SPRC19: A Database Tracking US State Policy Responses to COVID-19[*]

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Abstract

SPRC19 is a new database that captures every state policy action in response to COVID-19 in the United States. Since March 2020 we have monitored state governments' and multi-state associations' websites for executive orders, agency rules, new legislation, and court decisions. We categorize each policy action into one of two hundred seven distinct policies, then document the branch of government, source document, announcement date, implementation date, and expiration date (if applicable). We also record whether the action represents the introduction of a new policy or the expansion or contraction of an existing policy. We have coded all actions through April 2020 and many states through August 2020. The first public release of SPRC19 captures over 12,000 distinct policy actions through April 2020, more than three times as many as similar resources over the same time period. We will continue to update the database for policy actions taken through 2022.

Keywords: COVID-19, State policies, Policy innovation

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Since the beginning of the COVID-19 pandemic, over six million total deaths have been confirmed. Of these, over one million have occurred in the Unites States. However, the rates of deaths and cases per state vary greatly. While the national average as of March 30, 2022 was just under three thousand cases per million, current estimates across the states range from about one thousand in Hawaii to over four thousand in Mississippi. This variation reflects many differences across the states, including heterogeneity in demographics, baseline health, and geography. Because the U.S. policy response to COVID-19 has largely been left to the states, differences in deaths and cases, among others, also reflect differences in the policy choices made state governors, agencies, legislators, and courts. The policy actions taken by this variety of government officials reflect pandemic and political differences across the states, with the latter arising from differences in political ideology and state government structures. Understanding how state politics and institutions affect policy responses is critical for assessing the toll of COVID-19 and preparing for future pandemics and other emergencies.

State Policy Responses to COVID-19 (SPRC19) is a new database that seeks to provide a comprehensive record of *all* policy actions taken in the American states in response to COVID-19. We immediately began collecting these data at the outset of the pandemic in the spring of 2020. The data include all actions related to the pandemic and its consequences, including those that aim to directly reduce spread of the virus and those that address the consequences of those mitigation efforts, such as shutdowns or stay-at-home orders for individuals or businesses. The policy choices made by state officials, including legislators, governors, and judges, have occurred in real time in a fluid and dynamic environment. SPRC19 reflects this temporal variation by documenting policy *actions* rather than just the presence or absence of a given intervention. Similar to existing COVID-19 data collections, our data indicate when a state first adopted a particular policy. But SPRC19 also captures every government extension, expansion, reduction, or repeal of those policies. Our data reflect a deep interest in the political side of these decisions in addition to how they might affect public health or other individual outcomes. We believe the resource will also help researchers capture the broader, cumulative effects of state responses on public health outcomes.

The first public release of SPRC19 includes the period from January through April 2020. While it currently reflects a modest (albeit critical) time frame compared to other COVID-19 policy databases, it includes about 12,000 state policy actions drawn from 4,000 documents.[1] Moreover, our research team is actively working to extend the data to all actions taken through 2022. The resulting richness is this database's value. SPRC19 already includes three to four times as many distinct policy areas and observations as other common data sources describing Nonpharmaceutical Interventions (NPIs) in the American states, despite these existing collections covering more than a year of actions. The difference comes, in part, from our broad focus on any policy actions (over two hundred) related to COVID-19, which is much more comprehensive than those captured in other collections. In addition to casting our net widely across policies, we include a great deal of information about the details of each policy action. We document whether the action was made by a governor, an executive branch agency, the legislature, or the courts. We code each policy into broader topic areas to facilitate grouping related actions together. Finally, for each action that does not represent an adoption of a policy not currently in, we code how the action's scope relates to policy's prior status.

Including every action for each policy allows us to paint a broader picture of how the American states responded to the pandemic. It offers extensive opportunities to account for this richness in explaining state outcomes vis-à-vis the virus. It also affords the opportunity to examine the differences in states' choices. Policy solutions depend on within-state political preferences, conditions, and structures. They also reflect choices made by other states within the U.S. federal system through the process of policy diffusion. SPRC19 offers an unprecedented opportunity to understand how policy choices spread across states in response to a sudden shock in which political leaders had very little information on which decisions to make.

