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Policy learning and change during crisis: COVID-19 policy responses across six states

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Abstract

Whereas policy change is often characterized as a gradual and incremental process, effective crisis response necessitates that organizations adapt to evolving problems in near real time. Nowhere is this dynamic more evident than in the case of COVID-19, which forced subnational governments to constantly adjust and recalibrate public health and disease mitigation measures in the face of changing patterns of viral transmission and the emergence of new information. This study assesses (a) the extent to which subnational policies changed over the course of the pandemic; (b) whether these changes are emblematic of policy learning; and (c) the drivers of these changes, namely changing political and public health conditions. Using a novel dataset analyzing each policy's content, including its timing of enactment, substantive focus, stringency, and similar variables, results indicate the pandemic response varied significantly across states. The states examined were responsive to both changing public health and political conditions. This study identifies patterns of *preemptive policy learning*, which denotes learning in anticipation of an emerging hazard. In doing so, the study provides important insights into the dynamics of policy learning and change during disaster.

KEYWORDS
COVID-19, policy change, policy learning, state policymaking

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INTRODUCTION

When and under what conditions do policy change and learning occur during long duration crisis events? Extant policy research provides important insights into the dynamics of lesson learning in the aftermath of disasters (Birkland, 2004a, 2006; Crow et al., 2018; O'Donovan, 2017a; Sabatier & Jenkins-Smith, 1993), yet little is known about the conditions leading to learning *during* a crisis. This omission is problematic given the marked uptick of long duration crises over the last two decades, including various climate-related disasters and novel disease outbreaks (DeLeo et al., 2021).

It is against this backdrop that the following study assesses subnational learning during the COVID-19 pandemic. The COVID-19 pandemic, which has lasted over 2 years and resulted in over 1 million deaths in the United States alone, presents a useful context for assessing governmental learning and policy change during an evolving crisis (Boin et al., 2020; Dostal, 2020). The crisis has forced states to grapple with various changes in public health guidance on everything from mask wearing to social distancing protocols while managing the emergence of novel disease variants. Nor were the effects of the virus confined to the public health domain. Instead, COVID-19 is a uniquely boundary spanning problem that impacted virtually every sector of society and the economy. Complicating matters further, a vacuum in pandemic response leadership rooted in federal inaction during the initial phase of the COVID-19 crisis provided both responsibilities and opportunities for state-level policy change and learning (Birkland et al., 2021; Fowler et al., 2021; Kettl, 2020; Taylor et al., 2022). The COVID-19 pandemic thus provides an opportunity to assess whether such change and learning can occur in near real time and in response to rapidly changing social, economic, political, and public health environments.

To assess variation in subnational policy change and learning, we examine COVID-19 policy making in six geographically and politically distinct states in the United States, including initial policies and subsequent modifications during 2020. We specifically seek to assess (a) the extent to which subnational policies changed over the course of the pandemic; (b) whether these changes are emblematic of policy learning; and (c) what the drivers of these changes are, namely changing political and public health conditions. We develop a novel dataset analyzing each policy's content, including its timing of enactment, substantive focus, stringency, and similar variables. Results suggest the pandemic response varied significantly across states, with Democratic-led states engaging earlier in the pandemic timeline than Republican-led states. Specifically, the states examined in our study were responsive to both changing public health and political conditions. We identify patterns of what we call *preemptive policy learning*, which denotes learning in anticipation of an emerging hazard. In doing so, our study provides important insights into the dynamics of policy learning and change during disaster.

THE IDEA OF CRISIS-INITIATED LEARNING

The varieties of policy change

Policy change is broadly defined as the replacement of one policy with one or more new policies. Policy change can include situations where a new policy is adopted, an existing policy is changed, or an old policy is terminated (Lester & Stewart, 1996). Policy change is not the byproduct of a binary, "go/no go" decision. It does not end with the passage of a law. Instead, policy change involves actions and decisions taken across time and in response to shifting demands (Capano & Howlett, 2009; Šinko, 2016). In this respect, policy change can be measured in degrees. At one extreme, policy

innovation encompasses pioneering decisions that seek to involve government in a new area. At the other extreme, policy termination refers to a policy that is abandoned or wound down. Between these two poles sits policy maintenance, which refers to minor adjustments to help ensure a policy continues to meet its goals.

Major policy reform is relatively rare, especially within the United States (Baumgartner & Jones, 2010; Peters, 2018). Consequently, we focus not only on innovations and termination (the two extremes) but also on what Hall (1993) calls "first order" reforms or policy changes that recalibrate the application of existing policy instruments and tools to better address changes in a problem condition. First-order reforms are more or less akin to policy maintenance in that they do not involve government in new policy initiation but instead seek to improve upon or alter policy that is already in place. This is especially critical within the context of a long duration crisis event like the COVID-19 pandemic because most states, particularly prior to deployment of vaccines, focused on managing the crisis as opposed to fashioning new legislation aimed at making lasting changes to their public health policy regime. DeLeo (2015) observed a similar pattern during the 2009 swine flu pandemic, noting that most major reforms were put on hold during the crisis as the federal government shifted its attention to more technocratic policy decisions like vaccine deployment and bolstering hospital surge capacity. In stark contrast to the focusing event literature that suggests sudden onset events with a rapid accumulation of problem indicators will be effective at capturing fleeting policy attention, events that involve a slow accumulation of indicators may not promote learning as government organizations and their publics slowly become acclimatized to the problem as a new normal. However, in a longer duration crisis where indicators accumulate rapidly but also endure over time, we may observe learning, as evidenced by policy changes and modifications that respond to changes in indicators. The COVID-19 pandemic represents this last category of a long duration crisis with rapid accumulation of problem indicators (e.g., COVID-19 cases). Therefore, it may be possible to observe policy changes that indicate government organizations' learning as the pandemic crisis evolves.

Policy change, and first-order reforms in particular, can vary depending on the policy domain and situational context. For the purposes of public health policy making, two concepts are especially important. First, policy change can present itself as change in the relative *stringency* of a particular policy. The concept of policy stringency has been widely applied within the environmental policy context and is used to describe the extent to which a policy puts an explicit or implicit price on failing to comply with different rules and regulations (see, e.g., the OECD Environmental Policy Stringency Index; Galeotti et al., 2020). Unlike most environmental policies that are often monitored at the firm level, the various nonpharmaceutical interventions used during the COVID-19 pandemic frequently asked individuals to engage in certain risk reduction strategies, like mask wearing, social distancing, or staying at home. Stringency within the context of COVID-19 thus ranges from simply recommending certain risk mitigation behaviors to mandating individual compliance.

Second, complex problems like environmental and health protection typically require the creation of governance regimes encompassing an array of distinct but interrelated instruments and policies, colloquially referred to as policy mixes (Howlett & Rayner, 2013). According to Howlett (2005), different policy mixes are implemented based on capacity to affect behavior change and the types of actors that governments must engage with when enacting their programs and policies.

