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Tracking Government Responses To Covid-19: The CoronaNet Research Project

ABSTRACT

Governments around the world have taken a significant number and variety of actions in response to the Covid-19 pandemic. To understand this flood of government actions, policymakers and researchers need access not only to high-quality, up-to-date data on government responses, but also tools to help them make sense of that data. In a joint initiative, the data collected in CoronaNet are visualized on the ifo Institute's DICE website. The following article introduces the CoronaNet research project and explains some of the data collected and how they are presented on DICE.

The Covid-19 crisis represents one of the most severe global crises in modern times. The scale of the pandemic has created substantial economic turmoil, leading to a worldwide economic downturn and a significant reshaping of the global economy.

While the health consequences of the virus itself play an important role in explaining the economic effects of the Covid-19 pandemic, government reactions to the pandemic have also played an equally, if not more, important role. To a large extent, governments did not have time to develop comprehensive strategies, but instead had to react quickly to contain the spread of the virus. Thus, governments implemented a variety of measures without much international coordination, resulting in enormous variation in responses to the pandemic.

The following article presents a new tool that enhances users' understanding of this variation based on a joint initiative to visualize the data collected by the CoronaNet Research Project, an endeavor to gather information on policies related to the Covid-19 crisis, using ifo's DICE website. CoronaNet tracks the implementation, adaptation and, where appropriate, repeal of Covid-19 related policies worldwide on a daily basis. While collecting data on government responses to Covid-19 is crucial for understanding how the pandemic has affected economic outcomes, data visualization tools also play an important role when it comes to making sense of the data collected. In what follows, we provide a brief overview of the CoronaNet Research Project and the data it collects, explain how this data is visualized in the Database for Institutional Comparisons of Economies (DICE), and outline the methodology behind the CoronaNet Research Project.

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OVERVIEW OF THE CORONANET RESEARCH PROJECT

The CoronaNet Research Project[1] is an ongoing initiative which systematically documents government policies made in response to Covid-19. To date, it has gathered nearly 70,000 policies worldwide, making it the largest database of Covid-19 government policies in the world. CoronaNet employs a fine-grained taxonomy in order to document data, categorizing each policy into 20 broad types and over 100 sub-types. It also collects information about initiators, human and geographic targets, compliance, enforcers and timings of the policies.

CoronaNet is an international collaboration of more than 600 volunteer research assistants managed and organized by principal and co-princip-al investigators from all over the world. It has received internal financial support from the Hochschule für Politik, Technical University of Munich, and NYU Abu Dhabi. It has also received funding from the Peace Research Institute Frankfurt, a member of the Leibniz association.[2] Its most significant external collaboration to date has been its participation in PERISCOPE,

[1] The project website is available at https://www.coronanet-project.org/.
[2] Leibniz-Institut Hessische Stiftung Friedens- und Konfliktforschung or HSFK.

an academic consortium of 32 EU universities investigating the behavioral and socio-economic impacts of Covid-19. PERISCOPE is funded by Horizon 2020[3] and will ensure that CoronaNet's data collection effort can continue for three more years.

THE DATASET

The dataset provides comprehensive and granular documentation of government policies across the world for more than 200 countries. It covers the following policy types:

1. Declaration of Emergency
2. Quarantine
3. Lockdown
4. External Border Restrictions
5. Internal Border Restrictions
6. Restriction of Mass Gatherings
7. Social Distancing
8. Curfew
9. Closure and Regulation of Schools
10. Restrictions and Regulation of Government Services
11. Restriction and Regulation of Businesses
12. Health Monitoring
13. Health Testing
14. Health Resources
15. Hygiene
16. Public Awareness Measures
17. Anti-Disinformation Measures
18. New Task Force, Bureau or Administrative Configuration
19. Covid-19 Vaccines
20. Other Policy not Listed Above

National-level data is available for most countries, and subnational (ISO administrative level 2) data is also collected for the following countries: Brazil, China, Canada, France, Germany, India, Italy, Japan, Nigeria, Russia, Spain, Switzerland and the United States.