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[1]The next public release will target state policy actions through August 2020. This period adds about 4,000 new documents and currently includes more than 16,000 additional actions already entered.

Results

We present the current release of SPRC19 through three analyses. First, we provide a general description of the data. Second, we compare SPRC19 to other prominent resources on COVID-19 policies in the states. Finally, we examine innovativeness in state COVID-19 policy and compare it to an existing measure of states' historical innovativeness across many policies. These analyses highlight the richness of our database and demonstrate its promise for understanding the political dynamics of governmental decisionmaking in a rapidly evolving and uncertain policy environment.

Description of Key Data Features

In this section we summarize some of the features of our current data release.[2] Table 1 shows the number of actions for each type. During this early phase of the pandemic, states were mostly adopting new policies with over one-third of actions being of that type. Nearly a quarter of actions were extensions of previous adoptions while another one-fifth involved increasing the restrictiveness of prior actions. Just under one quarter involved decreasing restrictiveness and a scant two dozen actively repealed earlier policy adoptions (in contrast to letting the policies expire).

Table 1: Frequency of State Policy Actions by Type in SPRC19

Action	Frequency
Adoption	4,241
Decrease restrictiveness	2,575
Extend	2,746
Increase restrictiveness	2,129
Repeal	26
Total	11,717

Figure 1 shows the frequency of actions across eighteen intermediate-level and five top-level policy categories. At the intermediate level, the largest number of actions occur in the health and medical relief category. At over two thousand actions, this category more than doubles the number in courts, the second largest grouping. All but six of the eighteen categories have over five hundred actions, with vaccines and testing coming in as the smallest category (about one hundred actions),

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[2]See the section 'Details on Data Acquisition and Coding' for more information.

perhaps not surprising given that our initial release reflects the early days of the pandemic. These categories are grouped into five high-level categories by color. The largest is government and state operations with nearly five thousand actions. Containment and closure comes second with nearly three thousand, while social falls last with about nine hundred actions.
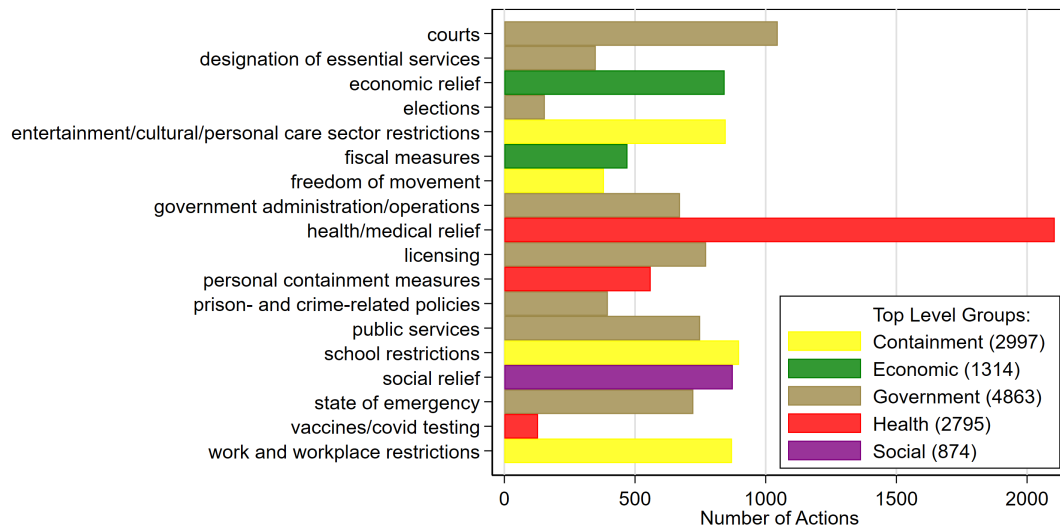

Figure 1: Frequency of Policy Actions by Intermediate Level Policy Categories

Note: Includes actions with effective dates prior to April 30, 2020. Bars color coded according to which higher-level categories the intermediate categories are assigned.