Put differently, policy makers are rarely presented with a single "silver bullet" solution but instead need to select from a variety of different interventions based on their perceived efficacy, legitimacy, equity, and partisan support (Howlett, 2005; Salamon, 1989). Policy change thus involves critical decisions about which policies to add or subtract from an existing mix or portfolio across time and, as noted below, in response to changing political and problem conditions. Regarding the COVID-19 pandemic, policy scholars have advocated for deeper understanding of policy mixes and policy designs

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to examine the mechanisms that result in policy outcomes (Dunlop et al., 2020). The varieties of policies that could be included in a COVID-19 mix are substantial, ranging from nonpharmaceutical interventions to economic development packages, vaccination campaigns, or online learning programs.

The dynamics of policy learning

Policy learning is the "relatively enduring alterations of thought or behavioral intentions which result from experience and which are concerned with the attainment (or revision) of policy objectives" (Sabatier, 1988, p. 133). Individuals in their role as officials in public organizations—agencies, legislatures, and executive offices—act on new information which in turn potentially leads to organizational-level change (Heikkila & Gerlak, 2013). Learning occurs when individuals within organizations come to discover or realize the significance of policy problems, uptake new information about how to address a problem, and potentially change policies (Albright & Crow, 2021; Birkland, 2004a, 2004b, 2006; Crow et al., 2018; O'Donovan, 2017b; Sabatier & Jenkins-Smith, 1993). Although policy learning is an important part of the policy process, policy change may not necessarily occur as an outcome of learning (O'Donovan, 2017b; Taylor et al., 2021).

Learning is arrayed along a spectrum from *instrumental learning* about policy tools and their successes or failures to *social learning* about the underlying causes of policy problems to *political learning* about the various strategies and tactics that can be used when advocating for a particular policy (Albright & Crow, 2021; May, 1992; O'Donovan, 2017b; Sabatier, 1988). In this study, we focus on instrumental policy learning and political learning because social learning typically occurs in the aftermath of a crisis rather than during management or response. First, we use instrumental policy learning to assess the extent to which state governments changed policy because of learning about policy tools and instruments to address the problems presented by the pandemic. Instrumental policy learning is the most common form of policy learning, particularly compared to social learning (Birkland, 2006, 2009; May, 1992; O'Donovan, 2017b). It involves learning about new or existing policy tools and instruments that can be used to address a policy problem (Birkland, 2006; May, 1992; O'Donovan, 2017b). The empirical connection between instrumental learning and change is clear (Birkland, 2009; Crow et al., 2018; Howlett, 2012). Policies represent the lessons—political, instrumental, organizational, social—derived from a particular crisis (Albright & Crow, 2021; Crow & Albright, 2021). Policy change is generally considered to be one outcome of the learning process (Heikkila & Gerlak, 2013). In the context of the COVID-19 pandemic, our expectation is that the lessons will be instrumental, meaning that states will engage in instrumental policy learning because of a change in problem indicators (i.e., COVID-19 case counts).

Second, we examine the prospect of political learning in states during the COVID-19 pandemic. Political learning is observed in cases where political influences—such as public opinion and electoral cycles—or considerations of political strategy lead to changes in policies. Political learning may include learning about the credibility or public acceptability of certain types of policies (Taylor et al., 2021) as well as the political strategies and tactics used by public organizations (Crow & Albright, 2019; May, 1992). In the absence of new information about a problem or other traditional drivers of learning, political learning can also take the form of policy mimicking where decision makers "copy" policies used in nearby or similar jurisdictions (May, 1992), perhaps because they simply observed that it worked well elsewhere (Shipan & Volden, 2014). Similarly, there may be political opposition to some forms of change that will prevent the putative lessons from an event or phenomenon from being "learned" to the extent that it is applied in the form of a new or revised policy. Our expectation in this study is that political learning will occur when there is no new information, either about the

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policy instruments or COVID-19 case counts, to inform choices by policy makers. As a result, states will mimic the policies of states that are politically—either by partisanship or ideologically—similar.

Because we are examining the policies that are adopted, we look to policies as the products of learning. Building on this idea, we conceive of policy change—be it innovation, maintenance, termination, or adjustments in a policy's stringency—as potential evidence of learning. This is often referred to as *prima facia* evidence of policy learning. Relying on *prima facia* evidence of policy learning was a practice initially used by May (1992), meaning that evidence of policy learning can be inferred from face value of government documents in the absence of direct evidence gathered by surveying policy makers and government officials. This practice of inferring evidence of policy learning based on *prima facia* evidence has been further refined over time (Albright & Crow, 2015; Birkland, 2004a, 2004b, 2006, 2009; Crow et al., 2018; Crow & Albright, 2019; O'Donovan, 2017b). This approach is especially useful within the context of learning during crisis since policy makers are not responding to a single, discreet disaster, but rather an ongoing crisis that is perpetually evolving and changing.

Crisis as a catalyst for learning and potential policy change

A number of factors can catalyze policy change and learning, particularly within the context of crises and hazards. Kingdon (2011) introduced the term "focusing event" as a "little push" that can elevate issues on a government's or the public's agenda. Birkland (1997, 1998) later refined Kingdon's description by defining a potential focusing event as an event that is sudden, rare, harmful, or illustrative of future harms, that affects a particular geographic area or a community of interest, and that is known to policy elites and the general public nearly simultaneously (1997). Focusing events create pressure for public organizations to learn from disaster and, ideally, change policy in ways that improve future performance (Birkland, 2006; May, 1992; O'Donovan, 2019; Taylor et al., 2021).

Focusing events allow certain issues to bowl their way onto the policy agenda, effectively leapfrogging other items in the wake of disaster (Kingdon, 2011). COVID-19 similarly skyrocketed to the top of federal and state policy agendas in March of 2020, but the crisis does not meet Birkland's definition of the term in that it was neither sudden nor defined to a specific geographic area—a pandemic is by definition a global phenomenon (DeLeo et al., 2021). Instead, the COVID-19 crisis revealed itself through the accumulation of what scholars call problem indicators or measures and metrics of a policy problem. The most prominent indicators within the context of COVID-19—indeed all public health crises (DeLeo, 2018)—included the number of cases, deaths, and hospitalizations resulting from the virus.

Whereas most federal policy during the first year of the pandemic focused on passing fairly large relief packages to support individuals and state governments during the crisis (DeLeo et al., 2021), subnational governments were more dynamical because states and localities were tasked with directly managing the crisis. This critical response function most clearly manifested in decisions regarding whether or not to require various nonpharmaceutical interventions, like mask mandates, stay-at-home orders, and social distancing requirements, as well as various policy interventions aimed at buoying the economic, education, and housing sectors, among others. Because COVID-19 was a long duration crisis event, states had to consider adjusting and recalibrating their policies in the face of improving or worsening indicators of the crisis like cases, deaths, and hospital capacity.