The dataset not only includes information about which governments are responding to Covid-19, but it also covers who the policies are targeted at (e.g., other countries), how they are doing it (e.g., imposing travel restrictions, banning exports of masks) and when they are doing it. More specifically, the CoronaNet dataset collects information on government policy actions taken in response to Covid-19 across the following dimensions (Cheng et al. 2020):

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

CORONANET DATA IN DICE

In a joint initiative between the researchers of the Technical University of Munich and the ifo Institute, the data collected in CoronaNet is presented on ifo's DICE website in a user-friendly way.[4] In addition to the 20 broad policy types, DICE will include information on sub-measures, when available, and present an even more fine-grained picture of governments' policy responses.

Figure 1 shows some of the broad key policy measures that were taken on a national level in seven selected countries (Austria, the Netherlands, Germany, Italy, Sweden, the UK, and the US).[5] The data refers to the proportion of a month, i.e., the number of days in a month on which each measure was in place divided by the number of days of that month. It ranges from 0 (measure did not apply) to 1 (measure applied over the whole month). When looking at lockdowns, for instance, data shows that some countries enforced them at a very early stage (e.g., Austria and Italy), while others implemented them much later (e.g., the UK) or more hesitantly (e.g., the US). All countries shown implemented quarantining as a national policy response to Covid-19, some (e.g., Germany, the UK and Italy) earlier than others (e.g., Austria). In addition, all countries restricted mass gatherings early on in the pandemic. Interestingly, Italy and Austria briefly lifted these restrictions in the summer of 2020, before subsequently reintroducing them. As early as January 2020, the first countries, such as Italy, the US, and the UK placed restrictions on their external borders, and other countries quickly followed. These restrictions remained in place throughout the period shown (including March 2021) and are only now gradually being lifted.

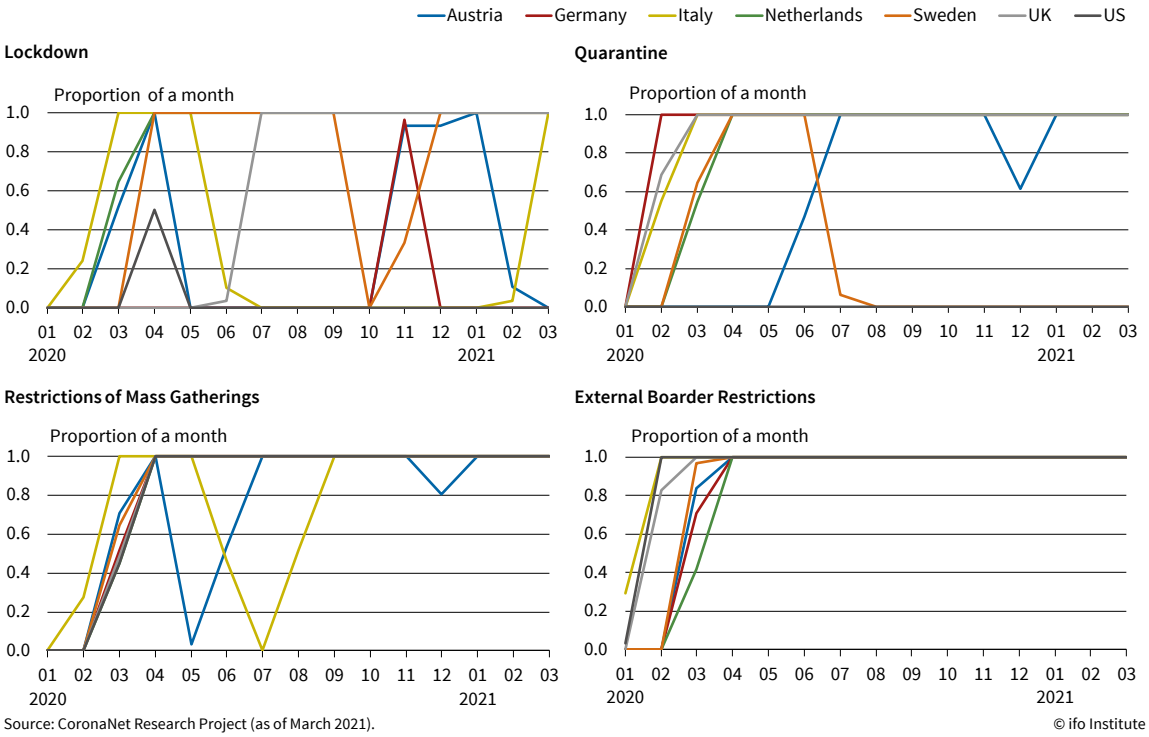
[3] PERISCOPE is funded by the European Commission under the Horizon 2020 Research and Innovation program (Agreement No. 101016233).

