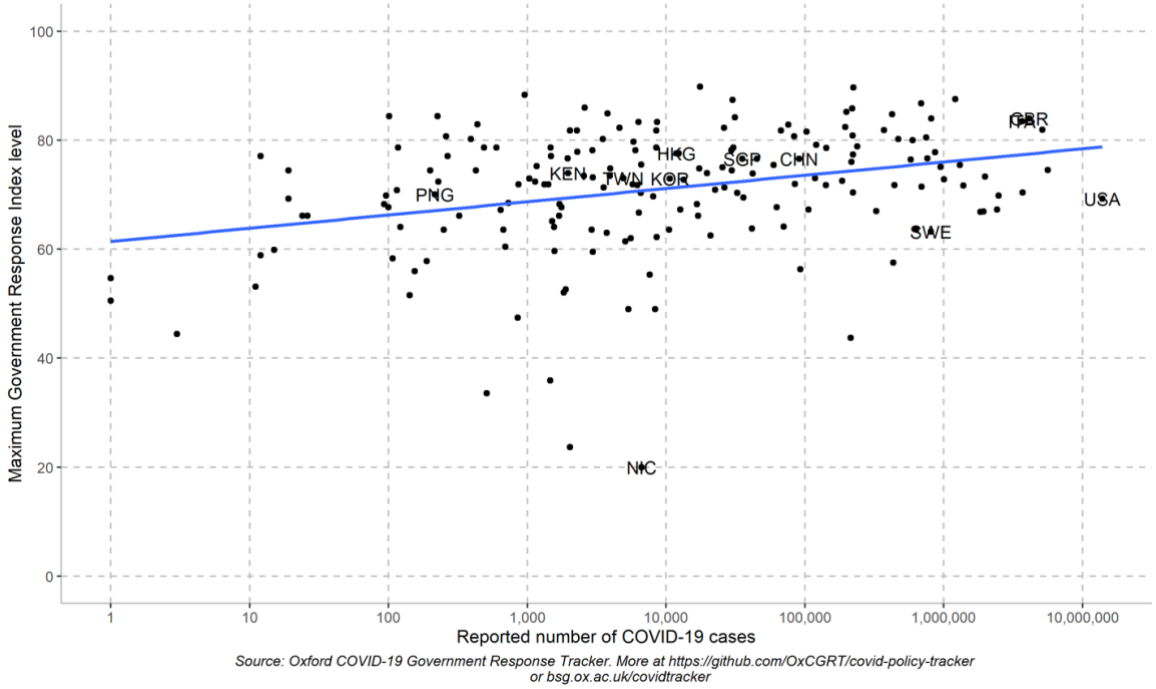
Figure 5 presents the Response-Risk Ratio operationalised as the maximum level of government response a country has reached compared to the total number of cases in that country. Countries above the line can be interpreted as having more stringent measures than the average country (or at least, have enacted measures on a greater number of dimensions to a higher degree), given their number of confirmed cases. Conversely, countries below the line show a lower level of policy action than the average country given their number of confirmed cases. Thus, the closer a country is to the top-left corner of Figure 5, the higher the level of their response in light of the risk it faces, and conversely, the closer a country is to the bottom-right corner, the smaller its response given its risk. Over time, we are observing more countries implement a larger response at a lower case load.

Figure 5: Response-Risk Ratio

a. Current (as of June 4 2020, GRI vs COVID cases



b. Maximum GRI vs COVID cases



7. Conclusion

As governments continue to respond to COVID-19, it is imperative to study what measures are effective and which are not. While the data presented here do, of course, not measure effectiveness directly, they can be useful input to studies that analyse factors affecting disease progression. OxCGRT seeks to contribute to this knowledge gap by providing comparable measures of individual policy actions, as well as several comparable aggregate indices. We find significant variation in both the measures that governments adopt and when they adopt them. Going forward, governments will benefit from adopting an evidence-based approach to the measures they deploy.

OxCGRT will continue to evolve over the coming months as the pandemic progresses. We envision not only updating the data on a regular basis, but also refining and improving the indicators we record for each country. The most up-to-date technical documentation can always be found on our GitHub repository.[14]

It is our hope that scholars, medical professionals, policymakers, and concerned citizens will make use of the OxCGRT data to enhance all countries' responses to the COVID-19 pandemic. We welcome constructive feedback and collaboration on this project as it evolves.

Data collection team

Abeba Aleka Kebede
Adel Molnar
Adil Sayeed
Aditya Lolla
Adrian Wang Xinting
Ahmed Safar
Aidana Arynbek
Akhila Kadgathur Jayaram
Alejandrina Cripovich
Alex Zhuang
Alexsander Silva Farias
Alfie Killigrew
Alfredo Ortega
Ali Arsalan Pasha Siddiqui
Alice Cavalieri
Alice Eddershaw
Alice Graham
Alice Secheresse
Alice Vodden
Alina Romani Pozo
Aline Tognini
Allen Haugh
Alonso Moran de Romana
Ana Lucia Villagran
Anandam Sarcar
André Houang
André Parente Houang
Andrea Garaiova
Andrea Klaric
Andrea Salhuana Bellodas
Andreea Anastasiu
Andrew Brown