Often times, public health problems are said to be subject to indicator lock, meaning there is general consensus that cases and deaths represent the only viable metrics of changes in problem conditions (DeLeo, 2018; see also Jones & Baumgartner, 2005). However, this was not the case for the COVID-19 pandemic, which had profound effects across multiple sectors. Of particular importance was the virus's economic effects, which were readily tracked and tabulated alongside public health metrics (Carrieri

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et al., 2021). Thus, indicator change at the state level should facilitate not only greater policy change (DeLeo et al., 2021) but also greater policy mixing both with respect to the types of public health interventions applied and policies aimed at mitigating the deleterious economic and social effects of the crisis.

Crises can force governments to both change and learn. While learning after a disaster is normatively desirable, certain factors such as presence of a focusing event, issue salience, and group mobilization can make learning more likely, and it may take several iterations of crises for learning to occur (e.g., repeated disasters). Disasters provide the impetus for policy learning because they often lay bare flaws or shortcomings within the existing crisis management regime. However, much of the literature has focused on change and learning *after crisis*, a testament to the fact that many of the crises studied are short duration rapid onset events like hurricanes, terrorist attacks, tornadoes, and flooding (Albright & Crow, 2021; Birkland, 2006; O'Donovan, 2017a). COVID-19, by contrast, has lasted for more than 2 years thereby creating pathways for learning during disaster and in response to changing indicators. This type of long duration crisis event can teach us a great deal about learning *during* disaster rather than our more frequent approach to understanding learning *after* disaster.

Of course, problem indicators do not present themselves in a vacuum. Instead, they interact with competing social and political forces that ultimately shape how they are perceived by policy makers at any point in time, a phenomenon known as indicator politicization (DeLeo & Duarte, 2021). Various studies have demonstrated the profound effect of partisanship on COVID-19 governance. Fowler et al. (2021) observe partisan divergence with respect to the timing and enactment of state emergency declarations, noting that Democratic governors were quicker to declare emergencies than their Republican counterparts. Birkland et al. (2021) echo this finding, adding that states not only differed in terms of the timing of emergency declarations but also the adoption of various nonpharmaceutical interventions. Grossman et al. (2020) find that Republicans were far more likely to support a return to in-person learning than Democrats, regardless of COVID-19 severity in their state. Taken together, these studies suggest that while indicators remain an important driver of change and learning throughout the pandemic, the crisis unfolded in a hyper-politicized environment where Democratic versus Republican-controlled states pursued different policies. Thus, political pressures can both promote and stymie normatively desirable learning depending on the state context.

RESEARCH QUESTIONS AND METHODS

While policy change and learning after disaster are widely studied phenomena, much less is known about learning *during* disaster, particularly long duration crises like the COVID-19 pandemic. We stipulate that the literature on policy and organizational learning is based not on careful assessment of whether and to what extent individuals experienced cognitive change, but is assessed based on the extent to which a reasonable case can be made that policy changed in the face of new information (Busenberg, 2001) and that this policy change is an artifact of learning (May, 1992). Based on these assumptions, we ask:

RQ: When and under what conditions do policy change and learning occur during long duration crisis events?

We conceive of learning in a way that is influenced by the severity of the policy problem, as signaled by changes in public health problem indicators over time as well as different political contexts. Thus, we hypothesize:

H1a *State policies will change in response to changing problem indicators, with increases in problem indicators leading to greater policy promulgation and stringency and decreases leading to greater policy termination or relaxation.*

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H1b *State policies will change according to political conditions, with Republican governors in states that voted for President Trump less likely to adopt policies designed to slow the pandemic, Democratic governors in states that did not vote for President Trump more likely to adopt more policies and more stringent policies, and states whose governors' parties differed from their electorates' partisan preferences adopting an intermediate number of policies with an intermediate level of stringency.*

We also expect see multiple patterns of policy mixing, a testament to COVID-19's boundary spanning effects and a desire by state elected officials to throw all possible tools at the problem, given its severity. We hypothesize the following with regard to policy mixing:

H2 *Policy mixes with greater policy variety will be associated with increases in problem indicators.*

H3 *Policy mixes with greater policy variety indicate instrumental policy learning as opposed to political learning by state governments.*

Research design

The study's hypotheses are examined using a comparative case analysis approach. We selected six states for comparison: Colorado, Iowa, Louisiana, Massachusetts, Michigan, and Washington. We chose these states based on variation in regional, political, and economic characteristics, COVID-19 case rates, and early actions in response to COVID-19 (Table 1). Most importantly for the key variables analyzed here related to politically induced policy change as well as indicator-driven policy change, the sample of states includes those governed by both Democrats and Republicans, states that took early and frequent COVID-19 policy action as well as those that did not, and states with early outbreaks as well as those that saw more severe outbreaks later in 2020. The time period of analysis is March 2020 through December 2020. This period is characterized by a particular type of policy response focused on risk mitigation, limiting spread of the virus, and responding to corollary effects of the pandemic across sectors. It is also prior to the release of vaccines for COVID-19 and therefore a markedly different timeframe in terms of the understanding of risk and an eventual end to the pandemic.

TABLE 1 Characteristics of U.S. states included in analysis

	Region	Political Party of Governor/2020 Presidential Vote	Unemployment rate, June 2020	Unemployment rate, June 2021	Cumulative COVID-19 cases per 1,000,000 as of February 27, 2022
Colorado	Mountain West	Democrat/Democrat	10.6	6.2	228,708
Iowa	Midwest	Republican/Republican	8.4	4.0	237,097
Louisiana	South	Democrat/Republican	9.5	6.9	263,646
Massachusetts	Northeast	Republican/Democrat	17.7	4.9	242,233
Michigan	Midwest	Democrat/Democrat	14.9	5.0	235,541
Washington	West	Democrat/Democrat	10.0	5.2	186,357

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State policies

State-level policy[1] documents were collected by scraping relevant state policy documents and information from the websites of state governors' offices, state health agencies, and state-sponsored COVID-19 websites from March 2020 to December 2020. These documents included executive orders, proclamations, directives, emergency health orders, and other documents that were determined to constitute a policy. The policy documents were cross-referenced with state press releases, the National Governors Association's list of state COVID-19 policies, and the University of Washington's COVID-19 State Policy database to ensure that all significant policies were collected. While these other sources provide a useful check on the Risk and Social Policy Working Group's database used in this analysis, they do not serve as a substitute, as the database of policies collected for this study includes all COVID-19-related policy topics (e.g., social distancing, mask wearing, business closures, housing policies, tax moratoria, etc.), which casts a wider net than other publicly available databases.