[4] Data and visualizations on policy types and subtypes at the national level will be available at https://dice.ifo.de.

[5] Note that the data presented here covers national regulation and there may be additional policies at the sub-national level.

Figure 1

Policy Responses to Covid-19 in Selected Countries



Source: CoronaNet Research Project (as of March 2021).

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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 the greatest possible access to data that is reliable, valid, and timely. CoronaNet has adopted a data collection methodology which it believes optimizes over all three of these constraints. In the following, we present an overview of CoronaNet's data collection methodology.[6]

To collect the data, CoronaNet has organized more than 600 research assistants from colleges and universities around the world, representing 20 of the 24 time zones, who are actively collecting data at any given point in time. In order to join the project, research assistants must view a series of training videos and undergo a training assessment. Once on the project, RAs communicate with regional and country managers, who oversee their work, and with the principal investigators and other research assistants, who give feedback and support.

Each research assistant is responsible for tracking government policy actions for at least one country. Research assistants are allocated depending on their background, language skills, and expressed interest in certain countries. Depending on the level of policy coordination at the national level, certain countries are assigned multiple research assistants, for instance, Germany or France. This data collection strategy leverages the benefits of widespread recruitment and the diverse pool of country-specific knowledge across the globe.

Research assistants obtain assistance in identifying raw policies to code through CoronaNet's cooperation with both Jataware and Overton, both of whom use machine-learning algorithms to find news reports (Jataware) and government policies (Overton) related to Covid-19. Research assistants can also check the following platforms to identify relevant policies:

- the information page on Covid-19 policies for a particular country on the US Embassy website;
- the Wikipedia page on a particular country's response to the Covid-19 pandemic;
- the relevant government websites of a particular country (e.g., executive office, health ministry);
- newspaper coverage in a particular country (via e.g., LexisNexis or Factiva).

Once they have identified policies to code, research assistants are encouraged to organize the information they collect into country overviews and timelines, so that they can locate where a given policy fits into a country's policy history. They are further aided in this by a custom-designed Shiny App, which visualizes existing CoronaNet data.

Research assistants then enter the data they have found into a customized Qualtrics survey. Survey questions are designed to systematize and streamline the documentation of a given government policy over a wide range of dimensions. The tool enables research assistants to document information about different

[6] For more information, please see Cheng et al. (2020).

policy actions easily and efficiently by answering the relevant questions in the survey (Büthe et al. 2020). For example, instead of entering the country that initiated a policy action into a spreadsheet, research assistants answer the following question in the survey: "From what country does this policy originate?" and choose from the available options given in the survey. This method of data collection has many benefits, especially in terms of ensuring the reliability and validity of the resulting data, such as by preventing data being entered in the wrong fields, standardizing responses, and reducing missed data by employing forced data entries.

CoronaNet further implements cleaning and validation processes, including internal and external cleaning and multiple coding, as well as an evaluation and reconciliation procedure, in which CoronaNet checks for discrepancies between the original coded data and the second and third codings.

CONCLUSION

Governments around the world have implemented a substantial number and variety of policies in reaction to the Covid-19 pandemic. In order to make sense of this flurry of government actions, policymakers and researchers not only need access to quality, up-to-date data on government responses to Covid-19, they also need tools to help them make sense of this data.

By providing interactive and user-friendly visualizations of data on government policies collected by the CoronaNet Research Project on the ifo DICE database, we want to improve researchers' and policymakers' understanding of the pandemic and their analyses of whether, how, and to what degree these fast-changing policies have succeeded in mitigating the health, political, and economic impacts of the pandemic.

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