CoronaNet COVID-19 Government Response Event Dataset

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Abstract

Governments worldwide have implemented countless policies in response to the COVID-19 pandemic. We present an initial public release of a large hand-coded dataset of over 12,000 separate policy announcements in response to the pandemic across more than 190 countries. The dataset is updated daily, with a 5-day lag for validity checking. We document policies across numerous dimensions, including the type of policy; national vs. sub-national enforcement; the specific human group and geographic region targeted by the policy; and the time frame within which the policy is implemented. We further analyze the dataset using a Bayesian measurement model which shows the quick acceleration of the adoption of costly policies across countries beginning in mid-March and continuing to the present. We believe that the data will be instrumental for helping policy makers and researchers assess, among other objectives, how effective different policies are in addressing the spread and health outcomes of COVID-19.

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Governments all around the world have implemented an astonishing number and variety of policies in reaction to the COVID-19 pandemic in a very short time frame. However, policy makers and researchers have to date lacked access to the quality, up-to-date data they need for conducting rigorous analyses of whether, how, and to what degree these fast changing policies have worked in brunting the health, political and economic effects of the pandemic. To address this concern, in this paper, we present the CoronaNet COVID-19 Government Response Event Dataset, which provides fine-grained, monadic and dyadic data on policy actions taken by governments across the world since the Chinese government first reported the COVID-19 outbreak on December 31, 2019. At the time of writing, the dataset covers the policy actions of 196 countries up until 2020-05-08, for a total of 12601 events.

With the help of a team of over 260 research assistants in 18 time zones, we are releasing the data on a daily basis. We are implementing a five-day lag between data collection and release to evaluate and validate ongoing coding efforts for random samples of the data to ensure the best possible quality given the considerable time constraints. More specifically, the CoronaNet dataset collects daily data on government policy actions taken in response to COVID-19 across the following dimensions:

- The type of government policy implemented (e.g. quarantine, closure of schools [16 total])
- The level of government initiating the action (e.g. national, provincial)
- The geographical target of the policy action, if applicable (e.g. national, provincial, municipal)
- The human or material target of the policy action, if applicable (e.g. travelers, masks)
- The directionality of the policy action, if applicable (e.g. inbound, outbound, both)
- The mechanism of travel that the policy action targets, if applicable (e.g. flights, trains)
- The compliance with the policy action (e.g. mandatory, voluntary)
- The enforcer of the policy action (e.g. national government, military)
- The timing of the policy action (e.g. date announced, date implemented)

Though government responses to the COVID-19 pandemic have inaugurated unprecedented changes in how billions of people live their lives, they draw on the lessons learned from the endless series of pandemics and epidemics that came before. Indeed, the earliest written sources document how ancient Mesopotamians responded to the constant threat of epidemic by, on the one hand drawing on spiritual practices and on the other hand, isolating people showing the first symptoms of a disease from others.[1,2] As time has marched forward, pandemics and epidemics have consistently and dramatically changed the course of human history[3–7] and governments have continued to implement a variety of policies in response.[1,8,9] Throughout it all, the collection of reliable data has helped advance collective understanding of which policies are effective in curbing the effects of a given disease outbreak.[10,11] This is no trivial task given that a policy that is effective in one context may be ineffective in another due to a whole host of potentially conditioning factors, including

the pathogenesis of the particular disease[12,13], the characteristics of the underlying population[14–17], and the available medical[18,19] and communication[20–23] technology at the time.

We believe that the data presented in this paper can similarly help policy makers and researchers assess how effective different policies are in addressing the spread and health outcomes of COVID-19[24]. While available research is necessarily preliminary, it suggests that which policies governments have implemented in response to COVID-19[25–27], when they decided to implement them[29,30], who they were targeted toward[31,32] and what state capacity they possessed to do so[33,34] have all significantly influenced how the virus has affected health outcomes both within and across different country contexts[35,36], all of which is readily captured by this dataset. Equally important is understanding why countries adopt different policies, with early analyses suggesting that institutional and political factors, e.g. the authoritarian or democratic nature of a country's institutions[37] or its level of political partisanship[38], play an important role. These findings will not only improve the global response to the current crisis, but can also build an influential foundation of knowledge for responding to future outbreaks[39,40].

Meanwhile, given the exogenous timing of the initial outbreak in Wuhan, China, government policies made in reaction to the COVID-19 pandemic constitute the single largest natural experiment in recent memory, allowing researchers to improve causal inference in any number of fields. Indeed, government reactions to the COVID-19 epidemic may forward our understanding of a wide-range of social phenomena, from the evolution of political institutions[41–45] to the progression of economic development[46–50] and the stability of financial markets[51,52] to say nothing of what we might learn about environmental economics[53,54], mental health[55,56], disaster response[57,58] and disaster preparedness[59–61]. Some initial analyses suggest that the COVID-19 pandemic has already led to authoritarian backsliding in some countries[62], unprecedented shocks to the economies around the world[63,64], and serious negative mental health effects for millions of people[65,66]. While scholars have always sought to understand how large-scale historical events have shaped contemporary phenomena, modern technological tools allow us to document such events more quickly and more precisely than ever before.

Detailed documentation of such policies is all the more important given that policy choices made by one government often depend on the policy choices of other governments. The structure of the data we present in this paper allows researchers and policy-makers not only to examine monadic policy information—i.e., policies targeted to the same political unit that enacted it—but also directed, dyadic policy information—i.e., policies targeted to a political unit that is different from the unit that enacted it. The dyadic data is not only limited to capturing foreign policy dynamics such as when country A implements a policy that affects citizens of country B but can also document dynamics within countries such as when central governments enact policies targeted to subnational political entities. Given its dyadic structure, the dataset further

enables critical analyses of the links and interdependencies between and within countries, including patterns of policy learning and diffusion across governments, as well as of cooperative and conflictive relationships in global crisis governance.

In what follows, we provide a description of the data, as well as an application of the data in which we model policy activity of countries over time. Using a Bayesian dynamic item-response theory model, we produce a statistically valid index that categorizes countries in terms of their responses to the pandemic, and further shows how quickly policy responses have changed over time. We document clear evidence of rapid policy diffusion of harsh measures in response to the virus, indicating some of the most extensive evidence of this type of diffusion ever documented. In the methodology section, we provide a thorough discussion of the methodology used to create this index, to collate the dataset and to manage the more than 260 research assistants coding this data around the world in real time.

Results

In this section, we first present some descriptive statistics that illustrate how government policy toward COVID-19 has varied across key variables. We then briefly present our new index for tracking how active governments have been with regard to announcing policies targeting COVID-19 across countries and over time.

Descriptive Statistics

Here we present some descriptive statistics for key variables available in the data. In Table 1, for each policy type (please see the Data Schema section for more information on how a policy type is defined) we present cumulative totals for the number of policies and the number of countries, an average value for the number of targeted countries, and percentages in terms of the degree of compliance within a policy type. While, we highlight the number of targeted countries in this table, we note that our data also captures other potential geographic targets not shown in the table. For instance, it is possible for a national policy to be targeted toward a particular sub-national province or a provincial policy to be targeted toward a certain sub-provincial regions.

Table 1 shows that the policy most governments have implemented in reaction to COVID-19 is external border restrictions, i.e. policies that seek to limit entry or exit across different governmental jurisdictions. We find that 186 countries have made 1064 policy announcements about such restrictions since December 31, 2019. The second policy that most countries, by our count 169, have implemented is 'Closure of Schools', of

which we document 1583 such policies. Meanwhile, the policy that has been implemented the most number of times, at X, has been health resources, that is policies which seek to secure the availability of health-related materials (e.g. masks), infrastructure (e.g. hospitals) or personnel (e.g. doctors) to address the pandemic. However, we note that a strict comparison of policy types by this metric is not perfect, given that, for example, there may be a need for more individualized policies regarding external border restrictions (given the number of countries which a government can restrict travel access to) as opposed to closing schools. In the next subsection, we provide a more rigorous method of comparing policies while taking their depth into account.

Meanwhile, our dataset also shows that the majority of countries in the world are a target of an external border restriction, quarantine measure, or health monitoring measure from another country. Moreover, a high percentage of policies documented in our dataset have mandatory enforcement.

In addition, we can look at the cumulative incidence of different types of policies in our data over time, as we show in Figure 1. The figure shows that arguably relatively easy to implement policies like external border restrictions, the forming of task forces, public awareness campaigns, and efforts to increase health resources came relatively early in the course of the pandemic. Relatively more difficult policies to implement like curfews, closures of schools, restrictions of non-essential businesses and restrictions of mass gatherings arrived later.

We can also explore the extent to which other countries are affected by policies that can have a geographic target outside the policy initiator (e.g. 'external border restrictions', 'quarantine') across time. For example, in Figure 2, we map a network of bans on inbound flights to European countries initiated by European countries as of March 15, 2020. In the plot, each horizontal line represents a particular country (more generally, what in network terminology is called a node). The vertical lines denote whether there was such a flight ban between two countries (more generally, what in network terminology is called an edge or a link), and the arrow of the vertical line indicates the direction in which the ban is applied (what in network terminology allows us to capture directed dyads). For instance, in the zoomed in panel inlay in Figure 2, the bottom horizontal line represents Taiwan, and the vertical line connected to it shows that there was a flight ban between Taiwan and Italy. The arrow pointing downwards to Taiwan shows that it was Italy which directed the flight ban against Taiwan. See Longabaugh for more information on how to interpret this plot (2012) 67.

Overall, the Figure shows that by March 15, 2020, the governments of Poland and San Marino had banned all flights into Poland and San Marino respectively while the government of Italy banned incoming flights from China, Hong Kong, Macau and Taiwan. Additionally, the governments of Greece and Romania both banned flights from Italy while the government of Albania banned incoming flights from Greece. According

to our data, up until this point in time, no other European governments at the national level had banned inbound flights from other countries.