External indicators and political drivers

To assess the relationship between problem indicators, policy change, and learning, our analysis includes variables measuring changes in COVID-19 cases in each of the six states included in the study (Table 1). Additionally, we consider political drivers of policy change and learning. Data sources are listed in Table 2.

Data analysis

The state policies were coded using a multi-step process. First, we used topic modeling (Latent Dirichlet Allocation) to identify clusters of COVID-19-related words in the state policy documents (included in Appendix B). Key policy topics were identified based on these clusters (e.g., masks, long-term care facilities, and gatherings, among others; see Appendix B). The policy topics include three broad categories: (1) risk mitigation policies that include stay-at-home orders, masks, events and gatherings, businesses, testing, and correctional facilities; (2) social support policies that include

TABLE 2 Data sources used to examine the relationships between policy change and learning and problem indicators

Variable	Source of data
Dependent variable: policy change and learning	Policy documents downloaded from state websites from March 2020 to December 2020
COVID-19 case numbers	Center for Disease Control and Prevention[a] and the COVID-19 Tracking Project[b]
State-level 2016 voting data	Associated Press[c]
State-level partisan composition	National Conference of State Legislatures (NCSL)[d]
Unemployment rates	Bureau of Labor Statistics

[a]Centers for Disease Control and Prevention: https://covid.cdc.gov/covid-data-tracker/#cases_casesper100klast7days

[b]COVID-19 Tracking Project: https://covidtracking.com/data

[c]Associated Press: https://elections.ap.org/dailykos/results/2020-11-03/state/US

[d]NCSL State Party Composition: https://www.ncsl.org/research/about-state-legislatures/partisan-composition.aspx#Timelines

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social and financial supports from the government and housing policies; and (3) medical capacity, including policies governing medical and long-term care facilities and elective surgeries. The documents (n = 581) were then analyzed for the presence of these topics using dictionaries of words commonly related to a topic developed from the topic modeling. Topics that appeared in more than one percent of words in the policy document were captured. When multiple topics were detected in a single document, we focused on the three most common topics. This allowed the researchers to systematically identify the units of analysis (i.e., distinct policies) within each document, as some policy documents introduced or modified multiple policies at once.

Second, each distinct policy identified through the automated analysis was coded manually (codebook available in Supplemental Material) to identify the following: (1) the issuer of the identified policy, (2) timing of enactment (or revision/termination), (3) policy design (e.g., mandates, economic incentives, persuasion, etc.), (4) stringency (highest stringency policies are mandates that apply to all people in a state while lowest stringency policies are recommendations), (5) policy targets, and (6) policy topics that were missed or inaccurate in the topic modeling stage of coding. Coders then returned to inaccurate or incomplete topics to code those by hand. The final dataset contains all distinct policies ($n = 748$), related to the identified topics. To examine whether risk mitigation policies became more or less restrictive over time, policies were ordered chronologically and adjacent coded policies were compared, including codes for stringency, whether a policy was new, revised, or continued, and the targets and goals of the policy (e.g., reopening or to reduce COVID-19 prevalence).

Intercoder reliability for the manual coding was established on a subset of policy documents. Two pairs of coders coded a set of identical documents separately. The coded data were analyzed by ReCal2[2] to determine percent agreement and Scott's Pi. Table 3 outlines the reliability scores for each of the variables used in the analysis presented next. According to Krippendorff (2018), a Scott's Pi value above .80 is acceptable for reliability of coded data. Importantly, some categories (i.e., stringency) allowed coders to select all that apply from a list of common policy characteristics. By allowing multiple responses we capture more complexity but maintain a lower intercoder reliability because even if two coders selected three policy tools, for instance, and only disagreed on one of the three, it was counted as a disagreement. Because percent agreement for these variables was still acceptable, the variables are included in this analysis despite lower Scott's Pi measures.

FINDINGS

COVID-19 policy changes over time in six U.S. states

COVID-19 impacted each of the six states in this analysis differently. With an eye toward these key differences, Table 4 presents an overview of major pandemic-related events in each of the states

TABLE 3 Intercoder reliability

	Pair one		Pair two	
Variable Name	**Scott's Pi**	**Percent agreement**	**Scott's Pi**	**Percent agreement**
Effective date	0.871	88.2	0.872	88.9
Expiration date	0.797	82.4	0.804	83.3
Issuing office	0.871	94.1	1	100
Stringency	0.437	88.9	0.624	77.8

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included in this analysis. In the following section, we briefly summarize these events before turning our attention to our hypotheses.

Colorado

Colorado had low case counts early in the pandemic, but high levels of policy change focused on tightening risk mitigation measures, particularly between March and May. Colorado opened restaurants to some indoor seating on June 1, 2020. The first spike in cases was low compared to the other five states yet overall policy activity was high. This pattern reversed later in the year as cases spiked above other states except Iowa and policy activity declined substantially. In Colorado, the governor controlled most policy activity. In the late 2020 COVID-19 peak, cases accumulated prior to a corresponding but small uptick in policy activity, suggesting that the state responded to problem indicators by recalibrating existing rules and measures. Indeed, Colorado initially used a color-coded dial system to differentiate counties that had higher levels of COVID-19 cases and later paired it with a "Five Star" rating system that allowed restaurants and businesses in counties that abide by more stringent COVID-19 risk mitigation rules to open with limited capacity.

Iowa

Iowa is one of only five U.S. states that did not implement a stay-at-home order in 2020, ignoring the policy guidance of the Centers for Disease Control and Prevention (CDC) and other federal agencies. (Note however that then-President Donald Trump openly contradicted the messaging of these agencies, further perpetuating the uneven federal response.) Instead, state policy makers in Iowa framed business restrictions as the functional equivalent to a stay-at-home order (Norvell & Pfannenstiel, 2020). Iowa began to loosen the few policies it did put in place beginning on May 1, 2020, earlier than the other states included this study. Iowa did not issue a mask mandate until November 2020, when the Iowa Board of

TABLE 4 COVID-19 timelines in six U.S. states, according to first incidence (all dates in 2020)

	First COVID-19 case reported	State of emergency	Stay at home adopted	Mask mandate	Termination of initial stay-at-home order
Washington	January 22	February 29	March 23	June 26	Phased reopening County-by-County June 1
Massachusetts	February 1	March 10	March 24	May 5	Phased reopening May 18
Colorado	March 5	March 16	March 26	July 10	Safer-at-Home April 26 Protect Our Neighbors July 9
Iowa	March 8	March 5	None	November 17	No official Stay-at-Home Order
Louisiana	March 9	March 11	March 22	July 13	Phase One of reopening May 15
Michigan	March 10	March 10	March 23	July 10	Order Lifted June 1

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Health voted 7–2 to encourage the governor to adopt a mandate (Mervosh et al., 2020). Throughout 2020, the state also saw the lowest level of policy activity compared to the other five states in this study, despite the fact that it also experienced the most pronounced spike in COVID-19 cases in late 2020.