Figure 2 reports daily activity for each of these types of actions. It shows a large wave of adoptions in the second half of March 2020, with two waves of extensions peaking in early and late April. Increases and decreases tend to occur at a more uniform rate (with some visible day of the week effects). Given their small number, we omit repeals from this figure.

This variation over time is matched by variation across states. Figure 3 reports the number of policy actions across the fifty states through the end of April 2020. States are broken into quartiles based on their adoptions. States in the lowest quartile have between thirty-three and one hundred forty-nine actions. Idaho falls at the bottom with thirty-three actions. This group mostly includes states scattered across the South, Mountain states, and the Great Plains that were not affected by COVID-19 as quickly as states in the Northeast or on the coasts. All of the states on the West Coast fall into the second quartile as do a couple more states in the South and Great Plains. These
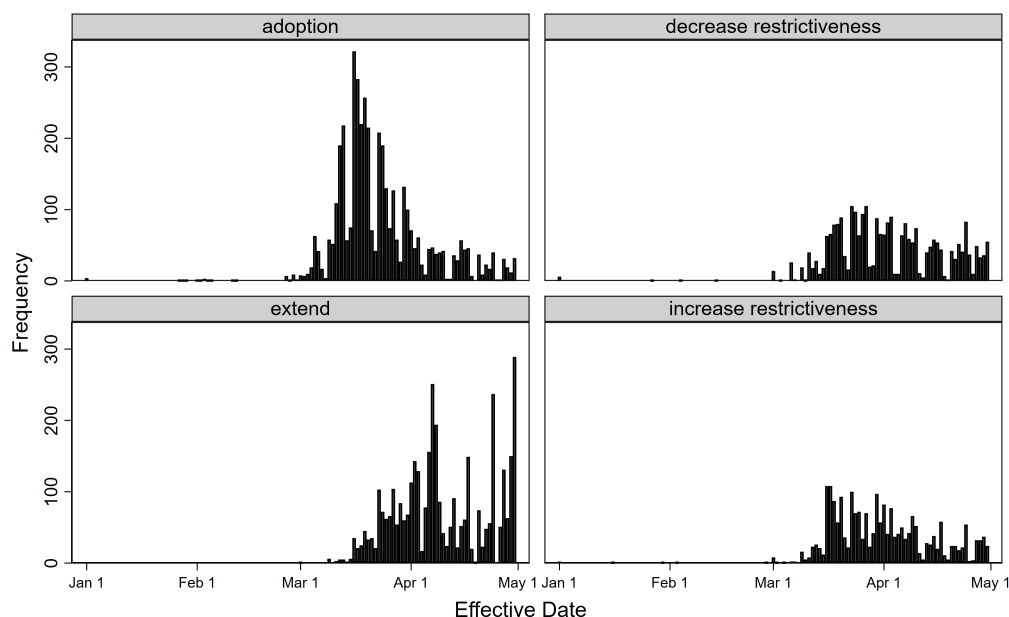
Figure 2: Policy Activity by Day and Action Type

Note: Includes actions with effective dates prior to April 30, 2020. Effective dates set retroactively to 2019 were recoded to January 1, 2020 for the purposes of making this figure.

states all have around two hundred actions. The final quartile includes predominantly states in the Northeast and upper Midwest, with the exception of Oklahoma. These states all have over three hundred forty-nine actions, with New Jersey at the top with nearly five hundred and fifty actions. These counts reflect all actions, so the totals do not necessarily imply that states with greater numbers adopted more policies. The tendency to issue short term orders and then extend them varies widely across states, as does repeated adjustments of policies.[3]

Comparison to Other COVID-19 Policy Data Resources

SPRC19 is far from the first collection of government NPIs available for the American states. We therefore offer a brief comparison of the resource to other data collections that include information on the U.S. states. Prominent examples of such collections include HIT-COVID[1]; the COVID-19 Control Strategies List (CCSL)[2]; the COVID-19 Government Response Event Dataset (CoronaNet)[3]; the COVID-19 US State Policy Database (CUSP)[4,5]; the Oxford COVID-19