Government Policy Activity Index

In this section, we briefly present our new index for tracking the relative government activity with regards to policies targeting COVID-19 across countries and over time. The model is a version of item-response theory known as ideal point modeling which incorporates over-time trends[68–73], permitting inference on how a latent construct, in this case total policy activity, responds to changes in the pandemic. To fit the model, the different policy types shown in Table 1, as well as sub-policies within them, were coded in terms of ordinal values, with lower values for sub-national targets of policies and higher values for policies applying to the entire country, or in the case of external border restrictions, to one or more external countries. For instance, internal country policies can take on three possible values: no policy, sub-national policy, or policy covering the whole country. Meanwhile external border restrictions can take on four possible values: no policy, policy targeting one other country, policy targeting multiple countries, and policy targeting all countries in the world (i.e., border closure).

We employed ideal point modeling because it can be given a latent utility interpretation[69]. We assume that each country has an unobserved "ideal point" on a uni-dimensional space representing its willingness to impose policies, while each policy likewise has a position on the same space. The relative cost of different policies can be thought of as the distance between a country's ideal point and the ideal point of the policy relative to other policies. While the meaning of this implied cost will vary from country to country, it is likely a combination of the social, political and economic costs of implementing the policy at a given time point.

As countries become more willing to pay the implied cost (i.e. the latent distance between country and policy decreases), the country's ideal points/policy activity score will rise and they will implement more policies. This interpretation is similar to the traditional item-response theory approach for analyzing test questions in which students who correctly answer more questions on a test are considered to have higher "ability"[74,75]. Following this logic, we are able to estimate latent country scores that represent the readiness of a country to impose a set number of policies. The implied cost of policies is estimated via discrimination parameters, which indicate how strongly policies discriminate between countries.

The country-level policy activity score is further allowed to vary over time in a random-walk process with a country-specific variance parameter to incorporate heteroskedasticity[71]. Incorporating over-time trends explicitly is very important for capturing the nuances of policy implementation over time. For example,

countries that impose more restrictive policies at an earlier date will be rewarded with higher policy activity scores compared to those who impose such policies at a later date. Imposing a given policy when most countries have already imposed them will result in little if any change in the policy activity score.

The advantage of employing a statistical model, rather than simply summing across policies, is that the index ends up as a weighted average, where the weights are derived from the probability that a certain policy is implemented. In other words, while many countries set up task forces, relatively few imposed curfews at an early stage. As a result, the model adjusts for these distinctions, producing a score that aggregates across the patterns in the data.

Furthermore, because the model is stochastic, it is robust to some of the coding errors of the kind that often occur in these types of datasets. As we discuss in our validation section, while we are continuing to validate the data on a daily basis, the massive speed and scope of data collection means that we cannot identify all issues with the data in real time. However, the measurement model employed only requires us to assume that on average the policy codings are correct, not that they are correct for each instance. Coding error, such as incorrectly selecting a policy type, will propagate through the model as higher uncertainty intervals, but will not affect average posterior estimates. As our data quality improves, and we are able to collect more data over time, the model will produce more variegated estimates with smaller uncertainty intervals.

Figure 3 shows the estimated index scores for the 196 countries in our dataset at present, and suggests strong evidence of policy diffusion effects. While information about COVID-19 existed at least as early as January, we do not see large-scale changes occurring in activity scores until March. Furthermore, the trajectories are highly non-linear, with a large number of countries quickly transitioning from relatively low to relatively high scores. This non-linear movement could be due to a variety of factors, including the rapid spread of the virus and policy learning as states observe other states' policy actions. We note that the country that appeared to take the quickest action in the shortest amount of time is New Zealand, as can be seen in Figure 5 where we show over-time variance parameters for each country.

Of course, a caveat with the index is that we may be missing some possible policy measures that have occurred due to the difficulty in finding them in published sources. However, there is still clear differentiation within the index in terms of when policies were imposed, with some countries starting to impose policies much earlier than others. Furthermore, there is a clear break around March 1st when countries began to impose more stringent policies across the world.

Table 2 shows the discrimination parameters from the underlying Bayesian model for each policy type. These parameters suggest which policies governments find relatively difficult or costly to implement, and for that reason tend to separate more active from less active states in terms of response to COVID-19. Two of these policies (Closure of Restaurants and Quarantine at Home) were given fixed values in order to identify the

direction and rotation of the latent scale, and so their discrimination parameters are not informative. These policies were chosen as *a priori* we can identify them as being relatively high cost. However, the rest of the parameters were allowed to float, which provides inference as to which policies appear to be the most difficult/costly to implement.

We note that these are average values for the sample. Imposing these policies may be less costly for certain countries or for countries that share certain characteristics, such as having smaller numbers of enrolled students or relatively healthy economies. However, it is important to note that we can see these patterns on a world-wide scale.

At the top of the index we see various business closure policies as the most difficult to implement, while school closures are the next most difficult. Closure of pre-schools, though, as opposed to other school types, appears to be relatively less costly for states to undertake, perhaps because pre-schools do not operate on a full-time basis. Internal border restrictions are considered more difficult to implement than external border restrictions, while relatively straightforward policies like public awareness campaigns, health monitoring and opening new task forces or bureaus are near the bottom of the index. Quarantines placing people in external facilities, such as hotels or government quarantine centers, are also estimated as being less costly than quarantine at home (stay-at-home orders).

Given this distribution of discrimination parameters, we believe the index is a valid representation of the underlying process by which governments progressively impose more difficult policies. As states relax policies, we will further gain information about which policies appear to be more costly as we will be able to factor in the duration for which these policies were implemented. Consistent with our findings, we observe that the announced relaxation policies happening at the time of writing in European countries primarily center on businesses and school openings, suggesting that these policies are uniquely costly to keep in place compared to travel restrictions[76].

Methods

In this section, we first provide more detail on the methodology we employed to estimate our government policy action index. We then describe the variables that our dataset provides as well as how they are organized. We then provide detail on the methodology we employed to collect the data.

Time-Varying Item Response Model

Our time-varying item response model follows the specification in 77. We review that notation here to show how it relates to classical item-response theory as well as the ideal point modeling literature.

The likelihood function for the model is as follows for a set of countries $i \in I$, items $j \in J$, time points $t \in T$ and ordinal categories $k \in K$:

$$L(Y_{ijtk}|\alpha_{it}, \gamma_j, \beta_j) = \prod_{i=1}^{I}\prod_{j=1}^{J}\prod_{t=1}^{T} \begin{cases} 1 - \zeta(\gamma_j\alpha_{it} - \beta_j - c_1) & \text{if } K = 0 \\ \zeta(\gamma_j\alpha_i - \beta_j - c_{k-1}) - \zeta(\gamma_j\alpha_{it} - \beta_j - c_k) & \text{if } 0 < k < K, \text{ and} \\ \zeta(\gamma_j\alpha_{it} - \beta_j - c_{k-1}) - 0 & \text{if } k = K \end{cases} \quad (1)$$

In this equation, the time-varying country parameters α_{it}, also called person abilities or ideal points, are our estimate of policy activity scores. They are estimated jointly with the item (policy type) discrimination parameters γ_j and item difficulty (intercept) parameters β_j. To address the ordinal nature of the outcome Y_{ijtk}, ordinal cutpoints c_k are used to model the varying levels of enforcement and geographical targets in the data. The logit function, represented by $\zeta(\cdot)$, maps the latent scale to probability that a given ordinal outcome is chosen. Because we have two separate type of ordered measures (domestic versus international policies) with either three or four ordered categories, we estimate the model jointly as two ordered logit specifications.

The likelihood in (1) is not fully identified due to possible scaling issues with the latent variable α_{it} (i.e., it has no natural units) and due to potential sign reflection (also called multi-modality) where $L(Y_{ijtk})$ could be unchanged even if α_{it} is multiplied by -1. These identification issues are well-known in the literature[70], and we resolve them with standard practices. First, we assign a reasonably informative prior distribution on the $t = 1$ ideal points:

$$\alpha_{it=1} \sim N(0, 1) \quad (2)$$

We also fix the discrimination parameters γ_j for two items, quarantines and restriction of restaurants and bars, to opposite ends of the latent scale (+1 and -1). Because both of these variables load on the same side of the scale (i.e. both indicate more policy activity), we reverse the order of the categories for restriction of restaurants and bars. We note that these types of restrictions are not commonly used in traditional IRT, where instead a sign restriction is imposed on all discrimination parameters. We employ the more flexible ideal point specification, which also allows us to test the assumption that all the discrimination parameters load on the same sign (as Table 2 shows, this is true for all of the parameters). The rest of the parameters are

given weakly informative prior distributions (note a prior is put over the difference of cutpoints, rather than the cutpoints themselves, to reflect the fact that only the differences between cutpoints have any natural scale):

$$\gamma_j \sim N(0, 5) \tag{3}$$

$$\beta_j \sim N(0, 2) \tag{4}$$

$$c_k - c_{k-1} \sim N(0, 5) \tag{5}$$

Finally, to model the policy scores α_{it} as a random walk, we assign a prior that is equal to the prior period policy score plus normally-distributed noise:

$$\alpha_{it} \sim N(\alpha_{it-1}, \sigma_i) \tag{6}$$

$$\sigma_i \sim E(1) \tag{7}$$

The over-time dimension induces a new source of identifiability issues, which we resolve by fixing the variance σ_i of one of the countries (the United States) to 0.1 so that the over-time variance is relative to this constant. This constraint has a similar identification effect to the informative prior on the first period policy activity scores in (2).

Model Convergence

For estimation, we sample from four Markov Chain Monte Carlo (MCMC) chains with over-dispersed starting values using Stan, a Hamiltonian Markov Chain Monte Carlo (HMC) sampler[78]. We run the sampler for 800 iterations, 400 of which are discarded as warm-up. While this number of iterations is far less than other MCMC samplers, HMC is far more efficient at exploring the posterior density and we are able to achieve convergence using this number of iterations.