[14] https://github.com/OxCGRT/covid-policy-tracker

Andrew Iupati
Andrew Read
Andrew Wood
Andrey Krachkov
Anika Buch
Anindita K. Listya
Anita Pant
Anjali Viswamohanan
Ankit Raj
Ann Hagen
Anna Bruvere
Anna Paula Ferrari Matos
Anna Petherick
Anna Welsh
Annalena Pott
Annamarie Candler
Anneloes Hoff
Annika Browne
Anthony Sudarmawan
Anupah Makoond
Anushka Shah
Ariana Detmar
Ariq Hatibie
Arkar Hein
Arthur Lau
Asiya Zaidia
Ayan Habane
Ayanna Griffith
Aysegul Elbasi
Babu Ahamed
Bárbara Prado Simão
Barbara Roggeveen
Barbora Bacyte
Bat-Orgil Bat-Erdene
Beatriz Cristina Rodrigues Silva
Beatriz Franco
Beatriz Kira
Beatriz Pioltine Macedo Costato
Ben Luria
Ben Weber
Benjamin Ignac
Benjamin Parker
Benjamin Peart
Bilal Majeed
Bill McCluskey
Blessing Oluwatosin Ajimoti
Bolorerdene Battsengel
Bpriya Lakshmy Tbalasubramaniam
Bronwyn Gavine
Bruna Maria da Silva Ruys
Bruno da Cunha de Oliveira
Bruno Stucchi
Bugei Nyaosi
Caitlin Sarro
Callum Ryan
Camilla Sacchetto
Camille Bedard-Gauthier
Carla Almeida da Vila
Carlos Danquer Amaral
Carolina de Medeiros Queiroz
Carolina Martinelli
Carolina Scherer Beidacki
Caroline Bendl
Caroline Carthy
Caroline Frassão
Caroline Weglinski
Cassy Inman
Catherine O'Donnell
Celso Antônio Coelho Júnior
Chandra Sekhar Viswanadha
Changyu (Erin) Yan
Charles Pinon
Charlotte Newton
Charlotte Rougier
Chenxi Zhu
Chloe Axford
Chloë Mayoux
Christian Ferreiro
Christian Lumley
Christopher Yoannou
Chuyun Dai
Clara Pavillet
Clara Portwood
Clarissa Fisher

Clarissa Lim
Claudia Sedano
Clea Boorman
Clemence Verbrugghe
Connor Lyons
Cornelia Santoso
Cristhian Pulido
Cynthia Waliaula
Dagny Ahrend
Dan Fay
Dan Grinevics
Dan Mocanu
Dane Alivarius
Dang Dao Nguyen
Daniel Pereira Cabral
Daniela Costanzo
Daniela Ferraz Bertholini
Daniela Mayerova
Daphne Nakawesi
Dar-Yin Li
Dário Kuteev Moreira
Davi Mamblona Marques Romão
Davi Mancebo Fernandes
Davi Romão
David Johnson
David McKinnon
Dayane Ferreira
Débora Nery Schwartz
Déborah Palacio do Sacramento
Delgermaa Munkhgerel
Delia Tegnalia
Denilson Soares Gomes Junior
Derek Messling
Dhruv Shetty
Diana Ivonne Rodriguez Sanchez
Diane Brandt
Digvijay Patil
Diogo Mussalem Smethurst
Dita Listya
Dorothee Sartorius
Dr Grace Mzumara
Edmund Derby
Eduardo Sebastián Pimentel Rebaza
Edward O'Brien
Eera Fatima Bangi
Ehsan Rafian
Elaine Fung
Eleanor Altamura
Elena Terenzi
Elisa Codonho Premazzi
Elisabeth Mira Rothweiler
Elisangela Oliveira de Freitas
Ellen Sugrue
Emily Cameron-Blake
Emily Nguyen
Emma Leonard
Emmanuel Mawuli Abalo
Enyuan Zhang
Ergon Cugler de Moraes Silva
Eric Cheng
Erin Kanzig
Eshitha Vaz
Ethan Teo
Evan DeTurk
Fabiana da Silva Pereira
Farah Sayad
Fatima Zehra Naqvi
Felipe Dias Gonçalves
Felipe Natil Martins Moreira
Felipe Paiva Pinto
Felipe Rodrigues Monteiro
Femi Adebola
Fernanda Assunção Tiraboschi
Fernanda Bouzan Cardoso
Finn Klebe
Fiona Ching Ming Hsu
Francesca Basile
Francesca Lovell-Read
Francesca Valmorbida McSteen
Francesco Moiraghi
Frederic Michaelsen
Gabriel de Azevedo Soyer
Gabriel Dowuona
Gabriel Podesta

Gabriel Rossini
Gabriella Henrique Targino Monteiro
Gaia Lisi
Garima Rana
Gautam Dambekodi
Gemma Mortell
George Sheppard
Giulia Biasibetti
Giulia Pirolo
Grace Mzumara
Grace Xu
Guilherme Macedo
Guilherme Ramos
Guillermo Miranda
Gustavo Henrique Luz Silva
Haiming Wu
Haiyun Deng
Hakeem Onasanya
Hakim Ronaque
Hala Sheikh Al Souk
Hannah Klim
Hao Zha
Harikharan Krishnaraju
Harriet Williams
Hatim Hussain
Heather Walker
Helen Tatlow
Helene Jow
Helórya Santiago de Souza
Henrique Oliveira da Motta
Henry Annan
Hermann Fernandes Pais
Himangshu Kumar
Hiu Hung Tse
Hong Zeng
Horácio Figueira de Moura Neto
Hui Zhou
Huma Zile
Hunter McGuire
Hyerean Yoo
Ifigenia Xifre Villar
Ikram Byah
Ilya Zlotnikov
Inaara Gulamhussen
Inaara Sundargy
India Clancy
Ingrid Maria Johansen
Isabel Jorgensen
Isabel Seelaender Costa Rosa
Isabela Abade Granzieri
Isabela Blumm
Isabella Borges Ávila
Isabelye dos Santos Mendes
Israa Mohammed
Iyone Agboraw
Jai Wei
Jaime Weber
Jake Lerner
James Balzer
James Fox
James Green
Jason Larson
Javier Pardo-Diaz
Jay Harley
Jeanna Kim
Jenna Hand
Jennifer Gunther
Jennifer Lim
Jeremy Ng
Jes Shultz
Jess Barreto
Jessica Anania
Jialin Xi
Jianjun Wu
Jiayi Deng
Jiayi LI
Jilin Zeng
Jimmy Kwong
Jinmeng Zhang
Joan Coloma
Joanna Klimczak
João Claudio Faria Machado
João Ferreira da Silva
João Gabriel de Paula Resende