Louisiana

Louisiana saw the highest early spike in COVID-19 cases, followed by an uptick in policy activity to tighten restrictions. In fact, Louisiana was one of the only states to experience a spike in COVID-19 cases during the summer months, which state officials attributed to the state's robust nightlife and the laissez-faire policy environment. Policy makers were slow to respond to the uptick in cases. On June 4, 2020, the state forged ahead with Phase 2 of its reopening plan despite the surge in cases, only to pause the reopening on June 25, 2020. Two weeks later, on July 11, 2020, Louisiana again delayed its reopening plan because of the continued spike in cases. Key policy changes enacted in the wake of the unusual summer surge included a requirement that bars provide carry-out and delivery service only. Gatherings were also limited to 50 people (down from 250 people).

Massachusetts

On February 1, 2020, Massachusetts became the fifth state in the nation to report a case of coronavirus, linked to a young man who recently traveled to Wuhan, China. Weeks later, a conference bringing together more than 100 people from across the globe became the state's first super spreader event, leading to hundreds of thousands of cases worldwide (Lemieux et al., 2021). These incidents foreshadowed the state's first wave of the pandemic, which peaked in late April. In May of 2020, the state initiated a four-phased reopening plan that gradually loosened restrictions on different industries. The plan also provided detailed guidance and safety protocols for different professions. Increases and decreases in these metrics were used to determine whether the state advanced to the next phase in the reopening plan or took a step back (Schumaker & Mitropoulos, 2020). For example, in August 2020, Governor Baker postponed the state's progression to step two of its third phase of the reopening, highlighting a marked increase in cases. Concurrently, the state reduced outdoor gathering sizes from 100 to 50 people while cracking down on restaurants and bars that violated state policy. The governor later expanded the mask mandate in November 2020, requiring all individuals above the age of five wear masks while in public places.

Michigan

Michigan demonstrated one of the more complex policy processes, a testament to ongoing debates regarding the scope of gubernatorial authority. The state constitution limits the governor's power during an emergency to 30 days. Thus, although the state's policy activity may appear prolific, most of these policies are simply renewals of programs that were already on the books. The legislature mounted an unsuccessful attempt to challenge the governor's emergency powers in May 2020 (Wonacott, 2020). Michigan took a two-pronged approach to restrictions that focused both on regions of the state and sectors of the economy. The state tightened restrictions in population-dense regions like Metro Detroit but loosened restrictions in rural parts of northern Michigan. In Figure 1, there is a rapid decline in policy activity in October 2020, which corresponds with the Michigan Supreme Court's ruling that the

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governor's authority to extend the declaration of a state of emergency expired on April 30th and that all subsequent executive orders were unconstitutional (Dodge, 2020). Modified versions of many of the Governor's orders were issued by various actors including the legislature, only some of which are captured by the data collection methods used in this study.

Washington

Washington was the first state in the United States to record a COVID-19 case. The state acted quickly with an initial surge of policy activity that continued through 2020. The state issued its stay-at-home order on March 23, 2020. King County, where Seattle is located, loosened restrictions beginning in June after the initial wave of policy activity. This loosening allowed 25% capacity in restaurants. A late-year uptick in cases was much lower than other states and was not associated with a large increase in new policy activity, but instead an increased focus on tightening restrictions. This sustained policy activity throughout 2020 is unique among the states analyzed and may be related to the lower COVID-19 peak in late 2020. Washington acted more quickly than most other states; its policies were more stringent; its governor's actions did not see broad-based, organized opposition in the legislature or in the public at large; and it maintained a higher level of stringency for consistently longer time than did other states (Mitchell et al., 2020). For example, the July 2, 2020, statewide order that required businesses to refuse service to customers not wearing a mask was implemented "with few ripples," because business owners and patrons in Seattle were broadly supportive of the mandate (Anne Long et al., 2020). Compliance was more varied outside of the Seattle area, but opposition was muted. Furthermore, the governor was able to take effective action as needed to address conditions.

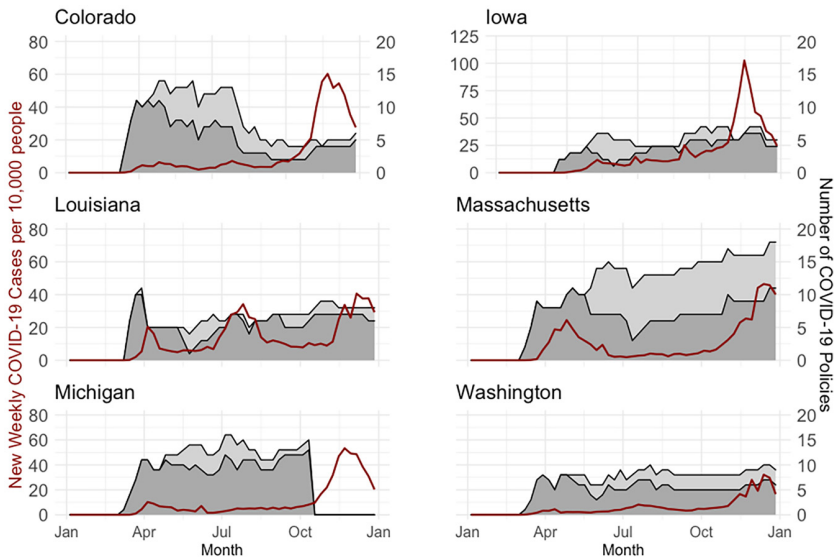

FIGURE 1 Frequency and change of risk mitigation policies and COVID-19 cases over time. Note that Figure 1 uses a different scale for Iowa because their COVID-19 cases, proportional to population size, were greater than the other five states.

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Hypothesis 1a and 1b: Policy response to problem indicators and political conditions

Our first hypothesis suggests policy change results from a change in problem indicators, namely an uptick in COVID-19 cases. To test this hypothesis, we coded various state COVID-19 policies. Specifically, topics detected through automated and manual coding were assigned to three categories based on the coding of policy goals: (1) *risk mitigation*; (2) *medical capacity*; and (3) *economic and social support* (for details on distribution of these policy topics in the dataset, see Table A1 in Appendix A). Because risk mitigation policies were both the most effective way to stop the spread of COVID-19 during this time period and the most dramatic in terms of their effect on daily lives and economies, they should have been the most responsive to changes in problem indicators and therefore should give a clear indication of policy maker attention to changing problem conditions.

Figure 1 shows the aggregation of risk mitigation policy activity in each state. The policies issued (black lines) over time are depicted as they relate to COVID-19 case increases in the previous week (red line) in each state. Policy activity is depicted as either those that strengthened risk mitigation by tightening or extending requirements for masks, correctional facilities, business and school closures, gathering size, staying-at-home, and testing (dark gray area) or policies that loosened risk mitigation by reversing these actions (light gray area). Loosening policies included actions such as increasing allowable gathering size, increasing capacity of bars/restaurants, and moving from stay-at-home to safer-at-home orders. Whether a new policy tightened or loosened COVID-19 restrictions was determined by comparing the new policy to the existing policy in place.