We assess convergence using split-$\hat{R}$ by fitting four independent chains with over-dispersed starting values. $\hat{R}$ values for all parameters (which totaled more than 40,000) were 1.01 or less (see plot A in Extended Data Figure 1). Plot B in Figure in Extended Data Figure 1 shows the distribution of effective number of samples for the parameters, which is a way of comparing the auto-correlation in MCMC draws to independent draws without auto-correlation, such as we might obtain from a Monte Carlo simulation. Again, the number of effective samples is quite high, often exceeding the total number of empirical draws. This occurred because Hamiltonian Monte Carlo can produce more informative samples than even a Monte Carlo simulation because

it can generate negatively correlated draws that explore the posterior space much more quickly. We also assess convergence using trace plots, one of which is shown below for the time-varying country policy activity scores for the United States. Strong mixing between chains can be observed in the plot. Finally, we report no divergent transitions or iterations where the sampler reached its maximum tree depth, which are both signs of poor mixing in the chains. For these reasons, we are confident than the sampler reached a stationary distribution and was able to adequately explore the high-density regions of the joint posterior.

Model Validity

While employing a measurement model ensures robustness to arbitrary data coding errors, it is still necessary to validate the model's over-time process, which imposes some assumptions on how policy activity scores change over time. The use of a random walk implies that policy differences will be relatively stable from one day to the next, which could limit the ability of scores to encompass quick, discontinuous changes[79]. While we employ this particular specification because it has been applied previously to a variety of empirical phenomena and because of its relative parsimony, we can partially test for whether it captures changes by estimating a static IRT model for each day in the sample. The corresponding estimates represent cross-sections without any time process imposed.

Due to the complexity of comparing the estimates, we plot the results for six countries separately in Figure 4. This figure shows that indeed the cross-sectional estimates can show much more discontinuous jumps, though we note at the same time that there appears to be substantial noise in the estimates as they only incorporate information available at a single day. Nonetheless, while the random-walk estimates certainly exhibit less discontinuous change, they do still allow for very quick divergence in policy activity scores, with France and Russia moving from the bottom to the top of the index in the space of only a few weeks.

We note as well that the model is parameterized so that each country has its own variance parameter. This permits the rate of change to vary by country, reducing the concern that the model may be overly restricting change. These variance parameters are shown in Figure 5, sorted in order of increasing over-time variance. These estimates are themselves substantively interesting, as the United States, which was used as the reference category, has actually one of the lowest rates of over-time change, while some countries like New Zealand, Spain and San Marino witnessed the highest variance in policy activity scores. Because, at this time, the index only captures increasing numbers of policies, the variance parameters can be given the interpretation of which countries responded in the shortest period of time across a broad array of policy indicators.

Data Schema

Each policy records at the minimum, the following information: the policy type; the name of the country from which a policy originates (if the policy originates from a province or state, that information is also documented. Future versions of the dataset will also include information on whether a policy was initiated from a city or municipality or another level of government); the degree to which a policy must be complied with; the entity enforcing the policy; The date a policy is announced, implemented and ends. Note that sometimes policies are announced without a pre-determined end date. In those cases, this field is left blank.

For all policies, the database further documents information about the geographic target of the policy and the human or material target of a policy. Note however, for some policies, the geographic target may be the same as the policy initiator and in those cases can be considered monadic. Where applicable, we also document the directional flow of the policy, and the mechanism of travel.

All of the information mentioned above is also provided qualitatively via a textual policy description. Additional meta-data that is available for all policies include when the record entered into the database and a link for the information source for the policy. See the appendix for a list of currently available fields in the data, along with a list of external data variables such as country-level covariates that are added to daily releases, including COVID-19 tests and cases.

There is a unique record ID for each unique policy announcement per initiating country, which we code at the policy sub category type. That is, some policy types are further categorized into sub-categories. For example, 'Quarantine' can be further classified into one or more of the following sub categories: 'Self-Quarantine', 'Government Quarantine', 'Quarantine outside the home or government facility', 'Quarantine only applies to people of certain ages' and 'Other'. Of the 12601 such events in the dataset, we have identified 10798 unique events. That is, some events in the database are updates or changes to existing policies. We link such events over time using a unique ID, which we term the policy ID as opposed to the record ID. An event counts as an update if it deals with a change in either the:

1. The time duration (E.g. A country lengthens its quarantine to 28 days from 14 days.)
2. The quantitative 'amount' of the policy (E.g. A restriction of mass gatherings was previously set at 100 people and now it is set at 50 people)
3. A set of other policy dimensions:

a. Who the policy applies towards (E.g. The quarantine used to apply to people of all ages and now it only applies to the elderly)
b. The directionality of the policy (e.g. a travel ban previously banned inbound flights from country X and now bans both inbound and outbound flights to and from country X)

c. The travel mechanism (e.g. a travel ban was previously applied towards all types of travel but now only applies towards flights)
d. The compliance rules for the policy (E.g. The quarantine used to be voluntary but now its mandatory)
e. The enforcer of a policy (e.g. the policy was previously under the purview of the ministry of health but was changed to the ministry of the interior).

A policy counts as a new entry and not an update if it deals with a change in any other dimension, e.g. the qualitative policy type (e.g. a quarantine used to mandate a stay in a government facility but now quarantine at home is allowed) or the targeted country (e.g. quarantine upon arrival was mandated for people traveling from China but now these rules also apply to people traveling from Italy) etc. In those cases, or when a policy is completely cancelled or annulled, the policy is coded as having ended.

Data Collection Methodology

As researchers learn more about the various health, economic, and social effects of the COVID-19 pandemic, it is crucial that they have access to data that is reliable, valid, and timely (to the greatest extent possible). We have adopted a data collection methodology that we believe optimizes over all three of these constraints.

To collect the data, we recruited more than 260 research assistants (RAs) from colleges and universities around the world, representing 18 out of the 24 time zones. Large social scientific datasets typically rely on experts, coders, or crowd-sourcing to input data. The literature has shown that common coding tasks can be completed via crowd-sourcing[80,81], but that there are also limitations to the wisdom of crowds when specific contextual or subject knowledge is required[82,83]. To address these trade offs, we decided to train current RAs to code our entries, leveraging the benefits of wide-spread recruitment and a diverse pool of country-specific knowledge from across the globe. Data collection started on March 28, 2020 and has proceeded rapidly, reaching 12601 records as of the date of this article. Each RA is responsible for tracking government policy actions for at least one country. RAs were allocated depending on their background, language skills and expressed interest in certain countries[84]. Note depending on the level of policy coordination at the national level, certain countries were assigned multiple RAs, e.g. the United States, Germany, or France.

We have also partnered with the machine learning company Jataware to automate the collection of more than 200,000 news articles from around the world related to COVID-19. Jataware employs a natural language processing (NLP) classifier using Bidirectional Encoder Representations from Transformers (BERT) to detect whether a given article is indicative of a governmental policy intervention related to COVID-19. They then apply a secondary NLP classifier to categorize the type of policy intervention (e.g. “declaration of emergency”, “quarantine”, “travel restrictions”, etc.). Next, Jataware extracts the geospatial and temporal extent of the

policy intervention (e.g. "Washington DC" and "March 15, 2020") whenever possible. The resulting list of news sources is then provided to our RAs as an additional source for manual coding and further data validation.

In what follows, we describe in greater detail how RAs document the policies that they identify using our data collection software instrument, and our post data-collection validation procedure. Please refer to the appendix for more information on our procedure for on-boarding and training RAs and our system for communicating with and organizing RAs.

Data Collection Software Instrument

We designed a Qualtrics survey with survey questions about different aspects of a government policy action to streamline the CoronaNet data collection effort. With this tool, RAs can easily and efficiently document different policy actions by answering the relevant questions posed in the survey. An example of a similar use of Qualtrics in collecting data was undertaken by Büthe, Minhas and Lieu (unpublished manuscript). For example, instead of entering the country that initiated a policy action into a spreadsheet, RAs answer the following question in the survey: "From what country does this policy originate?" and choose from the available options given in the survey.

By using a survey instrument to collect data, we are able to systematize the collection of very fine-grained data while minimizing coding errors common to tools like shared spreadsheets. The value of this approach of course, depends on the comprehensiveness of the questions posed in the survey, especially in terms of the universe of policy actions that countries have implemented against COVID-19. For example, if the survey only allowed RAs to select 'quarantines' as a government policy, it would not capture any data on 'external border restrictions', which would seriously reduce the value of the resulting data.

As such, to ensure the comprehensiveness of the data, before designing the survey, we collected in depth, over-time data on policy actions taken by one country, Taiwan, since the beginning of the outbreak as well as cross-national data on travel bans implemented by most countries for a total of 245 events. The specific data source we cross referenced for this effort was the March 20, 2020 version of the New York Times article on travel restrictions across the globe[85]. We chose to focus on Taiwan on because of its relative success, as of March 28, 2020, in limiting the negative health consequences of COVID-19 within its borders[86]. As such, it seemed likely at the time that other countries would choose to emulate some of the policy measures that Taiwan had implemented, which increases the comprehensiveness of the questions we ask in our survey. Indeed at the time of writing, it would appear that some countries have indeed sought to emulate Taiwan's response[87].

Meanwhile, by also investigating variation in how different countries around the world have implemented travel restrictions, we have also helped ensure that our survey is able to comprehensively document variation in how an important and commonly used policy tool is applied, e.g., restrictions on different methods of travel (e.g. flights, cruises), restrictions across borders and within borders, restrictions targeted toward people of different statuses (e.g. citizens, travelers).

There are many additional benefits of using a survey instrument for data collection, especially in terms of ensuring the reliability and validity of the resulting data:

1. Preventing unforced measurement error. RAs are prevented from entering data into incorrect fields or unknowingly overwriting existing data—as would be possible with manual data entry into a spreadsheet—because RAs can only document one policy action at a time in a given iteration of a survey and do not have access to the full spreadsheet when they are entering in the data.

2. Standardizing responses. We are able to ensure that RAs can only choose among standardized responses to the survey questions, which increases the reliability of the data and also reduces the likelihood of measurement error. For example, when RAs choose different dates that we would like them to document (e.g., the date a policy was announced) they are forced to choose from a calendar embedded into the survey which systematizes the day, month and year format that the date is recorded in.

3. Minimizing measurement error. A survey instrument allows coding different conditional logics for when certain survey questions are posed. This technique obviates the occurrence of logical fallacies in our data. For example, we are able to avoid situations where an RA might accidentally code the United States as having closed all schools in another country.