Joao Monteiro
João Paulo de Jesus Martins
João Pires Mattar
Johannes Dommnich
John Miller
Jonathan Chan
Jonathan David Roberts
Jonty Redman
Joohee Uhm
Jorge Luis Revilla
José Renato Venâncio Resende
Joseph Ssentongo
Joy Carveth
Juan David Gutierrez
Judy Cossins
Judy Nguyen
Juhi Kore
Julia Abrahão Homsi
Julia de Menezes Sampaio
Julia Sawatzky
Juliana Bueno Refundini
Juliana Moura Bueno
Juliana Novaes
Julie Laura Mermet
Juliet O'Brien
Junu Shrestha
Ka Yu Wong
Kaisa Saarinen
Kaitlyn Green
Kala Pham
Kalkidan Belayneh
Kangning Zhang
Karoline Becker
Kasia Whitaker
Katherine McCreery
Katherine Tyson
Katiana dos Santos Telefora
Katrina Marina
Katy Aymar
Kaushal Jain
Kaushalya Gupta
Keliang Zeng
Kelly Daniels
Kelly Kon
Kevin Parham
Kirandeep Bal
Kristie Jameson
Kumar Shastry
Kurt Sant
Lam Quynh Vo
Lama Khaiyat
Lana Ahmad
Larissa Cristina Margarido
Laura Angelica Chavez-Varela
Laura Chamberlain
Laura de Lisle
Laura dos Santos Boeira
Laura Hallas
Leana Diekmann
Leanne Giordono
Leen Aghabi
Lei Wang
Leire Gonzalez Yubero
Leonie Lam
Leslie Fraser
Letícia Barbosa Plaza
Letícia de Araújo Dias
Letícia Figueiredo Collado
Lia Stefanovich
Lian Najami
Liene Kaori Asahi Baptista
Lilas Mercuriali
Liliana Estrada Galindo
Lin Shi
Linrui Zhong
Lione Alushula
Liu Victoria Yang
Liu Zhang
Liviu Dimitriu
Lorena G Barberia
Louisa-Madeline Singer
Lucas André Grejo Almendra
Lucia Soriano
Lucy Ellen

Lucy Goodfellow
Luiz Eduardo Barbieri Bedendo
Luiz Guilherme Roth Cantarelli
Luiz Gustavo Machado Cruz
Luiz Philipe de Souza Ferreira
Luma Mundin Costa
Luyao Ren
Maebh Gallagher
Maha Al-Areeqi
Malin Bornemann
Manikantha Nataraj
Manikarnika Dutta Dutta
Manjit Nath
Marcela Mello Zamudio
Marcela Reynoso Jurado
Marcelle Costa Marinho
Marcelo Arruda Candido
Marco Antonio Silva Costa
Marco Aurelio Mayer Duarte Neto
Mareeha Kamran
Margie Morrison
Maria Carolina Gachido
Maria Clara Leme de Oliveira
María de los Ángeles Lasa
Maria Leticia Claro
Maria Luciano
Maria Luisa Piatti
Maria Luíza Barreto Cazumbá
Maria Paz Astigarraga Baez
Maria Puolakkainen
Maria Widiastuti
Mariam Raheem
Mariami Jintcharadze
Mariana Costa Oliveira Morais
Mariana Lima Maia
Mariana Victoria Braga Resende
Marianne Lafuma
Marie Mavrikios
Marília Camargo Miyashiro
Marina Fernandes Bispo de Siqueira
Mark Deakin
Marryam Ishaq
Marta Koch
Martha Stolze
Martina Lejtreger
Marwa Ghoname
Maryann Heil
Mateus Bernardes dos Santos
Mateus Henrique Müller
Matheus da Silveira Maia
Matheus Mariano
Matheus Porto Lucena
Matheus Ricardo Gonçalves Barbosa
Matilde Stronell
Maurice Kirschbaum
Mauricio Montelongo Quevedo
Maurício Nardi Valle
Maxime Bourdier
Mayra Henrique de Melo
Megan McDowell
Melissa Leon Pons
Melissa Toh
Melody Leong
Meskerem Aleka Kebede
Michael Chen
Michelle Chan
Michelle Sharma
Mikafui Dzotsi
Mikhela Bayes
Mildred Aziengbe
Minah Rashad
Minsoo Bae
Mirava Yuson
Miriam Pittalis
Monika Pyarali
Morgan Grobin
Moza Ackroyd
Muhammad Ali
Muktai Panchal
Myank Mawar
Nadia Nasreddin
Nadine Dogbe
Nan Chen
Naol Balema Gemech