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[3]Some states, such as New Jersey and South Carolina, have over sixty percent of their actions in the form of extensions whereas others have fewer than ten percent of actions as extensions.
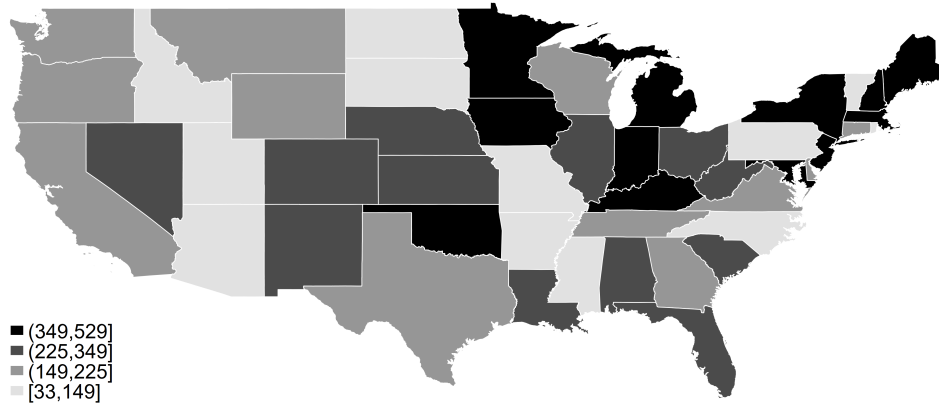
Figure 3: Total Policy Actions by State

Government Response Tracker (OxCGRT)[6]; and the COVID Analysis and Mapping of Policies (COVID-AMP)[7]. We summarize key features of these available databases as of October 2022, including the numbers of policies and actions and the dates of the first and last recorded actions. Given differences in reporting, we count unique policies to facilitate comparability. For example, our data captures adoptions, extensions, and readoptions within a single policy whereas some treat them as separate "policies," such as first restaurant closure, second restaurant closure, and so on.

Table 2: Summary of Select COVID-19 Policy Resources

Source	Begin	End	Policies	Actions
CCCSL	12/19	1/21	70 (L2)	$\approx 1,000$
CUSP	1/20	3/22	79	$\approx 3,500$
HIT-COVID	1/20	3/21	41	$\approx 3,100$
OxCGRT	1/20	10/22	55	$\approx 7,000$
CoronaNet	1/20	9/22	205	$\approx 8,000$
COVID-AMP	1/20	9/22	70	$\approx 19,000$
SPRC19 (complete)	1/20	4/20	200	$\approx 12,000$
SPRC19 (partial)	1/20	8/20	203	$\approx 28,000$

Table 2 reports these features for SPRC19 and the selected comparison datasets. Despite the fact that our data cover the shortest time period, the resource already captures more than three times as many distinct policies and actions as all but one of the existing alternatives. SPRC19 includes about 12,000 distinct policy actions through April 2020 and 28,000 through August 2020 while the next largest, COVID-AMP, has 19,000 through September 2022. There is a substantial

drop-off after that, with the next largest, CoronaNet and OxCGRT, featuring about 8,000 and 7,000 actions respectively through fall 2022. CUSP includes seventy-nine different policies compared to more than two hundred in SPRC19, with two hundred appearing through April 2020, two hundred three identified through August 2020, and two hundred seven total identified to date.[4] Through the broad design and detailed action-by-action accounting of policy decision, our data capture a large amount of information related to policy actions not reflected in other sources.

State Policy Innovativeness

As an illustration of SPRC19's utility, we assess COVID-19 policy innovativeness—a measure of which states led the way in responding to the pandemic. An extensive literature studies and seeks to explain the timing of policy adoptions, including in the U.S. states[8,9]. One commonly-used indicator captures state policy innovativeness based on the timing of a state's policy adoption relative to the time of availability (i.e., after the first state adopts it). Thus, states adopting the policy in the initial year of its availability receive a score of one whereas states adopting in the second year have a score of 0.5, and so on. Innovation rate scores have been calculated for the American states using collections of hundreds of policies covering a wide range of policy areas, such as the State Policy and Innovation and Diffusion Database (SPID)[10]. Typically, states adopt policies over years, even decades, and have ample opportunity to evaluate policy effectiveness and its fit with the state's political, business, and demographic circumstances. In contrast, COVID-19 policies were adopted very rapidly during a period of great uncertainty regarding the best way to respond. Data sources such as SPRC19 offer the opportunity to compare policy innovativeness in this distinct environment to a more typical one.