4. Reduction of missing data. We are able to reduce the amount of missing data in the dataset by using the forced response option in Qualtrics. Where there is truly missing data, there is a text entry at the end of the survey where RAs can describe what difficulties they encountered in collecting information for a particular policy event.

5. Reliability of the responses. We increase the reliability of the documentation for each policy by embedding descriptions of different possible responses within the survey. For example, in the survey question where RAs are asked to identify the policy type (`type` variable, see appendix and/or Codebook), the survey question includes pop-up buttons which allow RAs to easily access descriptions and examples of each possible policy type. Such pop-up buttons were also made available for the survey questions which code for the people or materials a policy was targeted at (`target_who_what`) and whether the policy was inbound, outbound or both (`target_direction`). Embedding such information in the dataset both clarifies the distinction between different answer choices and increases the efficiency of

the policy documentation process (as RAs are not obliged to refer back and forth from the survey to the codebook).

6. Linking observations. The use of a survey instrument allows us to easily link policy events together over time should there be updates to existing policies. Once coded, each policy is given a unique Record ID, which RAs can easily look up, reference and link to if they need to update a particular policy.

Post-Data Collection Validation Checks

We further implement the following processes to validate the quality of the dataset:

1. Cleaning. Before validation, we use a team of RAs to check the raw data for logical inconsistencies and typographical errors. The data will also become part of a larger effort commissioned by the World Health Organization to collate different datasets on government actions taken in response to COVID-19. To that end, future versions of the data will be further cleaned with resources from this collaborative effort[88].

2. Multiple Coding for Validation. Others have shown that the random allocation of tasks and the validation of labels by more than one coder are among the best ways to improve the quality of a dataset[89,90]. We randomly sample 10% of the dataset using the source of the data (e.g. newspaper article, government press release) as our unit of randomization. We use the source as our unit of randomization because one source may detail many different policy types. We then provide this source to a fully independent RA and ask her to code for the government policy contained in the sampled source in a separate, but identical, survey instrument. If the source is in a language the RA cannot read, then a new source is drawn. The RA then codes all policies in the given source. This practice is repeated a third time by a third independent coder. Given the fact that each source in the sample is coded three times, we can assess the reliability of our measures and report the reliability score of each coder.

3. Evaluation and Reconciliation. We then check for discrepancies between the originally coded data and the second and third coding of the data through two primary methods. First, we use majority-voting to establish a consensus for policy labels. Using the majority label as an estimate of the "hidden true label" is a common method to address classification problems[91]. One issue with this approach is that it assumes that all coders are equally competent[92]. This criticism is generally levied at data creation with crowd-sourced laborers. We mitigate this problem by training our RAs in the data collection process and prioritizing RA country-knowledge and language skills, therefore ensuring a more equal baseline for RA quality. In addition, we provide RA identification codes that will allow users to evaluate coder

accuracy.

If the majority achieves consensus, then we consider the entry valid. If a discrepancy exists, a fourth RA or PI makes an assessment of the three entries to determine whether one, some, a combination of all three is most accurate. Reconciled policies are then entered into the dataset as a correction for full transparency. If an RA was found to have made a coding mistake, then we sample six of their previous entries: 3 entries which correspond to the type of mistake made (e.g. if the RA incorrectly codes an 'External Border Restriction' as a 'Quarantine', we sample 3 entries where the RA has coded a policy as being about a 'Quarantine') and randomly sample 3 more entries to ascertain whether the mistake was systematic or not. If systematic errors are found, entries coded by that individual will be entirely recoded by a new RA.

At the time of writing, we are in the process of completing our second coding of the validation sample. Thus far, 297 policies have been double coded—276 double-coded policies after excluding the category 'Other policies' from the analysis—out of the original 500 randomly-selected policies included in our validation set. This is equivalent to 10% of the first 5,000 policies in the dataset. We will be gradually expanding the validation set until we cover all observations.

We provide several measures in Table 3 to evaluate the inter-coder reliability at this early stage of validation. We find remarkable heterogeneity in the inter-coder reliability across types of policies. Our coders show a substantial level of agreement on policies such as 'Restrictions of Mass Gatherings' (n = 21, k = 0.95), 'Closure of Schools' (n = 14, k = 0.92), 'Restrictions of Non-Essential' (n = 19, k = 0.89), 'External Border Restrictions' (n = 52, k = 0.83), 'Curfew' (n = 6, k = 0.82), and Internal Border Restrictions (n = 11, k = 0.80). However, we also observe poor inter-rater agreement scores in other policies such as 'Social Distancing' (n = 14, k = 0.38), 'Public Awareness Measures' (n = 15, k = 0.49), and 'New Task Force, Bureau or Administrative Configuration' (n = 9, k = 0.52). Overall, these statistics indicate substantial levels of overall agreement between coders with inter-coder reliability scores between 0.71 and 0.74 (n = 276).

Our initial assessment of miscodings suggests that our coders have difficulties in distinguishing 'Social Distancing' policies from 'Quarantine/Lockdowns' and 'Public Awareness Campaigns'. We have taken some steps to ameliorate these issues. First, we have recently separated Quarantine from Lockdowns in our codebook and survey. Second, we have added branching logic into the Qualtrics survey that also clarifies the specific sub-policies that fall under 'Quarantine', 'Lockdowns', and 'Social Distancing'. Additionally, we have added several sub-types of 'Public Awareness Campaigns' in the survey that should provide conceptual clarity to this policy category. Further, the creation of a 'New Task Force, Bureau or Administrative Configuration' often goes together with a number of additional policies. In these cases, some of our coders seem to focus on these additional policies rather than on the creation of administrative units, which lowers the

reliability of the coding system for this policy. Finally, we have detected extremely poor reliability for the health-related policies of 'Health Monitoring' and 'Health Testing'. We have clarified the distinction across the three health-related policies—namely, 'Health Resources', 'Health Monitoring' and 'Health Testing'—in the codebook and we combine them under the category of 'Health Measures' in this on-going validation.

In the following weeks, we expect inter-coder reliability scores to improve as a consequence of three processes: (a) our coders are becoming more experience with the codebook and the coding task in general; (b) we are cleaning the dataset of obvious errors and logical inconsistencies; and, (c) we are working on clarifying and improving the codebook and the coding system. Notwithstanding these processes, we acknowledge that some ambiguities will unavoidably remain providing evidence for the utility of our planned "majority voting" validation strategy.

Conclusion

As policymakers, researchers and the broader public debate and compare how to succeed against the novel threats posed by COVID-19, they need real-time, traceable data of government policies in order to understand which of these policies are effective, and under what conditions. This requires specific knowledge of the variation of such policies and how widely implemented they are across countries and time. The goal of the dataset and policy action index presented here is to provide this information.

We have tried to match our data collection efforts to keep up with the exponential speed with which COVID-19 has already upended global public health and the international economy while also maintaining high levels of quality. However, we will inevitably be refining, revising and updating our data to reflect new knowledge and trends as the pandemic unfolds. The data that we present here represents an initial release; we will continue to validate and release data so long as governments continue to develop policies in response to COVID-19.

In future work, we intend to analyze the policy combinations that are best able to stymie the epidemic so as to contribute to the research community and provide urgently needed knowledge for policymakers and the wider global public.

Data Availability

For the most current, up to date version of the dataset, please visit http://coronanet-project.org or our Github page at https://github.com/saudiwin/corona_tscs.

Interested readers may also find our code for collecting the data and maintaining the database at the aforementioned Github page. For more information on the exact variables collected, please see our publicly available codebook here and visit our website.

Code Availability

Interested readers may also find our code for collecting the data and maintaining the database at our Github page: https://github.com/saudiwin/corona_tscs.

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Competing interests

The authors declare no competing interests.

Figure Legends

- Figure 1: Cumulative Incidence of Policy Event Types Over Time.
- Figure 2: Network Map of Bans on Inbound Flights by European Countries as of March 15, 2020.
- Figure 3: CoronaNet Time-Varying Index of National Policy Activity of Measures Opposing COVID-19 Pandemic. Estimates are derived from Stan, a Markov Chain Monte Carlo sampler. Median posterior estimates are shown. Plot A shows the full distribution of countries, while plot B shows each month separately with the top 3 countries for that month in terms of increases in activity scores from start of the month to the end of the month.
- Figure 4: Comparison of Cross-sectional Estimates of Policy Activity Scores to the Random-Walk Time Series Estimates.
- Figure 5: Country-level Variance (Over-time Change) Parameters from Policy Activity Index Estimation.
- Extended Data Figure 1: Convergence Diagnostics for Random-Walk HMC Fit. Plot A shows the distribution of split-Rhat values for all 40,000 parameters in the model, revealing most parameters are close to 1, which indicates strong convergence. The effective number of samples for parameters in plot B is also very high, often exceeding the total number of posterior draws. Plots C and D show strong mixing across chains for the intercept and over-time parameter for the United States for January 30th.