Nasra Habane
Natalia Brigagão
Natália Colvero Maraschin
Natália de Paula Moreira
Natalia Elizabeth Espinola Lopez
Nate Dolton-Thornton
Nathan Felipe Caetano da Silva
Nathaniel Dolton-Thornton
Natsuno Shinagawa
Neenah Young
Negin Shahiar
Nicholas Wan
Nicole Guedes Barros
Nicole Gump
Nicole Nanci
Nikhil Tekwani
Nina Desgranges
Noam Angrist
Nomondalai Batjargal
Nupur Suhas Bhise
Oksana Matiiash
Olga Romanova
Olivia Route
Onkar Deep
Pamela Gongora Salazar
Pamela Quevedo Joia Duarte da Costa
Paola Del Carpio Ponce
Paola Schietekat Sedas
Paraskevas Christodoulopoulos
Patricia Silva Castillo
Patrick Rehill
Paul Anderson
Paul Lawson
Pedro Arcain Riccetto
Pedro Riquelme Gonzalez
Pedro Santana Schmalz
Pollyana Pacheco Lima
Prabhakar Chandramouli
Prakrit Prasad
Pranav Bhatia
Prarthna Srivastava
Praveen Rajendran
Precious Oluwadara Olajide
Prianka Rao
Primrose Adjepong
Priya Lakshmy Tbalasubramaniam
Priyanka Bijlani
Purna Chandra Panda
Qianyi Ye
Qing Yang
Qingling Kong
Qiyuan Dong
Quynh Lam Vo (Lam)
Rachel Dixon
Rachelle Koch
Rafa Andre Silva
Rafael Goldszmidt
Rahima Hanifa
Rancy Chadha
Randy Taufik
Raymond Pottebaum
Rayssa Deps Bolelli
Rene' Landers
Rhona Rahmani
Ricardo Miranda Rocha Leitao
Richard Florance
Richard James Chapler, Jr.
Robert Gorwa
Roda Mohammed
Rodrigo Furst de Freitas Accetta
Rose Wachuka Macharia
Rotimi Elisha Alao
Roxana Tatiana Flores Ibarra
Roy Barnes
Ruolan Xie
Rushay Naik
Ruwa Mahdi
Sa'id Gaya
Saba Mahmood
Safa Khan
Sagar Grewal
Sakina Bano Mendha
Salim Salamah
Sam Webster

Samantha Harris
Samson Leung
Samuel Kidane
Samuel Smith
San Jameson
Sandra Nwaobi
Sandra Sajeev
Saptarshi Majumdar
Sara Sethia
Sasidhar Gali
Scarlett Harbin-Owens
Scott Latham
Scott McCullers
Sena Pradipta
Serene Singh
Seun B. Adebayo
SeungCheol Ohk
Seungeun Yi
Shabana Basij-Rasikh
Shane Fitzsimons
Shannon Costello
Shannon Murray
Shannon Smith
Sharon Farrell
Shelly Lim
Shengchang Zhang
Shirley Chen
Shiwen Lai
Shoaib Khan
Shubo Zhang
Siddharth K Prakash
Silvia Shen
Simon Powell
Simphiwe Stewart
Siqi Liu
Siu Cheng
Siyang Jiang
Sonya Amin
Sophie Pearlman
Soumaya Belaid
Stefaan Sonck Thiebaut
Stefan Holzheuser
Stephanie Guyett
Stephen Hayes
Suganthan Asokan
Suryodeep Mondal
Swathi Rayasam
Syed Shoaib Hasan Rizvi
Sze Oh
Sze Tung Lam
Taís Pelinson Gomes da Silva
Tamoi Fujii
Tania Calle
Tanyah Hameed
Tatianna Mello Pereira da Silva
Tatsuya Yasui
Tayná Mendes
Tebello Qhotsokoane
Teresa Soter Henriques
Terrence Epie
Teruki Takiguchi
Tetsekela Anyiam-Osigwe
Thayla Bicalho Bertolozzi
Thayslene Marques Oliveira
Theo Bernard
Thi Yen Chi Nguyen
Thiago William Pereira Barcelos
Thomas Benson
Thomas Birdseye
Thomas Boby
Thomás Castanheira Manfrinatti
Thomas Mbuotidem Jeremiah
Thomas Rowland
Thomas Stubbs
Tilbe Atav
Tim Nusser
Tina Chim
Tiphaine Le Corre
Tiwa Ighomuaye
Toby Phillips
Tom Hale
Trevor Edobor
Twan van der Togt
Ubah Daahir

Ulla Mikkelsen
Ulrike Gruber-Gremlich
Ursula Panzner
Ursule Demael
Uttara Narayan
Vedant Shukla
Veronique Gauthier
Vian Wagatsuma
Victor Mtaki
Victoria Cavero
Vijay Krishna Palepu
Vinicios Javaroni
Vinícius Sanches Pontirolle
Vinicius Tadeu Silvério dos Santos
Viviane de Assis Ignacio
Walter Vinicius Ribeiro Cancelieri
Wei Sean Melvin Ting
Will Bennett
Will Marshall
William Dowling
William Hart
Winni Yang
Xema Pathak
Xiangyun Ren
Xingyan Lin
Xingyue Yang
Xinrui Wang
Yanjun Lu
Yanying Lin
Yaowen Deng
Yash Kamath
Yasmin de Sousa Pinheiro
Ye Chen
Yexuan Zhu
Yinqiu Zheng
Yishan Yuan
Yiwen Sun
Yiwen Zhang
Yixin Pu
Yizhou Pan
Yueying Zhang
Yulia Taranova
Yuxi Zhang
Yuxin Ma
Zachary Adnane
Zachary Parsons
Zara Abdurahaman
Zara Raheem
Zelie Kasten
Zhengyu Zhang
Zijia Tan
Zile Huma
Zilin Tu
Ziqi Zhou
Ziqing Huang
Zixuan Fu
Ziya Utku Karadeniz
Ziyue Chen
Zoe Lin
Zoha Minal Imran
Zongyue Liu
Zunaira Mallick

Codebook

This coding scheme is tweaked and revised from time-to-time. Please refer to our GitHub repository for the most up-to-date technical documentation: https://github.com/OxCGRT/covid-policy-tracker/blob/master/documentation/codebook.md