We compare the policy innovativeness rate for a sixty year period from the comprehensive SPID data to innovativeness from SPRC19 during the early days of the pandemic. To reflect

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[4]In total, CUSP has over two hundred fifty measured variables, but we exclude any that it does not measure in date units. This leaves one hundred forty-eight policies. We then further exclude policies measuring subsequent actions on a policy after first adoption. For instance, SPRC19 includes restaurant reopenings or second restaurant closures in a single policy listing.

the compressed time period we calculate innovativeness on COVID-19 policies based on a daily

adoption rate for a state: one divided by the number of days since the first adoption of a policy by

any state, plus one.[5] States that had not adopted a policy by April 30 receive a score of zero for

that policy. These calculations are combined across all policies to generate a single innovativeness

rate, with larger values indicating a more innovative state. Figure 4 compares the existing scores

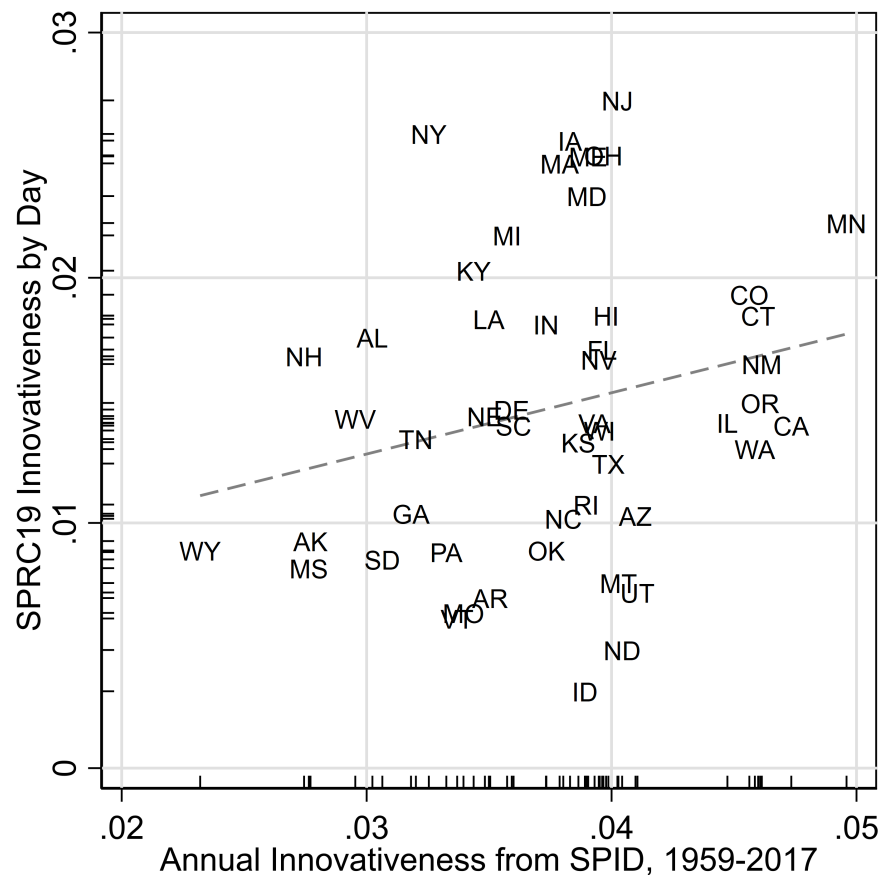from SPID to our COVID-19 specific scores.

Figure 4: Comparison of state policy innovativeness during COVID-19 to general innovativeness
from SPID

Note: Axis tick marks represent the marginal distributions of the two variables. SPRC19 dataset includes actions with
effective dates prior to April 30, 2020.