When comparing policy activity to case rates, Figure 1 shows that each state included in this analysis had varying levels of COVID-19 cases in early 2020, but all saw a peak in late 2020. The magnitude of that late peak varied, however, meaning some states suffered a larger case burden than others. Figure 1 thus provides mixed support for Hypothesis 1a. Early upticks in cases in Massachusetts, Louisiana, and, to a lesser extent, Michigan led to strong policy responses in terms of quantity of policies promulgated. Indeed, even Iowa, a state that, as noted above, was not politically inclined to impose robust COVID-19 regulations, enacted new—and increasingly stringent—policies during its fall 2020 surge.

Still, the relationship between indicators and policy change was not always as clear as anticipated. First, Colorado and Washington appear to be outliers. Despite having a relatively low case counts, Colorado was a forerunner with respect to the adoption of mitigation policy, suggesting they were motivated by something other than indicator change. Similarly, Washington did not experience particularly high case counts in the late fall/winter of 2020 (although it was one of the first states to identify COVID-19), yet the state promulgated robust risk mitigation programs at the outset of the pandemic. The policies enacted in Colorado and Washington were also among the most stringent of our six states, along with Michigan (see Table A2).

Second, the effect of indicators on policy change appears to have waned in some states over the course of 2020. Michigan, for example, lifted a good deal of its mitigation policies rather abruptly October, a testament to Michigan Supreme Court's ruling. Less than 2 months later, the state experienced its biggest surge of the pandemic. Surprisingly, despite the sheer volume of policies it issued, Massachusetts' policy portfolio lacked stringency compared to the other states, a pattern that continued well into the state's fall/winter 2020 surge.

H1b predicts that policy change is influenced by political conditions. We find robust evidence to support this hypothesis as states more or less behaved according to their political inclinations. Politics may help explain why Colorado and Washington reacted so decisively in the early stages of the pandemic despite having relatively low case counts, since both states were Democratically

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controlled. Similarly, both of our Republican controlled states (Iowa and Louisiana) were reluctant to enact COVID-19 mitigation policies. Indeed, Iowa's relative dearth of policy throughout the pandemic was undoubtably politically motivated, as Republican Governor Kim Reynold sought to follow "President Donald Trump's lead in downplaying the virus's seriousness" (Godfrey, 2020). Michigan's curious pattern of mitigation policy also reflects its distinctive political situation. Notably, Democratic Governor Gretchen Whitmer imposed some of the most numerous and stringent policies throughout the summer/fall of 2020; however, her powers were directly challenged by a Republican controlled legislature and eventually dashed by the state Supreme Court (see Figure 1).

Hypothesis 2: Problem indicators and variety of policy response

Turning our attention to policy mixing and variety, Figure 2 presents new and revised policies issued by each of the six states, broken down by quarter in 2020 and by category. In the figure, red represents policies focused on risk mitigation, blue represents those focused on medical capacity, and green is used for policies focused on government support such as economic, housing, and social policies. This figure illustrates the policy changes made (including revision or termination) as well as the timing of their issuance and policy variety in each state's policy response, as indicated by the mix of policies used to tackle the complex problems associated with the pandemic. Colorado, Michigan, and Washington show the greatest mixing in their policy portfolios (Figure 2), particularly when looking at the early months of the pandemic. Louisiana saw the least diverse policy mixing and fewest overall policies. During the second wave of COVID-19 in fall of 2020, the figure suggests most states focused their policy making on risk mitigation rather than other policy tools.

This analysis does not support Hypothesis 2. Policy mixing across all states was greatest during the first and second quarters of 2020, despite the fact that the largest uptick in cases came in the third and fourth quarter. This is particularly true in Colorado and Washington, which were exemplar states in terms of the scope and variety of policies included in their portfolios. In these states, most policy mixing occurred prior to their major surges, suggesting the creation of new policy was motivated by something other than a simple accumulation of indicators. A similar pattern occurred in Massachusetts, where mixing preceded the winter spike in COVID-19 cases. In Michigan, policies focused on

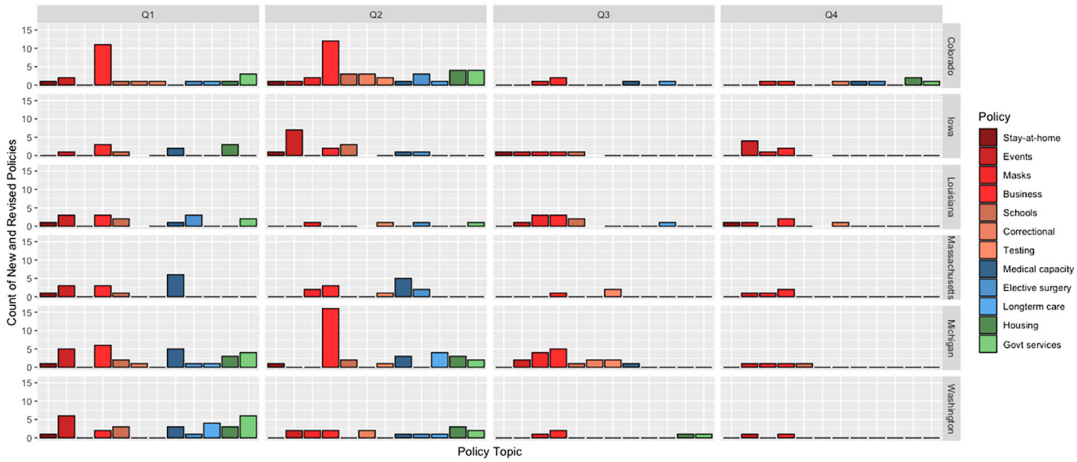

FIGURE 2 COVID-19 policy variety across six U.S. states during 2020: New policy adoption and revision

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risk mitigation were promulgated in the fall with the uptick in cases. There was a modest uptick in policies focusing almost exclusively on nonpharmaceutical interventions and other risk mitigation tools in Louisiana during third quarter of 2020; however, this likely reflects the fact that the state had done very little in preceding quarters.

It should be noted that Figure 2 is only tracking new or revised policies and is not accounting for the continuation of policies across time or termination. As such, the lack of mixing observed in the third and fourth quarters does not mean states were somehow unprepared or unable to respond. Indeed, as noted above, in Figure 1, the total number of COVID-19 policies (proportionate to population size) remained consistent across most states through 2020 (with Iowa as an outlier), as policy makers instead focused on recalibrating the stringency of their policy mixes in response to changing problem conditions. Still, the fact that the creation of new policy preceded the fall/winter surge suggests indicator change alone does not induce greater mixing. The following section probes this finding further by exploring the connection between the observed mixing and policy learning.