Closures and containment

ID	Name	Description	Measurement	Coding instructions
C1	School closing	Record closings of schools and universities	Ordinal scale + binary for geographic scope	0 - No measures 1 – Recommend closing, or all schools open with alterations resulting in significant differences compared to usual, non-Covid-19 operations 2 - Require closing (only some levels or categories, eg just high school, or just public schools) 3 - Require closing all levels No data - blank 0 - Targeted 1- General No data - blank
C2	Workplace closing	Record closings of workplaces	Ordinal scale + binary for geographic scope	0 - No measures 1 - recommend closing (or work from home) 2 - require closing (or work from home) for some sectors or categories of workers 3 - require closing (or work from home) all-but-essential workplaces (e.g. grocery stores, doctors) No data - blank 0 - Targeted 1- General No data - blank
C3	Cancel public events	Record cancelling public events	Ordinal scale + binary for geographic scope	0- No measures 1 - Recommend cancelling 2 - Require cancelling No data - blank 0 - Targeted

				1- General No data - blank
C4	Restrictions on gatherings	Record the cut-off size for bans on gatherings	Ordinal scale + binary for geographic scope	0 - No restrictions 1 - Restrictions on very large gatherings (the limit is above 1000 people) 2 - Restrictions on gatherings between 101-1000 people 3 - Restrictions on gatherings between 11-100 people 4 - Restrictions on gatherings of 10 people or less No data - blank 0 - Targeted 1 - General No data - blank
C5	Close public transport	Record closing of public transport	Ordinal scale + binary on geographic scope	0 - No measures 1 - Recommend closing (or significantly reduce volume/route/means of transport available) 2 - Require closing (or prohibit most citizens from using it) No data - blank 0 - Targeted 1- General No data - blank
C6	Stay at home requirements	Record orders to "shelter-in- place" and otherwise confine to home.	Ordinal scale + binary on geographic scope	0 - No measures 1 - recommend not leaving house 2 - require not leaving house with exceptions for daily exercise, grocery shopping, and 'essential' trips 3 - Require not leaving house with minimal exceptions (e.g. allowed to leave only once a week, or only one person can leave at a time, etc.) No data - blank 0 - Targeted 1- General No data – blank
C7	Restrictions on internal movement	Record restrictions on internal movement	Ordinal scale + binary on geographic scope	0 - No measures 1 - Recommend not to travel between regions/cities 2 – internal movement restrictions in place No data - blank

				0 - Targeted 1- General No data - blank
C8	International travel controls	Record restrictions on international travel	Ordinal scale	0 - No measures 1 - Screening 2 - Quarantine arrivals from high-risk regions 3 - Ban on arrivals from some regions 4 – Ban on all regions or total border closure No data - blank

Economic measures

ID	Name	Description		Coding instructions
E1	Income support	Record if the government is covering the salaries or providing direct cash payments, universal basic income, or similar, of people who lose their jobs or cannot work. (Includes payments to firms if explicitly linked to payroll/ salaries)	Ordinal scale + binary scale for **sectoral** scope	0 - no income support 1 - government is replacing less than 50% of lost salary (or if a flat sum, it is less than 50% median salary) 2 - government is replacing 50% or more of lost salary (or if a flat sum, it is greater than 50% median salary) No data - blank 0 - formal sector workers only 1 - transfers to informal sector workers too No data - blank
E2	Debt / contract relief for households	Record if govt. is freezing financial obligations (e.g. stopping loan repayments, preventing services like water from stopping, or banning evictions)		0 - No 1 - Narrow relief, specific to one kind of contract 2 - broad debt/contract relief No data - blank
E3	Fiscal measures	What economic stimulus policies are adopted?	USD	Record monetary value USD of fiscal stimuli, including spending or tax cuts NOT included in E4, H4, or H5 (see below)

				-If none, enter 0 No data - blank Please use the exchange rate of the date you are coding, not the current date. Exchange rate info here.
E4	Providing support to other countries	Announced offers of COVID-19 related aid spending to other countries	USD	Record monetary value announced if additional to previously announced spending -if none, enter 0 No data - blank Please use the exchange rate of the date you are coding, not the current date. Exchange rate info here.

Health measures

ID	Name	Description	Measurement	Coding instructions
H1	Public info campaigns	Record presence of public info campaigns	Binary + binary on geographic scope	0 -No COVID-19 public information campaign 1 - public officials urging caution about COVID-19 2 - coordinated public information campaign (e.g. across traditional and social media) No data - blank 0 - Targeted 1- General No data - blank
H2	Testing policy	Who can get tested?	Ordinal scale	0 – No testing policy 1 – Only those who both (a) have symptoms AND (b) meet specific criteria (e.g. key workers, admitted to hospital, came into contact with a known case, returned from overseas) 2 – testing of anyone showing COVID-19 symptoms

				3 – open public testing (e.g. “drive through” testing available to asymptomatic people) No data - blank N.B. we are looking for policies about testing for having an infection (PCR tests) - not for policies about testing for immunity (antibody tests).
H3	Contact tracing	Are governments doing contact tracing?	Ordinal scale	0 - No contact tracing 1 - Limited contact tracing - not done for all cases 2 - Comprehensive contact tracing - done for all identified cases No data - blank
H4	Emergency investment in health care	Short-term spending on, e.g., hospitals, masks, etc	USD	-Record monetary value in USD of new short-term spending on health -If none, enter 0 No data - blank Please use the exchange rate of the date you are coding, not the current date. Exchange rate info here.
H5	Investment in vaccines	Announced public spending on vaccine development	USD	Record monetary value announced if additional to previously announced spending -If none, enter 0 No data - blank Please use the exchange rate of the date you are coding, not the current date. Exchange rate info here.
H6	Facial Coverings	Record policies on the use of facial coverings outside the home	Ordinal scale + binary on geographic scale	0- No policy 1- Recommended 2- Required in **some** specified shared/public spaces outside the home with other people present, or **some** situations when social distancing not possible 3- Required in **all** shared/public spaces outside the home with other people present or **all** situations when social distancing not possible