States that have historically been more innovative also tend to adopt COVID-19 policies more

[5]Given the focus on initial adoption in most policy adoption data, we exclude information from

any subsequent actions in the SPRC19 data.

quickly, though the modest correlation of 0.23 indicates a substantial difference in how quickly states responded to the pandemic. COVID-19 policy leaders include New Jersey, New York, and Massachusetts, but not more traditional policy leaders such as California, Oregon, and Washington. Minnesota, Colorado, and Connecticut score highly on both measures. These differences undoubtedly reflect the virus' geographic prevalence and spread, but the comparison also likely illustrates more typical determinants of state policy adoption timing, including partisanship and resources[11].

Discussion

SPRC19 offers a highly detailed examination of the U.S. states' response to the COVID-19 pandemic. Despite current data entry being complete only through April 2020, it already includes many times as many policy actions as most other datasets. This level of detail offers a fine-grained understanding of when and how the states have enacted policies to address the pandemic. The broad policy coverage offers researchers a more detailed picture of the actions states took. Many of these may have had smaller effects on virus transmission or deaths, but many will have had smaller effects in general or larger effects in more targeted areas. These and other details will also make SPRC19 valuable for researchers interested in the process and outcomes of governing during a pandemic[11,12]. For example, while many other datasets indicate when a particular intervention is in place, SPRC19 seeks to capture every extension, expansion, or contraction during that time period and which branch of government enacted it. These dynamics will be particularly useful for scholars interested in the process of the response. For example, why did some states make extensive use short-term orders with several extensions? And why did they often lead to short-terms gaps in policy orders? How did the branches of government work with or compete against each other as the pandemic response evolved? Many states experienced ongoing tension over authority to enact or repeal measures between the executive and legislative branches, with the courts sometimes brought in to arbitrate.

The scope of SPRC19 offers some clear advantages. First, it includes policy actions that go beyond the primary public-health related NPIs included in extant data collections. It will therefore

offer the opportunity for more granular information regarding state policy in specific topic areas, especially those beyond the major interventions. Second, SPRC19 captures the political process in more detail by describing the dynamics of state policies in addition to their presence or absence. Information on the timing of policy implementation captures the evolution of states' responses to the pandemic as well the different approaches taken by the states in developing and structuring their responses. This difference will be of particular interest for those who wish to examine how politics and other state features influence the policy choices they made. The information contained in SPRC19 matters for understanding policymaking and governance. For example, some researchers may only be concerned with the presence or absence of a policy and not whether it occurred through an extension, but others studying the politics behind that policy may find the decision to extend to be critical.

Methods

Our data collection began in March 2020. We aimed to capture every state policy action in response to COVID-19, including executive orders, agency rules, new legislation, and court decisions. We obtained this information by scouring websites for each branch of all fifty states' governments along with multi-state websites supporting state officials, such as the Council of State Governments. For each policy action identified, we download the source document—a bill, executive order, or press release—and then began coding it based on an evolving list of (currently) two hundred seven distinct policies that we identified. In addition to high-profile items like business closures or mask guidelines, we track actions more broadly related to the pandemic or the consequences of states' responses to it, such as hotel repurposing, telemedicine, and alcoholic beverages to go. In addition to coding each action by policy, we document the branch of government, the source document, the date of announcement, the implementation date, and an expiration date (if given). We also note whether the policy action represents the introduction of a new policy or a change to an already-enacted policy. Those changes could involve an expansion or reduction of the scope of the original policy, an extension of the current policy, or its rescindment.

Details on Data Acquisition and Coding

In assembling these data our primary resources of data collection have been the websites (and their policy documents or press releases) of state political entities, namely governors, executive agencies, state legislatures, and state courts. Including press releases as data has proven necessary because of variation in resources across states. For some, press releases are an important form of communication: smaller executive agencies, for instance, tend to share their updates with short news items rather than storing public documents. We prioritized locating the official policy text, but used releases as needed. We compiled a list of the websites for the various aforementioned state actors for each state, routinely checked each of these websites, and catalogued any documents found associated with new policies or policy updates. While downloading policy documents, we also cross-checked our updates from state websites with the National Conference for State Legislators' State Action on Coronavirus and several other policy specific resources to help ensure we were not missing any updates or documents.