Tables

Table 1: Descriptive Information about the CoronaNet Government Response Dataset

Type	Total Number of Policies	Number of Countries	Average Number of Targeted Countries	% With Mandatory Enforcement
Health Resources	2342	148	67	54
Restriction of Non-Essential Businesses	1855	135	1	92
Closure of Schools	1583	169	1	90
Quarantine/Lockdown	1102	161	103	87
External Border Restrictions	1064	186	163	83
Other	819	132	26	60
Public Awareness Measures	609	137	1	23
Restrictions of Mass Gatherings	575	159	1	87
Social Distancing	518	127	1	71
Restriction of Non-Essential Government Services	373	99	1	80
New Task Force, Bureau or Administrative Configuration	345	104	1	100
Declaration of Emergency	330	114	1	100
Health Monitoring	318	110	83	71
Internal Border Restrictions	313	111	1	89
Health Testing	283	98	61	67
Curfew	172	91	1	95

Table 2: Discrimination of Item Parameters (Policies) in Policy Activity Index

Policy	5% Low Estimate	Median Estimate	95% High Estimate
Closure of Shopping Malls	1.5	1.7	2.0
Restriction Commercial Business	1.5	1.7	1.9
Closure of Retail Stores	1.3	1.5	1.8
Closure of Personal Grooming	1.2	1.4	1.6
Primary School Closure	1.1	1.3	1.4
High School Closure	1.1	1.2	1.4
Higher Ed Closure	1.0	1.1	1.2
Restriction Other Business	0.9	1.1	1.2
Sanitizer Policies	0.9	1.0	1.2
Closure of Restaurants	1.0	1.0	1.0
Quarantine At Home	1.0	1.0	1.0
Pre-school Closure	0.9	1.0	1.1
Mobilization of Volunteers	0.8	0.9	1.1
Other Health Staff	0.8	0.9	1.0
Restriction of Mass Gatherings	0.8	0.9	1.0
Test Production	0.7	0.8	1.0
Mobilization of Doctors	0.7	0.8	1.0
Mobilization of Nurses	0.7	0.8	1.0
Internal Border Restrictions	0.7	0.8	0.9
Limited Quarantine	0.6	0.8	1.0
Other Health Resources	0.7	0.8	0.9
Social Distancing	0.7	0.8	0.9
Other Health Facilities	0.6	0.8	0.9
Other Health Resources	0.6	0.8	0.9
Mobilization of Ventilators	0.6	0.8	0.9
Masks Policies	0.6	0.7	0.9

Restriction Government Services	0.6	0.7	0.8
Other Health Facilities	0.5	0.7	0.8
PPE Mobilization	0.5	0.6	0.8
External Border Closure	0.6	0.6	0.7
Supporting Hospitals	0.5	0.6	0.7
Other Quarantine	0.5	0.6	0.7
Quarantine in Hotel	0.5	0.6	0.7
Curfew	0.5	0.5	0.6
Biomedical Research	0.4	0.5	0.7
Declaration of Emergency	0.4	0.5	0.6
Temporary Medical Units	0.3	0.5	0.6
Quarantine/Lockdown	0.3	0.4	0.6
Building Quarantine Facilities	0.3	0.4	0.5
Public Testing Mobilization	0.3	0.4	0.5
Quarantine in Govt. Facility	0.3	0.4	0.5
Border Health Certificates	0.3	0.4	0.5
Monitoring Population Health	0.3	0.4	0.4
Public Awareness Measures	0.3	0.3	0.4
Suspend Visa Issuance	0.3	0.3	0.4
Mobilization of Testing	0.3	0.3	0.4
Task Force	0.2	0.3	0.4
Other Border Restriction	0.0	0.2	0.5
Border Health Screenings	0.2	0.2	0.3
Travel History Required	0.1	0.1	0.2

Table 3: Inter-Coder Reliability Measures for On-Going Validation

Policy	(n)	Percentage Agreement	Cohen's Kappa (k)
Restrictions of Mass Gatherings	21	95.2	0.95
Closure of Schools	14	92.9	0.92
Restriction of Non-Essential Businesses	19	89.5	0.89
External Border Restrictions	52	84.6	0.83
Curfew	6	83.4	0.82
Internal Border Restrictions	11	81.8	0.80
Declaration of National Emergency	19	73.7	0.71
Quarantine/Lockdown	28	67.9	0.65
Health Measures	52	65.4	0.63
Restriction of Non-Essential Government Services	16	62.5	0.59
New Task Force, Bureau or Administrative Configuration	9	55.6	0.52
Public Awareness Measures	15	53.3	0.49
Social Distancing	14	42.9	0.38

Summary Inter-coder Reliability Scores	
Percentage Agreement	0.74
Cohen's Kappa	0.72
Krippendorff's alpha	0.71
Scott's PI – Estimate (SE)	0.71 (0.03)

Appendix A: Description of Dataset Fields

The format of the data is in country-day-`record_id` format. Some `record_id` values have letters appended to indicate that the general policy category `type` also has a value for `type_sub_cat`, which contains more detail about the policy, such as whether health resources refers to masks, ventilators, or hospitals. Some entries are marked as `new_entry` in the `entry_type` field for when a policy of that type was first implemented in the country. Later updates to those policies are marked as updates in `entry_type`. To see how policies are connected, look at the `policy_id` field for all policies from the first entry through updates for a given country/province/city. If an entry was corrected after initial data collection, it will read corrected in the `correct_type` field (the original incorrect data has already been replaced with the corrected data).

1. **`coronanet_release.csv`** This file contains variables from the CoronaNet government response project, representing national and sub-national policy event data from more than 190 countries since December 31st, 2019. The data include source links, descriptions, targets (i.e. other countries), the type and level

of enforcement, and a comprehensive set of policy types. For more detail on this data, you can see our codebook here.

2. `coronanet_release_allvars.csv` This file contains the government response information from `coronanet_release.csv` along with the following datasets:
    a. Tests from the CoronaNet testing database (See http://coronanet-project.org for more info);
    b. Cases/deaths/recovered from the JHU data repository;
    c. Country-level covariates including GDP, V-DEM democracy scores, human rights indices, power-sharing indices, and press freedom indices from the Niehaus World Economics and Politics Dataverse

`coronanet_release.csv` Field Dictionary

1. `record_id` Unique identifier for each unique policy record
2. `policy_id` Identifier linking new policies with subsequent updates to policies
3. `recorded_date` When the record was entered into our data
4. `date_updated` When we can confirm the country - policy type was last checked/updated (we can only confirm policy type for a given country is up to date as of this date)
5. `date_announced` When the policy is announced
6. `date_start` When the policy goes into effect
7. `date_end` When the policy ends (if it has an explicit end date)
8. `entry_type` Whether the record is new, meaning no restriction had been in place before, or an update (restriction was in place but changed).
9. `correct_type` Whether a record as been corrected or not.
10. `event_description` A short description of the policy change
11. `domestic_policy` Indicates where policy targets an area within the initiating country (i.e. is domestic in nature)
12. `type` The category of the policy
13. `type_sub_cat` The sub-category of the policy (if one exists)
14. `type_text` Any additional information about the policy type (such as the number of ventilators/days of quarantine/etc.)
15. `index_high_est` The high (95% posterior density) estimate of the country policy activity score (0-100)
16. `index_med_est` The median (most likely) estimate of the country policy activity score (0-100)
17. `index_low_est` The low (95% posterior density) estimate of the country policy activity score (0-100)
18. `index_country_rank` The relative rank by each day for each country on the policy activity score

19. `country` The country initiating the policy
20. `init_country_level` Whether the policy came from the national level or a sub-national unit
21. `province` Name of sub-national unit
22. `target_country` Which foreign country a policy is targeted at (i.e. travel policies)
23. `target_geog_level` Whether the target of the policy is a country as a whole or a sub-national unit of that country
24. `target_region` The name of a regional grouping (like ASEAN) that is a target of the policy (if any)
25. `target_province` The name of a province targeted by the policy (if any)
26. `target_city` The name of a city targeted by the policy (if any)
27. `target_other` Any geographical entity that does not fit into the targeted categories mentioned above
28. `target_who_what` Who the policy is targeted at
29. `target_direction` Whether a travel-related policy affects people coming in (Inbound) or leaving (Outbound)
30. `travel_mechanism` If a travel policy, what kind of transportation it affects
31. `compliance` Whether the policy is voluntary or mandatory
32. `enforcer` What unit in the country is responsible for enforcement
33. `link` A link to at least one source for the policy
34. `ISO_A3` 3-digit ISO country codes
35. `ISO_A2` 2-digit ISO country codes

`coronanet_release_allvars.csv` Field Dictionary

1. All of the fields listed above, plus
2. `tests_daily_or_total` Whether a country reports the daily count of tests a cumulative total
3. `tests_raw` The number of reported tests collected from host country websites or media reports
4. `deaths` The number of COVID-19 deaths, aggregated to the country-day level (JHU CSSE data)
5. `confirmed_cases` The number of confirmed cases of COVID-19, aggregated to the country-day level (JHU CSSE data)
6. `recovered` The number of recoveries from COVID-19, aggregated to the country-day level (JHU CSSE data)
7. `ccode` The Correlates of War country code
8. `ifs` IMF IFS country code

9. `Rank_FP` (most recent year available from Niehaus dataset) Reporters without Borders Press Freedom Annual Ranking
10. `Score_FP` (most recent year available from Niehaus dataset) Reporters with Borders Press Freedom Score
11. `state_IDC` (most recent year available from Niehaus dataset) State/Provincial Governments Locally Elected
12. `muni_IDC` (most recent year available from Niehaus dataset) Municipal Governments Locally Elected
13. `dispersive_IDC` (most recent year available from Niehaus dataset) Dispersive Powersharing
14. `constraining_IDC` (most recent year available from Niehaus dataset) Constraining Powersharing
15. `inclusive_IDC` (most recent year available from Niehaus dataset) Inclusive powersharing
16. `sfi_SFI` (most recent year available from Niehaus dataset) State fragility index
17. `ti_cpi_TI` (most recent year available from Niehaus dataset) Corruption perceptions index
18. `pop_WDI_PW` (most recent year available from Niehaus dataset) World Bank population
19. `gdp_WDI_PW` (most recent year available from Niehaus dataset) World Bank GDP (total)
20. `gdppc_WDI_PW` (most recent year available from Niehaus dataset) World Bank GDP per capita
21. `growth_WDI_PW` (most recent year available from Niehaus dataset) World Bank GDP growth percent
22. `lnpop_WDI_PW` (most recent year available from Niehaus dataset) Log of World Bank population
23. `lngdp_WDI_PW` (most recent year available from Niehaus dataset) Log of World Bank GDP
24. `lngdppc_WDI_PW` (most recent year available from Niehaus dataset) Log of World Bank GDP per capita
25. `disap_FA` (most recent year available from Niehaus dataset) 3 category, ordered variable for disappearances index
26. `polpris_FA` (most recent year available from Niehaus dataset) 3 category, ordered variable for political imprisonment index
27. `latentmean_FA` (most recent year available from Niehaus dataset) the posterior mean of the latent variable index for human rights protection)
28. `transparencyindex_HR` (most recent year available from Niehaus dataset) Transparency Index
29. `EmigrantStock_EMS` (most recent year available from Niehaus dataset) Total emigrant stock from
30. `v2x_polyarchy_VDEM` (most recent year available from Niehaus dataset) Electoral democracy index

31. `news_WB` (most recent year available from Niehaus dataset) Daily newspapers (per 1,000 people)

Appendix B: Research Assistant Training and Management

0.1 RA Training

In order to register as a research assistant, RAs watch a mandatory 2 hour video training of the survey instrument which explains how to use the survey, update, and correct entries. RAs are also provided with written guidelines on how to collect data and a comprehensive codebook. To briefly describe it here, the written guidelines provide a definition of what counts as a new or updated policy (see the Data Schema section for more details) and provides a checklist for RAs to follow in order to identify and document different policies. In the checklist, RAs are instructed to find policies by checking the sources in the order given in the guidelines to identify policies, to document the relevant information into the survey and to save and upload a document of the source they found for each policy into the Qualtrics survey. Meanwhile, the codebook provides descriptions and examples of the different possible response options in the survey. Using a training video and the written codebook also has the added benefit of helping us efficiently disseminate the information RAs need to use the survey experiment consistently. Before getting allocated to a country based on language skills and interests, RAs participate in an online test where they are asked a randomized set of questions about how to code different policies. To pass the test, RAs need to get at least 70% of the entries correct.