				4- Required outside the home at all times regardless of location or presence of other people No data – blank 0 - targeted 1- general No data – blank
H7	Vaccination Policy	Record policies for vaccine delivery for different groups	Ordinal scale+ binary on cost scope	0 - No availability 1 - Availability for ONE of following: key workers/ clinically vulnerable groups / elderly groups 2 - Availability for TWO of following: key workers/ clinically vulnerable groups / elderly groups 3 - Availability for ALL of following: key workers/ clinically vulnerable groups / elderly groups 4 - Availability for all three plus partial additional availability (select broad groups/ages) 5 - Universal availability No data - blank 0 - At cost to individual (or funded by NGO, insurance, or partially government funded) 1- No or minimal cost to individual (government funded or subsidised) No data - blank
H8	H8_Protection of elderly people	Record policies for protecting elderly people (as defined locally) in Long Term Care Facilities and/or the community and home setting	Ordinal scale + binary on geographic scope	0 - no measures 1 - Recommended isolation, hygiene, and visitor restriction measures in LTCFs and/or elderly people to stay at home 2 - Narrow restrictions for isolation, hygiene in LTCFs, some limitations on external visitors and/or restrictions protecting elderly people at home 3 - Extensive restrictions for isolation and hygiene in LTCFs, all non-essential external visitors prohibited, and/or all elderly people required to stay at home and not leave the home with minimal exceptions, and receive no external visitors No data-blank

				0 - targeted 1- general No data – blank

Vaccine Policies

ID	Name	Description	Measurement	Summary data output (see Github page for coding instructions)
V1	V1_Vaccine prioritisation (summary)	Reports the existence of a prioritised plan for vaccine rollout.	Ordinal scale	0 – no plan 1 – a prioritised plan is in place 2 – no prioritised plan; there is universal eligibility and availability
V1	Vaccine prioritisation V1_Clinically vulnerable/chronic illness/significant underlying health condition (excluding elderly and disabled) V1_Healthcare workers/carers (excluding care home staff) V1_Residents in an elderly care home V1_Staff working in an elderly care home V1_Frontline retail workers V1_Military V1_Police/ first responders V1_Ethnic minorities V1_Educators V1_Other 'high contact' professions/groups (taxi drivers, security guards) V1_Pregnant people V1_Young people 5-16 yrs V1_People living with a vulnerable/shielding person or other priority group V1_Airport/Border/Airline Staff V1_Factory workers V1_Disabled People V1_Infants 0-4 yrs V1_Young people 5-16 yrs V1_General 16-19 yrs V1_General 20-24 yrs V1_General 25-29 yrs V1_General 30-34 yrs V1_General 35-39 yrs	Record the ranked position for different groups within a countries prioritisation plan.	Rank order	Blank – category not selected for prioritisation 1, 2, 3, 4…. – category has been selected for prioritisation; number represents the rank of prioritisation.

	V1_General 40-44 yrs V1_General 45-49 yrs V1_General 50-54 yrs V1_General 55-59 yrs V1_General 60-64 yrs V1_General 65-69 yrs V1_General 70-74 yrs V1_General 75-79 yrs V1_General 80+ yrs V1_At Risk 16-19 yrs V1_At Risk 20-24 yrs V1_At Risk 25-29 yrs V1_At Risk 30-34 yrs V1_At Risk 35-39 yrs V1_At Risk 40-44 yrs V1_At Risk 45-49 yrs V1_At Risk 50-54 yrs V1_At Risk 55-59 yrs V1_At Risk 60-64 yrs V1_At Risk 65-69 yrs V1_At Risk 70-74 yrs V1_At Risk 75-79 yrs V1_At Risk 80+ yrs V1_Religious/Spiritual Leaders V1_Frontline/essential workers (when subcategories not specified) V1_Primary and secondary school students V1_Crowded/communal living conditions (dormitories for migrant workers, temporary accommodation) V1_Tertiary education students			
V2	Vaccine eligibility/availability (summary)	Reports whether any categories of people are receiving vaccines.	Ordinal scale	Blank – no data 0 – no categories are receiving vaccines 1 – vaccines are available to some categories
V2	Vaccine eligibility/availability V2_Clinically vulnerable/chronic illness/significant underlying health condition (excluding elderly and disabled) V2_Healthcare workers/carers (excluding care home staff) V2_Residents in an elderly care home V2_Staff working in an elderly care home V2_Frontline retail workers	Record which categories of people – regardless of their position in a prioritised rollout plan – are currently receiving vaccines.	Ordinal (binary) scale	Blank – no data 0 – vaccines are not being made available to this category 1 – vaccines are being made available to this category

	V2_Military V2_Police/ first responders V2_Ethnic minorities V2_Educators V2_Other 'high contact' professions/groups (taxi drivers, security guards) V2_Pregnant people V2_Young people 5-16 yrs V2_People living with a vulnerable/shielding person or other priority group V2_Airport/Border/Airline Staff V2_Factory workers V2_Disabled People V2_Infants 0-4 yrs V2_Young people 5-16 yrs V2_General 16-19 yrs V2_General 20-24 yrs V2_General 25-29 yrs V2_General 30-34 yrs V2_General 35-39 yrs V2_General 40-44 yrs V2_General 45-49 yrs V2_General 50-54 yrs V2_General 55-59 yrs V2_General 60-64 yrs V2_General 65-69 yrs V2_General 70-74 yrs V2_General 75-79 yrs V2_General 80+ yrs V2_At Risk 16-19 yrs V2_At Risk 20-24 yrs V2_At Risk 25-29 yrs V2_At Risk 30-34 yrs V2_At Risk 35-39 yrs V2_At Risk 40-44 yrs V2_At Risk 45-49 yrs V2_At Risk 50-54 yrs V2_At Risk 55-59 yrs V2_At Risk 60-64 yrs V2_At Risk 65-69 yrs V2_At Risk 70-74 yrs V2_At Risk 75-79 yrs V2_At Risk 80+ yrs V2_Religious/Spiritual Leaders V2_Frontline/essential workers (when subcategories not specified) V2_Primary and secondary school students V2_Crowded/communal living conditions (dormitories for migrant workers, temporary accommodation) V2_Tertiary education students			