For each published policy document, graduate and undergraduate coders read through each section or subsection and decide which of our two hundred seven policies best describes the text. Figure 5, for example, is part of the 17th Executive Order by Tennessee Governor Bill Lee. In section 1-a, this order states not to socially gather with ten or more people. After reading this section, coders visited our list of policies and found the closest policy area. This case falls into our "gathering ban" policy category, which we define as "banning on gatherings of [size] and can also include policy related to state agencies' authority to cancel gatherings that are in violation of these policies." Defining our distinct policies was an iterative process, wherein coders were instructed to flag sections that they thought warranted creation of a new policy, such as when a state issued a policy action that did not fit any of our already established categories. Our objective in establishing our list of policies was to define them narrowly enough to indicate a specific policy choice that could be compared across states, but not so narrowly such that each policy in a state could have no others like it. Differences within policies are noted in our data and also reveal themselves through our documentation of changes in those actions, whether through rescindments,

reinstatements, expansions or reductions in scope.

> **NOW THEREFORE,** I, Bill Lee, Governor of the State of Tennessee, by virtue of the power and authority vested in me by the Tennessee Constitution and other applicable law, in light of the continuing state of emergency to facilitate the response to COVID-19, do hereby order the following statewide:
>
> 1. In accordance with the President's Coronavirus Guidelines for America and the guidance from the CDC, to limit the spread of COVID-19 so that normal life and activities may resume as soon as possible:
>
>   a. Persons in the State of Tennessee shall not participate in social gatherings of ten (10) or more people.
>
>   b. Persons in the State of Tennessee shall not eat or drink onsite at restaurants, bars, or other similar food or drink establishments, and
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Figure 5: Sample Policy Text from Tennessee Executive Order 17 (2020)

After coding the policy, coders next record the type policy action: adoption, repeal, extension, increased restrictiveness, or decreased restrictiveness. If there is not yet a policy adoption for the given category for the given state, the policy action is coded as an *adoption*. If there is an adoption but no *repeal* yet recorded, coders compared the previous document and the current document to decide whether it imposes more (*increase restrictiveness*) or fewer restrictions (*decrease restrictiveness*) or whether it merely extends the previous policy's expiration date (*extension*). With a gathering ban example, if the next order states no social gathering with more than five people, coders mark its policy action as an increase in restrictiveness because it imposes stronger restrictions than the previous policy. Alternatively, if the next document allows more than twenty people, it is coded as a decrease in restrictiveness. If the following policy document retains the current gathering ban level but extends the expiration date, it is coded as an extension. Finally, unlike many other policy adoption databases, ours allows for repeated adoptions from a single state. For instance, there are occurrences where a state adopts, repeals, and then re-adopts a policy.

SPRC19 also includes temporal information such as when the policy is signed or published (*announce date*), when the policy becomes effective (*effective date*), and when it expires (*expire date*). Figure 6 shows an example of how executive order documents commonly conclude and how

we code them. From section 7 of the excerpted order, coders mark '03-23-20' as the effective date and '04-06-20' as the expiration date. The announcement date is '03-22-20' based on when the document was published to the state website or based on the signature date on the document. While most policy documents have an announcement date, some do not provide clear effective and/or expiration dates. In these cases, we assume the effective date is equivalent to the announcement date. For the expiration date, coders note whether it does not specify the expiration date or whether it expires in other conditions, such as when the state of emergency is ended.

> 7. This Order shall be effective and enforceable at 12:01 a.m., Central Daylight Time, on March 23, 2020, and shall remain in effect until 12:01 a.m., Central Daylight Time, on April 6, 2020, at which time the suspension of any state laws and rules and the other provisions of this Order shall cease and be of no further force or effect.
>
> **IN WITNESS WHEREOF,** I have subscribed my signature and caused the Great Seal of the State of Tennessee to be affixed this 22nd day of March, 2020.

Figure 6: Example Policy Action Date Coding from Tennessee Executive Order 17 (2020)

After collecting and coding the data we incorporated additional information by grouping our policy areas into higher-level categories, drawing from other COVID-19 policy collections. We did so in two stages. Our intermediate level resulted in eighteen categories such as travel restrictions, prison policies, and medical licensing. We then grouped these into five high-level categories: containment and closure, economic, government/state operations, health system, and social.