Overall, in order to participate as an RA in this project, RAs must fill out a consent form[1] in which:

- They identify themselves.
- They certify that they have viewed the training video and passed the test.
- They certify they have joined the CoronaNet Slack Channel (see section below for more information).
- They certify that they understand that RA responsibilities entail
  - gathering historical data on COVID-19 government policy actions for their country, and;
  - providing daily updates for new government policy actions.
- They certify that they understand they can access the data collection guidelines and codebook or pose their questions on the Slack Channel.
- They certify that they are expected to upload .pdfs of the sources they access to the survey instrument.

Once the RA submits the form, they are sent a personalized link to access the survey. With the customized link, we are also able to keep track of which RA coded what entries and when the last policy entry was.

[1] See here for the link to the form.

0.2 Real-Time Communication and Feedback

Once an RA joins the project, they can pose their questions on a CoronaNet Slack channel, which they must join in order to participate in the project. The channel allows any RA to pose a question or issue they may have in using the survey instrument to any of the PIs and allows all other RAs to learn from the exchange at the same time. As such, RAs are able to receive feedback and learn from each other's questions in a timely and centralized manner. Since the data collection effort was launched on March 28, 2020 both RAs and PIs have actively used Slack to communicate with one another. On the Slack channel devoted to asking questions about the Qualtrics data survey in particular, there were more 2600 messages posted by 154 project members at the time of writing.

Appendix C: List of Contributors to Dataset

Table 4: Contributing Researchers and their Responsible Countries

Name	Affiliation	Country	Vita
Abdelaziz Ibn Abdelouahab	Mohamed V University	Senegal	Moroccan Medical Doctor.
Abhyudaya Tyagi	NYU Abu Dhabi	Romania	I am a second-year student at NYU Abu Dhabi, majoring in Political Science and Economics.
Adriana Poppe	University of Cologne	Colombia, Spain	Master Student of Sociology and Social Research at the University of Cologne

Alette Mengerink	Teacher (German and children's righs) to people with a migration background	Bosnia and Herzegovina	Teacher (German and children's rights).
Alexander Pachanov	Charite Universitätsmedizin, Berlin School of Public Health	Kazakhstan	Master's student at Berlin School of Public Health
Amadeus Albrecht		Georgia, Georgia	
Amanda Panella	Hertie School of Governance, Berlin, Germany	Cyprus	Amanda Panella is a MIA student specialising in international security studies at the Hertie School of Governance, where she graduates in June 2020.
Ana Acero	Sciences Po Paris	Equatorial Guinea	

Anabella McElroy		United States, United States	Anabella is studying political science at Sciences Po Paris and the University of British Columbia.
Anastasia Steinbrunner	Willy Brandt School of Public Policy/ University of Erfurt	Samoa	
Andreas Duncan	University of Applied Forest Scienes Rottenburg	Vanuatu	Andy is an undergraduate student in Sustainable Regional Management.
Andres Lopez Schrader	NYU Abu Dhabi	Morocco	I am a marine genetics researcher with an interest in education policy and language learning.
Angad Johar	NYU Abu Dhabi	India	Sophomore at New York University Abu Dhabi
Angela Herz	Heidelberg University	Spain: sub-national	Political Science Student from Germany

Angeline Kanyangi	Kenya School of Law	Eritrea	
Anke Horn	Pharmacist	Switzerland: sub-national	Pharmacist
Anna Sophia Körner	SciencesPo Paris/FU Berlin	Mexico	I am currently doing my dual degree at Sciences Po Paris and FU Berlin with a focus on European Affairs and Public Policy.
Anoushka Thakre	Dual BA Columbia University and Sciences Po Paris	Kuwait	A student currently enrolled in the Dual BA program between Columbia University and Sciences Po Paris interested in economics, healthcare and public policy.
Antonia Pérez	Dual BA Program Sciences Po Paris/ Columbia University	Venezuela	

Ariana Barrenechea	Willy Brandt School of Public Policy	Spain	Master of Public Policy candidate at the Willy Brandt School
Arianna Schouten	Research Assistant	Canada	I am Canadian with an interdisciplinary Bachelor in Politics, Psychology, Law & Economics from the University of Amsterdam, and I have a specific interest in law, health policy and pharmaceutical regulation.
Avery Edelman	Journalist	Lebanon	Tufts University graduate with a BA in Arabic and International Relations.
Aysina Maria	Technische Universität München	Greece	Grew up in Russia. I am a student at the Technical University of Munich and currently Erasmus Student at University of Pavia, Italy.

Babrik Kushwaha	University of Lille	Nepal	Babrik Kushwaha, BA, Graduate student of European and International Studies, Management of European Affairs Program at University of Lille / Trainee at the Institute for the Danube Region and Central (IDM).
Barbora Bromová	University of Amsterdam	Czechia, Slovakia	
Beatrice Di Giulio	Technical University of Munich	San Marino	
Beatrice von Braunschweig	Leuphana University Lüneburg / Université Paris-Est Créteil	Mali	BA student of political science at Leuphana University Lüneburg, Germany, and Paris XII, France

Borja Arrue-Astrain	Project and Policy Officer at AGE Platform Europe	Equatorinal Guinea	Graduate in Political Science from the University of the Basque Country (Spain) and Masters in European Affairs from Sciences Po Paris, specialised in social policy advocacy.
Brahim Ouerghi		Lebanon	I am a 22 year old student at the Technical University of Munich where I study technology and management
Brian Chesney Quartey	NYU Abu Dhabi	Ghana, Togo	
Bruno Ciccarini	Communicatio Manager	Italy: sub-national, Italy: sub-national	
Calvin Kaleel	Yale University	Oman	A sophomore at Yale University, Calvin majors in Modern Middle Eastern Studies and is extremely excited about this project!

Cara Kim	Technical University of Munich	Myanmar	Medical student from Germany
Caress Schenk	Nazarbayev University	Russia	Associate Professor of Political Science
Carl Philip Dybwad	Sciences Po Paris	Sweden	Circularity Advocate with a passion for the future of electioneering.
Carlos Velez	Yale University	Liberia	Yale Undergraduate, Class of 2020, B.A. Political Science
Carly Kimmett	University of Western Ontario	Republic of the Congo	Canadian. UWO Kin Grad and current BScN Nursing Student
Charlotte Vorbauer	TUM Munich	Namibia	student of political science at TUM
Cheng-Hao SHEN	Sciences Po Paris	Belize, Palau, Philippines, Saint Lucia	A political science student interested in comparative government, British politics, and cross-strait relations from the Republic of China

Chloë Fraser	Dual BA Sciences Po Paris/University of British Columbia	Guatemala	Having grown up near Montreal and close to Brussels, I am now completing my second year in a Dual BA in social sciences between Sciences Po and UBC, and with an interest in human rights work and sustainable development.
Cornelia Marie Dybwad	ESPOL Lille	Armenia, Estonia	Norwegian International Security Policy student, interested in hybrid security threats.
Csilla Horvath	Customer Support Specialist	Bolivia	
Dan Downes	TUM Munich	Brazil	Structural Engineer. Currently studying a Masters in Political Science.
Dan Wu	Sciences Po Paris	Finland, Finland	Native Chinese studying Political Science in France and living in Austria

Daniel Boey	Hertie School & Columbia University	Thailand	Columbia-Hertie MPA-MPP Dual Degree Candidate working in the intersection of environmental engineering and public policy.
Daniel Martínek	Institute for the Danube Region and Central Europe (IDM) Vienna	Czechia, Slovakia	Research Fellow at the Institute for the Danube Region and Central Europe (IDM), Vienna, Austria
Dariga Abilova	Georgia State U	Barbados, Lesotho	PhD Student
Davit Jintcharadzé	NYU Abu Dhabi	Italy: sub-national	NYU Abu Dhabi Psychology and Philosophy student.
Deborah Agboola	New York University Abu Dhabi	United Kingdom	I am a British-Nigerian undergraduate student at New York University Abu Dhabi
DICK PAUL OUKO	SciencesPo Paris	Burundi, Rwanda	A student at SciencesPo Paris University who considers himself to be a global citizen.