Hypothesis 3: Policy mixes and learning

To what extent do the patterns of policy change described above reflect instrumental policy learning in state governments? In Hypothesis 3, we posited that *more varied mixes of policy responses indicate instrumental learning as opposed to political learning by state governments*. However, returning to the evidence presented above in Figure 2, our data seem to suggest the converse is true: greater policy mixing is likely more emblematic of political learning rather instrumental learning. Specifically, instrumental learning suggests states adjust and recalibrate their existing policy regimes based on informed decisions about changing problem conditions. Within the context of COVID-19, we assume those conditions are changes in the key indicators like case counts.

The lion's share of policy mixing, particularly Washington, Massachusetts, Michigan, and Colorado, preceded the winter surge, suggesting learning was motivated by something other than a careful assessment of the viability of different policy instruments (see Figure 2). This is not to say the decision to enact these policies was somehow misguided or wrong; even in early 2020 there was fairly robust consensus within the public health community that various nonpharmaceutical interventions could help stop the spread of the disease and ultimately "flatten the curve" (Scott, 2020).

Given their scant experience managing large numbers of COVID-19 cases, places like Washington, Massachusetts, Michigan, and Colorado were likely engaging in something more akin to political learning in that they were enacting policies based on cues they were receiving from the larger public health community and other similar states. For example, in Colorado and Michigan, initial policy change occurred prior to their experiencing significant local outbreaks, suggesting that these states were mimicking, Washington, Massachusetts, and perhaps other forerunner states not included in our study. The informational environment during the early stages of the pandemic undoubtably lent itself to political learning, as there was rapid dissemination of information about the pandemic paired with an early sense that it was not a matter of if, but when the crisis would eventually spread nationwide. Furthermore, while the uncritical adoption of a policy idea borrowed from a neighboring or politically similar state is a form of non-learning, the borrowing of policy ideas from other states based on a consideration of states' early experience provides potential pathways through which states can quickly respond to emerging threats. This rationale is consistent with the idea of learning and adaptation in response to repeated hazardous conditions over time (May, 1992; O'Donovan, 2017b; Taylor et al., 2021).

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Ironically, the only states that did demonstrate modest instrumental learning, although very little overall mixing, were Louisiana and, to a slightly lesser extent, Iowa. Both states enacted new policies around mask wearing, businesses, events, and even schools during their fall/winter surges (Figure 2). This would seem to suggest a course correction in the face of souring indicators, which is emblematic of instrumental learning. However, it also speaks the limited policy activity these states engaged in at the outset of the pandemic. Michigan also instituted new policies in the third and fourth quarters (see Figure 2), but given the peculiarities of their emergency management system and the fallout State Supreme Court ruling limiting the Governor's emergency powers, it is difficult to characterize these changes as learning since most of these measures were simply being reinstated by the state legislature in the face of the winter surge.

DISCUSSION

This paper represents a modest first effort to understand the extent to which policy change and learning can occur *during* disaster. Previous research suggests policy change during long duration crisis events, including the COVID-19 pandemic, is shaped by changing problem conditions, namely souring of public health indicators (DeLeo et al., 2021) as well as political factors (Birkland et al., 2021). While we find ample evidence supporting the politicization hypothesis, the subnational response to COVID-19 indicators was much less straightforward than the patterns observed at the federal level by DeLeo and co-authors (DeLeo et al., 2021).

Most notably, we find that some states, namely Colorado, Massachusetts, Michigan, and Washington engaged in robust policy change prior to experiencing a surge in COVID-19 cases. This type of policy change has elsewhere been characterized as "anticipatory policymaking" in that it seeks to establish policy and programs aimed at preparing for the onset of an emerging hazard (DeLeo, 2015). The observed pattern of what we call *preventative policymaking* also pays testament to the relative novelty of the virus, particularly during the early stages of the pandemic, and the prevailing narrative that it was not a matter of if the pandemic would reach every state, but when. Thus, our research suggests that at the beginning of a slow onset event, many subnational governments will be hyper-sensitive to even modest indicator change, including those occurring in neighboring states, since these changes can portend a looming or emerging threat. This pattern is, of course, consistent with public health best practices. The very doctrine of preparedness centers on the assumption that government institutions will be constantly scanning their environment for emerging diseases and taking measures to proactively address them (Etheridge, 1992).

Second, we observe that the relationship between indicator change and policy change evolves across space and time. Whereas the early stages of the pandemic triggered varying levels of policy activity across all six states, subnational responses were remarkably uneven with respect to the overall number of policies introduced, the stringency of these policies, and the magnitude of mixing. Consistent with previous studies exploring the political dynamics of COVID-19 policy making (Birkland et al., 2021; Fowler et al., 2021; Grossman et al., 2020), our study suggests policy mixing broke along partisan lines, as the three states with the most mixing (Massachusetts, Colorado, and Washington) were all Democratic-leaning whereas the laggards (Iowa and Louisiana) were Republican-leaning. Within the context of the COVID-19 crisis, this pattern was likely especially pronounced since the Trump Administration sought to downplay the effects of the virus, further incentivizing the types of uneven responses observed over the course of the pandemic (Birkland et al., 2021). In fact, evidence

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seems to suggest this pattern accelerated across time, as evidenced by the differential rates of vaccine uptake across states (Kates et al., 2021).

Third, our findings suggest long duration crisis events create a learning environment that deviates from extant assumptions about when and under what conditions policy makers derive lessons from changing problem conditions. Whereas instrumental learning is seen like a desirable—even rational—response to crisis, long duration crisis events create pressures to not only act in near real time but also to prepare for and even preempt challenges that may not manifest until weeks if not months in the future, as described above in the description of preventative policy making. At first glance, the type of learning evidenced in states like Massachusetts, Colorado, and Washington appears to be emblematic of policy mimicking, which is a form of "superstitious learning" (Levitt & March, 1988, p. 325) that "occurs when beliefs about effectiveness of particular actions or individuals dominate any understanding or evaluation of performance" (May, 1992, pp. 336–337). However, when considered against the backdrop of the larger public health crisis unfolding in early 2020, we think *preemptive learning* is more apt characterization of the activities that took place during this period. To be sure, states borrowed considerably from other, like-minded states; however, this behavior was, at least in part, a reaction to signaling from the public health community that pandemic conditions would rapidly deteriorate in the months ahead and that a lack of preparedness would make states more vulnerable to widespread community transmission (Scott, 2020). Whereas mimicking is seen as a less informed or comprehensive type of learning than instrumental learning, preemptive learning occurs when governments are confronted with an emerging crisis that necessitates preventive measures and does not afford the luxury of trying different instruments. Thus, the adoption of robust policy mixes in the early stages of a pandemic represented a way for states to, for lack of a better term, "cover their bases" in the event that things worsened in the weeks ahead. In this respect, preemptive learning is similar to mimicking in that states readily borrow from one another; however, the motivation is a desire to act in anticipation of an emerging hazard. The preventative policy making taking place in the early months of the pandemic in states that acted quickly, therefore, can be characterized as preemptive learning in that the early adopters were eager to borrow practices from other jurisdictions in an effort to stave off worst case scenarios at home.