It is important to highlight a key feature of our data collection and coding experience. The policy categories that we have identified and the higher-level categories we group them into have all emerged from the data and evolved as our data collection and entry have progressed. The pandemic and states' responses to it are both on-going, evolving phenomena. Our categories were necessarily revised and expanded during coding to accommodate new types of policies. Policies enacted in April 2020 differ substantially from those debated in April 2022. Our data collection and coding evolved to reflect this fluidity.

Technical Validation

In order to check the accuracy of our data, we conducted a number of validation exercises, updating as needed, and then repeating them on subsequent iterations of the resource. Our first set of checks focused on ensuring that entered data all fit within the expected parameters and ranges. First, we did some basic technical validation checks for internal consistency. We compared the list of entered states, branches, actions, and policies to our definitive lists and corrected any errors. We searched policy announcement, expiration, and effective dates for out-of-range, string, or otherwise unexpected values and corrected those from the source documents as appropriate. We identified entries with unexpected missing values. We checked whether the state code in the name of the source file matched the state name in the relevant worksheet. We checked for duplicate entries.

Second, we checked our dates for gaps by identifying cases in which a state's action on a given policy had an effective date that occurred more than a day after the previous action had expired. That is, if we have an entry extending a policy that expired two days ago, we checked whether that prior expiration date or the current effective date were correct. In many cases they were. For example, Iowa's governor issued an order on May 13, 2020 that extended a closure order for casinos. That order listed an expiration date of May 27. On May 26, a new order allowed casinos to reopen at 50% capacity on June 1 effective through June 17. Thus, there is a gap of five days between the expiration of the former order and the effective date of the new order. Iowa has over fifty such gaps in our existing data. In total, we found three hundred ninety-one such gaps that began during the period through April 30, 2020. This amount corresponds to just over three percent of all entries during the time period. We use data entered after April 30 to identify gaps because a sequence of policy actions may produce a gap only when a subsequent action occurs after April 30. We reviewed these gaps and found that twenty-three of them were appropriate, three hundred fifty-seven required corrections to our entry, and eleven required recodings of our entries.

Third, we compared our data to other published sources for policies that overlapped. Given the difference in how topic areas are created and what they include, combined with the much greater

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(and therefore often more nuanced) number of topic areas that we consider, these comparisons were limited to a small subset of topic areas. Our primary check involved the COVID-AMP dataset. We identified over a dozen common topic areas that appeared to be similar based on their descriptions. From these we did a detailed comparison of state actions for four of them: curfews (ten), hazard pay (twelve), safer at home (seventy-six), and sick leave (sixty-seven). We examined all entries in both datasets through April 30, 2020 (one hundred sixty-five total) to identify differences based on announce dates, effective dates, end dates, and the source of the policy.

Our comparison revealed substantial differences between the two collections. We coded these by whether they resulted from differences in policy definitions, missing entries, or conflicting details. Differences in policy definitions explained the presence of entries regarding curfews in SPRC19 despite none in COVID-AMP—but not in the other areas—so we set that one aside. Overall, the majority of differences between the two sources resulted from missing entries in one or the other. SPRC19 had the broader coverage, with the differences resulting from a wider range of policy declaration documents from which to identify actions, most notably the presence of many gubernatorial press releases declaring policy adoptions or extensions. These instances were especially common during the initial pandemic response. For cases with conflicts or missing entries in SPRC19, we reviewed the source documents and made appropriate corrections.

Data Availability

Current and future releases of SPRC19 can be accessed via our study page on the Harvard Dataverse: https://dataverse.harvard.edu/dataverse/sprc19/. As noted above, we have made substantial progress on data entry through August 2020, which will more than double the total number of actions captured to over 28,000. We continue to download new documents beyond August 2020 and already have over 5,000 additional documents that will likely add at least 10,000 more actions. that will add even more actions. With most states having declared an end to their state of emergency declarations, our goal is to collect data on all state policy responses through the end of 2022. We also plan to clean and release the full text of the documents that we have been collecting in order to facilitate analysis of the text of government actions.

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