Diego Calvo	Florencio del Castillo University	Nicaragua	Law student
Dominik Juling	Technical University of Munich	Antigua and Barbuda	Currently studying political science at the Technical University Munich and working as a free journalist.
Donia Kamel	Paris School of Economics	Comoros, Djibouti	I am currently in my first year of my Masters in Analysis and Policy in Economics at the Paris School of Economics
Dorian Quelle	Zeppelin University	Nicaragua, Panama	
Dotrus Wilstic	IOM- Johannesburg ZA	Tanzania	A doctor of philosophy (Ph. D)in Education
Dylan Ollivier	Columbia College of Columbia University in the City of New York	Gabon	

Eduardo Landaeta	Old Dominion University	Costa Rica	Doctoral Student in the Graduate Program in International Studies at Old Dominion University
Elfriede Derrer-Merk	Universiity of Liverpool	Switzerland: sub-national, Switzerland: sub-national	I am a PhD student at the University of Liverpool. I am interested in psychological experience of covid-19 of older people. Risk and uncertainty and how it is communicated in this exceptional time might influence the individuals resilience.
Elisa Seith		Luxembourg, Luxembourg	Master Graduate from Heidelberg University, Political Science
Elizabeth (Lizzie) Jones	LSE/Sciences Po Paris/NYU	Cameroon	

Ella Pettersen	Kenyon College	Norway	I am a first year student at Kenyon College, and an intended Political Science major.
Elliot Weir	Otago University	Testing Data	I am an undergraduate student in my second year at Otago University in New Zealand, with a broad interest in statistical research.
Emma Hutchinson	Sciences Po Paris	Australia, Japan	Sciences Po Paris Masters in International Security Student
Esther Ollivier	SciencesPo Paris	Mali	Esther Ollivier is a French-American student studying in the Columbia-SciencesPo Dual BA program, where she is double majoring in Economics and Music, with a Finance minor.
Eugene Kwizera	African Leadership University - Kigali	Central African Republic	

Fabienne Lind	Univesity of Vienna	Austria	I am a PhD student and work as research associate at the Computational Communication Science Lab at the University of Vienna.
Fabio Kadner	University Bonn	Palastine	I'm currently writing my master thesis in the programme 'Society, Globalization, Development' at the university of Bonn, Germany. My main research topics include migration, religion and international relations.

Fadhilah Fitri Primandari	Universitas Indonesia	Indonesia	Final year political science student at Universitas Indonesia, with a concentration in comparative politics. Her views on Indonesian politics have previously appeared on several notable platforms, such as East Asia Forum, New Mandala, and The Diplomat.
Farah Sadek	NYU Abu Dhabi	Qatar	I am an undergraduate student pursuing a degree in Social Research and Public Policy with a minor in Economics and Peace Studies at New York University Abu Dhabi.

Felix Willuweit	London School of Economics and Political Science / Sciences Po Paris	Ethiopia	I am a student from Germany in my 3rd year of a BSc in International Relations at the London School of Economics and Sciences Po Paris with interest in Global Governance and International Development.
Fernanda Werneck	Leipzig University	Sao Tome and Principe	I'm a researcher on International Relations and Environmental Studies and I'm currently studying the last semester of MA. Global Studies
Francis Yoon	FU Berlin	Malaysia, Malaysia, South Korea, South Korea	
Frank Yuxuan Sun	Technische Universität München	Malta	Active social commentator, interested in political science.

Frederic Denker	I followed the outbreak of the Corona-Crisis in Israel, where I completed an internship and also had to deal with some Corona regulations. I could also work on any spanish-speaking country.	Niger, Nigeria	Undergraduate student interested in innovation and development economics.
Gloria Mutheu	The University of Nairobi, Kenya	Uganda	LLB 1st year student who has a great passion for research and helping people access information.
Gulmira Imanova	Carleton University	Tajikistan	

Ha-Neul Yu	NYU Abu Dhabi	Testing Data	I am an undergraduate student at New York University Abu Dhabi. I am majoring in biology with a minor in psychology and I have an interest in statistical research.
Hafsa Ahmed	NYU Abu Dhabi	Singapore	A senior undergraduate social research, public policy, and public health student from New York university in Abu Dhabi, driven to tackle global policy challenges in the development field.
Hajar Chams Eddine	University of Mohammed 5, Rabat	Mozambique	
Helene Paul	TU Darmstadt / Policylead	Germany, Netherlands	Graduate student in governance and public policy, working on political monitoring as a working student for Policylead.

Helwan Felappi	Sciences Po Paris	Moldova, Moldova, Montenegro, Montenegro	I'm a second year Economics and Political Science student at Sciences Po Paris, on exchange at the University of Pennsylvania. I am passionate about studying, describing and better understanding our societies and the challenges they face.
Heman Asibuo	Cornell University	Sierra Leone	
Henry Okwatch	Advocate of the High Court of Kenya	South Africa, South Africa	
Ilona Koch	German Development Cooperation	Niger	Passionate Political Scientist who loves to analyse the world

Imogen Rickert	Policy Advisor in non-profit sector	Trinidad and Tobago, United States: sub-national	Social researcher with M.A. in Sociology from Freie Universität Berlin, B.A. from the University of Sydney and experience in providing policy analysis in the non-profit sector.
Ines Böhret	University of Manchester, University of Passau	Kiribati	Ines has a B.A. in International Emergency and Disaster Relief and currently writes her theses for a M.Sc. in Global Health and a M.A. in Caritas Science and Value-based Management.
Ingeborg Sæle Helland	University of Copenhagen	Argentina	Master student in Security Risk Management at the University of Copenhagen
Isabela Russo	TU München HfP	Mozambique	Born and raised in Brazil - currently studying Political Science in Germany.

Isabelle Smith	Colorado College, SciencesPo Paris	Madagascar	Hello, my name is Isabelle Smith and I am a third year bachelors student in Political Science at Colorado College and have recently completed a year abroad with SciencesPo Paris.
Ismail Jamai Ait Hmitti	Yale University	Ivory Coast	Modern Middle Eastern Studies and History major at Yale University.
Jack Kubinec	Cornell University	Hungary	Jack is a freshman at Cornell University studying Government.
Jakob Berg	Universität Regensburg	Bulgaria	I am a third-year student in the field of political science at the University of Regensburg
Jane Murutu	Project Management Consultant	Uganda	I am a project Management Specialist Consultant
Janice Klaiber	ESB Business School / Rollins College	Tonga, Tuvalu	

Janne Luise Piper	Zeppelin University	Israel	I am a student of Sociology, Politics and Economics at Zeppelin University in Germany where I work as a student assistant for the Chair of International Relations.
Jasmina Sowa		Solomon Islands, Solomon Islands	I am Psychology student from Germany in the fourth year of my bachelors degree.
Jennifer Noguera Barrera	Universidad del Rosario	Cabo Verde	

Jessica Johansson		United Kingdom, United Kingdom	M.Sc. graduate in Politics, Economics and Philosophy from University of Hamburg, with research experience from political science research at the German Institute of Global and Area Studies (Hamburg) as well as economics research at CIESAS (Guadalajara, Mexico).
Jiho Yoo		South Korea, South Korea	Undergraduate student in Sciences Po Paris Campus de Reims, studying Political Humanities
Joana Lencastre Morais	Technische Universität München & Hochschule für Philosophie München	Angola	Politics & Technology student at the TU München.

Joel Gräff	Technical Product Designer	South Africa	German and South African Technical Product Design trainee in the final year
Josef Montag	Charles University	Testing Data	I am an Assistant Professor at the Department of Economics, Faculty of Law, Charles University in Prague, the Czech Republic. I do empirical research in fields related to law and economics.
Jule Scholten	Ruhr-Universität Bochum	Jamaica	Student of Political Science and student assistant, working on a project of interest groups influence on Government decision in Germany
Julia Dröge	University of Natural Resources and Life Sciences	Iceland, Iceland	

Julia Nassl	University of Munich	Bolivia, Peru	I am a 4th year law student at Ludwig-Maximilians-Universität, Munich with a specialization in Public International Law.
Julia Smakman	University of Amsterdam (currently interning with Amnesty International)	Poland	Dutch, BSc Graduate, Law major, Main interest in international law
Julia Wießmann	University of Heidelberg	Latvia	
Kadriye Nisa Başkan	Yıldız Technical University	Turkey	Economics Graduate from Yıldız Technical University/ Istanbul
Karina Lisboa Båsund	NYU Abu Dhabi	Norway, Senegal	Research Assistant at NYU Abu Dhabi's Department of Social Science

Karlotta Schultz	University of Edinburgh	Bolivia	I am a recent graduate of the University of Edinburgh in Global Environment, Politics and Society and just complete an internship at the Gesellschaft für Internationale Zusammenarbeit (GIZ).
Katharina Klaunig	NYU Abu Dhabi	Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turk-menistan, Uzbekistan	Katharina is a third year B.A. student studying Social Research and Public Policy at New York University Abu Dhabi.

Kayla Schwoerer	Rutgers University-Newark	United States: sub-national	PhD student at Rutgers University-Newark in the School of Public Affairs studying government transparency with a focus on ICT-enabled interactions between government and its stakeholders.
Khoa Tran	NYU Abu Dhabi	Vietnam	Khoa Tran is a legal studies student at New York University Abu Dhabi and a youth social entrepreneur.
Kojo Vandyck	NYU Abu Dhabi	Guinea	A Ghanaian STEM enthusiast keen on battling COVID-19!
Konstanze Schönfeld	Universität Leipzig / Fudan University	Japan	Global Studies student at Uni Leipzig / Fudan University, focusing on visa policy; BA in Japanese Studies from Uni Heidelberg

Laura Cadena	Rosario University of Colombia	Andorra	I have a degree in International Relations of University of Rosario of Colombia
Laura Williamson	Colorado Christian University	United States: sub-national	
Laureen Hannig	Universität Erfurt	Chad	Student of International Relations and Communication Science
Laurent Frick	Social Worker	Eswatini	Graduated Sociology Student and Social Worker
Lea Clara Frömchen-Zwick	Christian-Albrechts Universität zu Kiel	Grenada, Saint Kitts and Nevis, Saint Vincent and the Grenadines	
Lea Wiedmann	University of Groningen	Belize	International Relations graduate
Lena Kolb	Technische Universität München (TUM)	Cabo Verde, Malawi	I study in 4th Semester of political science at TUM
Leon Kohrt	Zeppelin University	Switzerland: sub-national	Senior Student at Zeppelin University

Leonie Imberger	TU Dresden	Australia	3rd year Med Student from Germany; interested in Global Health and Public Health Policy
Li Cheng	NYU Abu Dhabi	Testing Data	I am an undergraduate student at NYU Abu Dhabi majoring in Interactive Media.
Lilli Tabea Albrecht	Institute of Human Rights and Peace Studies, Mahidol University, Thailand	Cambodia	Grad student in Human Rights at the IHRP at Mahidol University, focusing on democracy and global health governance.