V3	V3_Vaccine financial support (summary)	Reports the overall approach taken to vaccine funding – whether paid by the individual or the government.	Ordinal scale	0 – no data 1 – full cost to the individual for all categories identified in V2 2 – full cost to the individual for some categories identified in V2, some subsidy for other categories 3 – partial funding by the government for all of the categories identified in V2 4 – partial funding by the government for some categories identified in V2, full funding for other categories 5 – all categories fully funded by the government
V3	Vaccine financial support V3_Clinically vulnerable/chronic illness/significant underlying health condition (excluding elderly and disabled) V3_Healthcare workers/carers (excluding care home staff) V3_Residents in an elderly care home V3_Staff working in an elderly care home V1_Frontline retail workers V3_Military V3_Police/ first responders V3_Ethnic minorities V3_Educators V3_Other 'high contact' professions/groups (taxi drivers, security guards) V3_Pregnant people V3_Young people 5-16 yrs V3_People living with a vulnerable/shielding person or other priority group V3_Airport/Border/Airline Staff V3_Factory workers V3_Disabled People V3_Infants 0-4 yrs V3_Young people 5-16 yrs	Record how vaccines are funded for each category of people identified in V2 as currently receiving vaccines.	Ordinal scale	0 – full cost borne by the individual (or through private health insurance) 1 – partially funded by government and individual pays nominal fee 2 – fully covered by government funding, FREE

	V3_General 16-19 yrs V3_General 20-24 yrs V3_General 25-29 yrs V3_General 30-34 yrs V3_General 35-39 yrs V3_General 40-44 yrs V3_General 45-49 yrs V3_General 50-54 yrs V3_General 55-59 yrs V3_General 60-64 yrs V3_General 65-69 yrs V3_General 70-74 yrs V3_General 75-79 yrs V3_General 80+ yrs V3_At Risk 16-19 yrs V3_At Risk 20-24 yrs V3_At Risk 25-29 yrs V3_At Risk 30-34 yrs V3_At Risk 35-39 yrs V3_At Risk 40-44 yrs V3_At Risk 45-49 yrs V3_At Risk 50-54 yrs V3_At Risk 55-59 yrs V3_At Risk 60-64 yrs V3_At Risk 65-69 yrs V3_At Risk 70-74 yrs V3_At Risk 75-79 yrs V3_At Risk 80+ yrs V3_Religious/Spiritual Leaders V3_Frontline/essential workers (when subcategories not specified) V3_Primary and secondary school students V3_Crowded/communal living conditions (dormitories for migrant workers, temporary accommodation) V3_Tertiary education students			

Miscellaneous

ID	Name	Description	Measurement	Coding instructions
M1	Misc. wild card	Record policy announcements that do not fit anywhere else	Free text	Note unusual or interesting interventions that you think are worth flagging. Include relevant documentation.

Calculation of policy indices

The composition and calculation of our indices is updated from time-to-time. Please refer to our GitHub repository for the most up-to-date technical documentation: *https://github.com/OxCGRT/covid-policy-tracker/blob/master/documentation/index_methodology.md*

Policy indices

All of our indices are simple averages of the individual component indicators. This is described in equation 1 below where *k* is the number of component indicators in an index and I_j is the sub-index score for an individual indicator.

$$(1) \qquad index = \frac{1}{k}\sum_{j=1}^{k} I_j$$

The different indices are comprised as follows:

Index	*k*	C1	C2	C3	C4	C5	C6	C7	C8	E1	E2	E3	E4	H1	H2	H3	H4	H5	H6	H7	H8	M1	V1	V2	V3
Government response index	16	x	x	x	x	x	x	x	x	x	x			x	x	x			x	x	x				
Containment and health index	14	x	x	x	x	x	x	x	x					x	x	x			x	x	x				
Stringency index	9	x	x	x	x	x	x	x	x					x											
Economic support index	2									x	x														
Legacy stringency index (see end of doc)	7	x	x	>	?	x	?	?	x					x											

Two versions of each indicator are present in the database. A regular version which will return null values if there is not enough data to calculate the index, and a "display" version which will extrapolate to smooth over the last seven days of the index based on the most recent complete data. This is explained below.

Calculating sub-index scores for each indicator

All of the indices use ordinal indicators where policies are ranked on a simple numerical scale. The project also records eight indicators – E3, E4, H4, H5, V1, V2, V3 and M1 – that are not used in our index calculations.

Some indicators – C1-C7, E1 and H1, H6, H7, and H8– have an additional binary flag variable that can be either 0 or 1. For C1-C7, H1 and H6 this corresponds to the geographic scope of the policy. For E1, this flag variable corresponds to the sectoral

scope of income support. For H7, this flag variable corresponds to whether the individual or government is funding the vaccination.

The codebook has details about each indicator and what the different values represent.