CONCLUSION

The findings from this study help us understand responses to the COVID-19 pandemic in six U.S. states and draw broader lessons about how governments learn during crisis. Our analysis underscores the extent to which policy change was motivated by both changing problem conditions (problem indicators) and political factors. It also spotlights the dynamics of preemptive learning resulting in preventative policy making, which sees states adopt lessons from other states as well as larger policy communities in anticipation of an emerging hazard.

Of course, because our analysis is limited to six states we cannot speak to the extent to which these patterns were evidenced in other states. Future research can build on these findings by exploring the dynamics of COVID-19 policy change and learning in other contexts. Scholars are behooved to explore learning in other states and investigate the possiblity of conducting 50 state studies.

Moreover, while the first year of the COVID-19 pandemic was certainly a dynamic time with respect to the adoption of risk mitigation policies, the crisis did not end on January 1, 2021. If anything, the patterns of politicization described above only accelerated with the deployment of vaccines. Future research should expand on the limited temporal perspective of this paper by considering learning up to and through present day. Indeed, whereas we consider learning and change during disaster, it is

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plausible that some of the most enduring lessons of the COVID-19 pandemic will not be fully realized for some time. Previous research suggests substantive learning often occurs in the aftermath of disaster (Birkland, 2006), so scholars should remain vigilant in tracking COVID-19 policy change over the coming years. One particularly fruitful area of research is an investigation of whether or not states make substantive changes to their existing public health policy regimes in order to better prepare for future pandemics. For example, to what extent have states adjusted the organizational capacity of public health departments, improved disease surveillance capacity, reinvested in public health preparedness, or revisited existing emergency response doctrines? These types of changes will signal a much deeper kind of learning than what we observed in six states during disaster and are thus worthy of closer attention.

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DATA AVAILABILITY STATEMENT

All policy documents and summary data will be made available to other researchers through the research team's website or through a database repository the journal prefers.

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ENDNOTES

[1] A complete database of all policies coded for this analysis is available by contacting the authors or at https://www.riskandsocialpolicy.org

[2] Recal2 intercoder reliability calculator: http://dfreelon.org/utils/recalfront/recal2/

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APPENDIX A: FREQUENCY TABLES FOR COVID-19 POLICIES

TABLE A1 Policy topic frequency

Policy type	Freq.	Percent
Risk mitigation	478	64.8
Medical capacity, including long-term care facilities	143	19.4
Economic and social support, including housing	117	15.8
Total	738	100.00

TABLE A2 States' stringency of COVID-19 policies

	State						
Stringency	**CO**	**IA**	**LA**	**MA**	**MI**	**WA**	**Total**
High stringency	56	49	26	20	111	55	317
Moderate stringency	79	15	52	26	23	0	195
Low stringency	7	14	1	0	1	2	25
Service provision (N/A)	49	23	19	15	24	63	193
Other/Not applicable	2	1	2	1	2	0	8
Total	193	102	100	62	161	120	738

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APPENDIX B: DICTIONARIES OF POLICY TOPICS

Masks	Home (stay-at-home)	Events/Gatherings	Long-term care facility	Elective surgeries	Housing	Medical capacity
Mask	Curfew	Event/s	Long term	Procedure/s	Landlord/s	Acute care
Cover/covers/ covering	Stay at home/stay-at-home	Gather /gathering/ gathers	Nursing home/s	Elective/ elect	House/ housing	Beds
Face	Remote	Limit/s	Assisted living	Surgery/ surgeries	Apartment/s	ICU
Wear/wears/ wearing	Safer-at-home/safer at home	Indoor/s	Residential care	Medical	Rent/al	Intensive care
ppe	Stay	Outdoors	Congregate care	Dental	Evict/eviction	Nurse/s
Protective equipment	Home	Outside	Congregate	Voluntary/ Voluntarily	Property	Ventilator/s
Cloth	Lock down/ Lockdown	Concert/s	Residential treatment	Outpatient/s	Utility	Respiratory therapy/ist
n95		Crowd/s	Elderly		Mortgage	Care Capacity
Handkerchief		Capacity			Payment	Bed capacity
Bandana		Spectator/s			Assistance	Hospital capacity
		Audience/s			Moratorium	Medical staff
		Mass			Delinquent	Adequate supply
		Parade/s			Foreclosure	Nurse license
		Stadium/s			Tenant	
		Theater/s			Deed	
		Convention/s			Late fee	
		Music hall				
		Group/s				
		Sport center				
		Assemble				
		Assemblages				

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Testing	Personal services	Services (social/governmental)	Businesses	Schools	Religion (Religious services)	Correctional facilities
Test/s/ing	Salon	Unemploy/ed/ment	Business/es	School/schools	Church/es	Correctional
Swab/s	Hair	Medicaid	Owner	District/s	Religion	Prison/er/s
Nasal	Spa	Foster	Manager	Student/s	Temple/s	Jail
Spit	Beauty	Child/ren	Workplace/s	Instruct/ Instructor /instruction	Synagogue/s	Detention
Contact trac	Aesthet	Family	Employee/s	Teach/teaches/ Teacher	Mosque	Confine
Positive	Tanning	Food access	Employer	Pupil/s	Congregation/s	Sentence
Negative	Massage	Nutrition	Customer/s	Education/ Educate/ Educational	Faith	Release
Asymptomatic	Barber	Assistance	Store/s	Learn/s	Pray/er	Guard
	Tattoo	Nourish	Shop/s	Superintendent	Minister/s	Bail
	Parlor/parlor	Poverty	Bar/s	Principal/s	Priest/s	Inmate/s
		SNAP	Capacity	University	Iman/s	Security
		Claimant	Closure	College	Rabbi/s	Incarcerate/d/ion
		Food program	Retail	Professor/s	Worship/ping	Convict/ed
		USDA	Restaurant/s	Faculty	Choir/s	Crime/s
		Eligibility	Agriculture			Justice
			Farm			
			Meat pack	**Businesses, Continued**		
			Meat process	Beverage		
			Coffee shop	Cafe		

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Testing	Personal services	Services (social/governmental)	Businesses	Schools	Religion (Religious services)	Correctional facilities
			Remote work	Dine in		
			Construction	Shopping mall		
			Manufact	Gym		
			Ski resort	Fitness		
			Bowling	Job site/s		
			Food	Occupation		
			Drink/s	Distiller		
			Carry-out	Winery		
			Alcohol	Brewery		

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