Lily Zandstra	Project Support Officer	Syria	Recent MA graduate from Leiden University in International Relations: European Union Studies. A dynamic thinker with cross-cultural and international experience and a keen interest in project development. Experience working on research projects to bridge the gap between policy and practice.
Lincoln Dow	New York University	Uruguay	Lincoln Dow is an undergraduate student in political science at New York University from Houston, Texas.

Linlin Chen	TU München HfP	Sri Lanka	Final year M.Sc student in the Politics and Technology program at Technical University of Munich
Luise Modrakowski	Copenhagen University	Norway	Master student of security risk management at Copenhagen University, originally from Dresden (DE), focusing on risk governance, political risk analysis, and sustainability.
Lya Cuéllar	FU Berlin	Costa Rica, El Salvador	
Magdalena Strebling	Management	Marshall Islands	
Maheen Zahra	Lecturer, Social Policy specialist	Afghanistan, Iran	Lecturer at the Department of Development Studies, National University of Science and Technology (NUST), Pakistan

Maira Sheikh		Liberia	Born and raised in Pakistan, I'm a Social Research and Public Policy Major at New York University Abu Dhabi.
Maisa Nasirova	Technical University of Munich (TUM)	Pakistan, Tanzania	Political Science Student at Technical University of Munich
Maite Spel	University of Amsterdam	Suriname	I'm a graduate in Interdisciplinary Social Sciences from the University of Amsterdam
Malina Winking	University of Amsterdam	Botswana	
Mamle Akosua Kwao	New York University Abu Dhabi	Mauritania	
Mara Förster	Sciences Po Paris	Trinidad and Tobago	I am currently a first-year student at the Reims Campus of Sciences Po Paris, particularly focusing on North America and Europe.

Marianne Sievers	Humboldt University, Berlin, Germany	Yemen	I'm a freelance researcher, holding a BA in Sociology and Islamic Science, currently a MA student in Berlin.
Marius Deierl	LMU Munich	Ecuador	Student of cultural anthropology, 22, Germany
Marlies Hofmann	University of Amsterdam	United States	Currently completing my BSc in PPLE (Politics, Psychology, Law and Economics) at the University of Amsterdam and looking forward to subsequently continuing my studies of law at the University of Oxford.
Mary Nussbaumer	Colorado College	United States: sub-national, United States: sub-national	I am Mary Nussbaumer, a sophomore at Colorado College

Mascha Hotopp		United States, United States	I am a Master 1 journalism and human rights and humanitarian action student at the Sciences Po Paris.
Mats Jensen	Sciences Po Paris	Iceland	
Matthew Cottrell	University of Cologne	United States	
Matthew Hargreaves	University of Amsterdam	Switzerland	A graduate in psychology, politics, law and economics from the university of Amsterdam.
Maximilian Dirks	University of Bochum, Germany	New Zealand	I am studying Economic Policy Consulting M.Sc. at the University of Bochum.
Maya Rollberg	University of Freiburg	Germany: sub-national	I am a Liberal Arts and Sciences student, currently writing my Bachelor's thesis in Germany.

Mehdi Bhouri	Technische Universität München	Algeria	I am a Business/Political science student at The Technical University of Munich
Michaela Balluff	Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH	Eritrea	
Milan Chen	HfP (Munich)	Taiwan	Doctoral researcher at the Technical University of Munich
Milos Moskovljevic	City University of Hong Kong	Maldives, Serbia	PhD student at City University of Hong Kong

Miranda Tessore Janowski		Argentina, Argentina	I am a graduate of Politics, Psychology, Law and Economics (PPLE) with a specialisation in International Law from the University of Amsterdam, where I graduated with an Upper 2:1. I currently live in London and will start a Master's in International Peace and Security at King's College London in September 2020.
Miriam Witte	University of Regensburg, Germany	Ireland	Psychology student BSc at the University of Regensburg, scholarship holder of the Friedrich-Ebert-Foundation, lived and worked in L'Arche Ireland for 1 1/2 years.

Mirjam Muller	European Parliament	European Union, Latvia, Lithuania	BSc law graduate working for the Greens in the European Parliament and hoping to contribute to some good on this earth!
Mona Horn		Costa Rica, Costa Rica	I am a student of geosciences at the University of Freiburg.
Muhammad Masood	City University of Hong Kong	Bahrain	Muhammad Masood is a Ph.D. student at the Department of Media and Communication, City University of Hong Kong, since September 2018. Muhammad's dissertation focuses on the impact of social media use on the socio-political landscape of Pakistani society.
Muhannad Alramlawi	NYU Abu Dhabi	Jordan	I am senior student studying Economics at New York University Abu Dhabi (NYUAD).

Museera Moghis	NYU Abu Dhabi	United Arab Emirates	Museera is an undergraduate student at New York University Abu Dhabi, double majoring in Political Science and Social Research & Public Policy.
Mustafa Nasery	Researcher and Consultant	Afghanistan	Co-founder and Board-Member of Afghanistan Center for Policy Studies (ACPS)
Nadja Grossenbacher	Utrecht University / University of Vienna	Gambia	Nadja Grossenbacher holds a MA degree in Conflict Studies & Human Rights as well as a BA degree in Cultural & Social Anthropology and set her regional focus on Sub-Saharan Africa.

Natalia Filkina-Spreizer	HfP (Munich)	Belarus, Russia	M.Sc. student of Politics and Technology at Technical University of Munich
Nicolas Göller	Zeppelin University	Germany	Undergraduate student of Sociology, Politics & Economics with an interest in interdisciplinary research and Data Science.
Nicole Oubre	Willy Brandt School of Public Policy	Honduras	I am a Master of Public Policy student at the Willy Brandt School of Public Policy in Erfurt, Germany.
Nida Hasan	Dual BA Sciences Po Paris/Columbia Universiity	Saudi Arabia	I am an undergraduate student in the Dual BA program with Sciences Po Paris and Columbia University, passionate about working in the fields of Medicine and Public Health.

Niklas Illenseer	SciencesPo Paris/FU Berlin	Austria, France, Liechten-stein	Dual Degree Master's student in Environmental Policy at Sciences Po Paris and Political Science & International Relations at FU Berlin.
Nikolina Klatt	Fernuniversität Hagen	Croatia, United States	Political Science student based in New York City
Nivedita Darshini Bholah	University of Tübingen	Mauritius, Mauritius	Graduate Student/Avid Researcher
Noelle Kubinec	English teacher	Albania, North Macedonia	I am a Language and Orientation Coordinator for a non-profit and have been living in the Balkan region of Europe for 8.5 years.
Noor Altunaiji	NYU Abu Dhabi	Libya	I'm a student studying at NYU Abu Dhabi.
Océane Mauffrey	Colorado College	Guinea-Bissau	
Oketch Juliet Anyango	University of Nairobi	Burundi, Sierra Leone	

Oliver Pollex	TUM Munich	Brunei	B.Sc. student politics and technology TU Munich
Oliver Weber	University of Regensburg, Germany	Denmark, Germany, Italy, Monaco	Graduate Student at the University of Regensburg, Bachelor's Degree from the University of Mannheim
Olzhas Gibatov	Nazarbayev University	Barbados	2nd year MA student at the Department of Political Science and International Relations at Nazarbayev University
Ongun Durhan	University of Amsterdam	Turkey	Graduate student of Political Economy at the University of Amsterdam (expected to graduate this year).
Pablo Robles	Hochschule Fresenius	Paraguay	Ecuadorian Architect pursuing an International Business Masters degree

Paula Germana	Willy Brandt School of Public Policy/ University of Erfurt	El Salvador	Peruvian Sociologist. Master in Public Policy Student at the Willy Brandt School of Public Policy.
Philipp Weber	Motio Gmbh & Co. KG	Fiji	
Pia Bansagi	University of Vienna	Nauru, Timor Leste	Erasmus Mundus Masters of Global Studies student at the University of Leipzig and University of Vienna.
Racha Hanine	University of Oslo	Tunisia	First year BA student in Political Science at the University of Oslo
Raquel Karl	Zeppelin University	Cuba, Dominican Republic	Undergraduate student in Sociology, Politics & Economics.
Rebecca Beigel	Stiftung Neue Verant-wortung, Project Manager In-ternational Cybersecu-rity Policy	Syria	

Ricardo Buitrago	Universidad de La Salle Colombia	Honduras	Head of the B.A. in International Business & Relations
Richmond Silvanus Baye	University of Tuebingen	Mauritius	I am into environmental and food economics research
Robin Fischer	University of Braun-schweig	Dominica	I study Mathematics and Philosophy at the University in Braunschweig.
Rosana Fayazzadh	University of Oslo	Iran	Oslo-based student majoring in law and economics at the University of Oslo
Saif Khan	Technical University of Munich	Seychelles	M.Sc. Politics and Technology student.
Salma Soliman	NYU Abu Dhabi	Egypt	I am a third year student studying Economics with a Data Science Track at NYUAD.

Samantha Reinard	San Francisco State University/On Exchange Sciences Po Reims	Bhutan, Mongolia	Undergraduate student of International Relations and Comparative World Literature, soon to study in Taiwan.
Sana Moghis	Shifa College of Medicine	Bangladesh, Nepal, Testing Data	I am a young doctor who has just graduated from Shifa College of Medicine. Passionate about developing a career in Critical Care and exploring methods that revolutionize modern healthcare.
Sarah Edmonds	TUM Munich	Papua New Guinea, United States: sub-national	
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Tasia Wagner	Institute for Islamic Strategic Affairs (IISA), programme advisor & advisor to Executive Director	Finland: sub-national	A passionate researcher with a strong background in international relations.
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Tom Seiler	University of Bremen	Denmark	
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Victor Abuor	Kenyatta University	Zambia	A data-driven young professional passionate in research, data analysis and presentation.
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