Because different indicators (j) have different maximum values (N_j) in their ordinal scales, and only some have flag variables, each sub-index score must be calculated separately. The different indicators are:

Indicator	Max value (N_j)	Flag? (F_j)
C1	3 (0, 1, 2, 3)	Yes=1
C2	3 (0, 1, 2, 3)	Yes=1
C3	2 (0, 1, 2)	Yes=1
C4	4 (0, 1, 2, 3, 4)	Yes=1
C5	2 (0, 1, 2)	Yes=1
C6	3 (0, 1, 2, 3)	Yes=1
C7	2 (0, 1, 2)	Yes=1
C8	4 (0, 1, 2, 3, 4)	No=0
E1	2 (0, 1, 2)	Yes=1
E2	2 (0, 1, 2)	No=0
H1	2 (0, 1, 2)	Yes=1
H2	3 (0, 1, 2, 3)	No=0
H3	2 (0, 1, 2)	No=0
H6	4 (0, 1, 2, 3, 4)	Yes = 1
H7	5 (0, 1, 2, 3, 4, 5)	Yes=1
H8	3 (0, 1, 2, 3)	Yes=1

Each sub-index score (I) for any given indicator (j) on any given day (t), is calculated by the function described in equation 2 based on the following parameters:

- the maximum value of the indicator (N_j)
- whether that indicator has a flag (F_j=1 if the indicator has a flag variable, or 0 if the indicator does not have a flag variable)
- the recorded policy value on the ordinal scale ($v_{j,t}$)
- the recorded binary flag for that indicator, if that indicator has a flag ($f_{j,t}$)

This normalises the different ordinal scales to produce a sub-index score between 0 and 100 where each full point on the ordinal scale is equally spaced. For indicators that do have a flag variable, if this flag is recorded as 0 (i.e. if the policy is geographically targeted or for E1 if the support only applies to informal sector workers) then this is treated as a half-step between ordinal values.

Note that the database only contains flag values if the indicator has a non-zero value. If a government has no policy for a given indicator (i.e. the indicator equals zero) then the corresponding flag is blank/null in the database. For the purposes of calculating the index, this is equivalent to a sub-index score of zero. In other words, $I_{j,t}=0$ if $v_{j,t}=0$.

$$(2) \qquad I_{j,t} = 100\frac{v_{j,t} - 0.5(F_j - f_{j,t})}{N_j}$$

Here is an explicit example of the calculation for a given country on a single day:

Indicator	$v_{j,t}$	$f_{j,t}$	N_j	F_j	$I_{j,t}$
C1	2	1	3	yes=1	66.67
C2	No data	no data	3	yes=1	0.00
C3	2	0	2	yes=1	75.00
C4	2	0	4	yes=1	37.50
C5	0	null	2	yes=1	0.00
C6	1	0	3	yes=1	16.67
C7	1	1	2	yes=1	50.00
C8	3	N/A	4	no=0	75.00
E1	2	0	2	yes=1	75.00
E2	2	N/A	2	no=0	100.00
H1	2	0	2	yes=1	75.00
H2	3	N/A	3	no=0	100.00
H3	2	N/A	2	no=0	100.00
H6	2	0	4	yes=1	37.50
H7	2	1	5	Yes=1	40.00
H8	2	1	3	Yes=1	66.66

Index	
Government response	57.18
Containment and health	52.86
Stringency	43.98
Economic support	87.50

Dealing with gaps in the data for display purposes

Because data are updated on twice-weekly cycles, but not every country is updated in every cycle, recent dates may be prone to missing data. If fewer than *k-1* indicators are present for an index on any given day, the index calculation is rejected and no value is returned. For the economic support indicator, where *k*=2, the index calculation is rejected if either of the two indicators are missing.

To increase consistency of recent data points which are perhaps mid contribution, index values pertaining to the past seven days are rejected if they have fewer policy indicators than another day in the past seven days, i.e. if there is another recent data point with all *k* indicators included, then no index will be calculated for dates with *k-1*.

Further, we produce two versions of each index. One with the raw calculated index values, plus we produce a "display" version which will "smooth" over gaps in the last seven days, populating each date with the last available "good" data point.

For example, the date at the time of writing was 22 May. The table below gives an example of which index calculations would be rejected based on the number of policy indicators with data on each data. In this table, we will consider the overall government response index where *k*=13.

Date	No. of valid indicators	No. of indicators in index (*k*)	Raw index	"Display" index
10/05/2020	11	13	null	null
11/05/2020	12	13	60	60
12/05/2020	10	13	null	null
13/05/2020	13	13	65	65
14/05/2020	10	13	null	null
15/05/2020	10	13	null	null
16/05/2020	10	13	null	65
17/05/2020	13	13	70	70
18/05/2020	13	13	75	75
19/05/2020	12	13	null	75
20/05/2020	12	13	null	75
21/05/2020	6	13	null	75
22/05/2020 (today)	4	13	null	75

Legacy stringency index

We also report a legacy stringency index that approximates the logic of the first version of the Stringency Index, which only had seven components under our old database structure with the old indicators S1-S7. We generally do not recommend using this legacy index, but it may be useful for continuity purposes.

The legacy indicator only uses seven indicators, and it chooses a single indicator between C3 and C4, and between C6 and C7, selecting whichever of those pairs provides a higher sub-index score. This is because C3 and C4 aim to measure the information previously measured by S3, and similarly for C6, C7 and the old S6. This method, shown in equation 3, faithfully recreates the logic of the old stringency index.

$$(3) \qquad SI_{legacy} = \frac{1}{7}\left(I_{C1} + I_{C2} + max(I_{C3}, I_{C4}) + I_{C5} + max(I_{C6}, I_{C7}) + I_{C8} + I_{H1}\right)$$

The individual sub-index scores for the legacy index are calculated through a slightly different formula to the one described in equation 2 above. This formula is described in equation 4 below (with a separate formula for C8, the only indicator in this index without a flagged variable).

$$(4) \qquad I_{j,t} = 100\left(\frac{v_{j,t} + f_{j,t}}{N_j + 1}\right) \quad | \quad I_{C8,t} = 100\left(\frac{v_{C8,t}}{N_{C8}}\right)$$