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Policy performance in crisis: evaluating federalism and multi-party governance

Saahir Shafi ^a and Daniel J. Mallinson ^b

^aDepartment of Public Policy and Administration, California State University – Sacramento, Sacramento, CA, USA; ^bSchool of Public Affairs, Penn State University – Harrisburg, Middletown, PA, USA

ABSTRACT

Federalism and multiparty systems are two institutional arrangements that affect institutional friction and centralization, which shape governments' capacities to manage crises. Evaluating the cross-national variation of these features enables us to assess how institutional friction and centralization impact policy performance during crisis. Using cumulative COVID-19 cases and deaths in 2020 across a range of 80 countries, we demonstrate that (1) higher levels of regional authority, i.e., federalism, are associated with reduced policy performance, (2) there are discernable between-group differences in performance for each of the institutional factors assessed, and (3) the relationship between policy punctuations and performance is not readily distinguishable in condensed periods of crisis.


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KEYWORDS Federalism; Regional authority; Crisis; Policy punctuations; Policy performance

Introduction

The COVID-19 pandemic laid bare vast differences in the capacities of different types of governments to respond to crises. New Zealand, with a unitary system, proved effective in mobilizing its crisis response and securing support among its population (Bromfield & McConnell, 2021). The United States, a federal system, struggled to muster a consistent response due to weak national leadership, fragmented federalism, and political polarization (Haffajee & Mello, 2020). Many factors shape a government's capacity to respond to a crisis. For one, there is the scope of the crisis itself. A regional natural disaster requires a very different national government response than a pandemic. Secondly, resources vary greatly across countries, as

CONTACT Saahir Shafi  saahir.shafi@csus.edu 

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evidenced by the vastly unequal distribution of COVID-19 vaccines (Asundi *et al.*, 2021). Finally, a government's institutional arrangements shape its ability to respond quickly and with legitimacy to an emergent crisis.

Formally, governance capacity refers to institutional structures and administrative procedures. Informally it refers to the way these features function in practice (Christensen *et al.*, 2016). Though periods of crisis generate *opportunities* for policy innovation and major policy reforms (i.e., policy punctuations) (Kingdon, 1995; Nohrstedt & Weible, 2010), whether these opportunities for policy change coincide with *actual* changes depends on prevalent institutional arrangements. This article evaluates two institutional arrangements that condition government capacity: friction and centralization. Friction can emerge from the division of power between national and subnational governments, as well as the degree of party fragmentation that exists across single-, two-, and multi-party systems. For instance, in federal governments or those with two- or multi-party control, decision-making authority is fragmented among multiple levels of governance and an increasing number of political parties. In each case, consensus is difficult to forge (Hegele & Schnabel, 2021; Kincaid *et al.*, 2010). Centralization occurs when a country has a unitary system of government. Unitary systems centralize decision-making authority, whereas federal systems distribute authority to subnational governments (Elazar, 1997). Such decentralization can decrease the capacity of a national government to respond to a crisis like the COVID-19 pandemic.

Focusing on friction and centralization as two institutional factors that shape governance capacity, this article aims to develop an improved understanding of how they influence policy performance in times of crisis. While previous studies focus on patterns of policy change, and therefore, the performance of democracies relative to other types of governments over extended or condensed periods of time (Jones *et al.*, 2019; Shafi & Mallinson, 2023), this study contributes by empirically evaluating the performance of federal systems and party fragmentation, two institutional features that shape governments' capacities to manage crises (Brusis, 2003; Cucca & Ranci, 2021).

The purpose of this study is to examine the relationship between *institutional friction*, *centralization*, *policy punctuations*, and *policy performance* during times of crisis. The relationship between each of these factors is evaluated in the context of the COVID-19 pandemic, as an illustrative example of broader emergency situations. The global scope of the pandemic and the availability of extensive public health data on COVID-19 policy responses provides a unique context for the evaluation of policy performance, enabling the analysis of a large set of observations across a broad array of political systems.

Using cumulative COVID-19 cases and deaths in 2020 across 80 countries, descriptive and multivariate regression analyses demonstrate that (1) levels of regional authority are associated with policy performance—nations with

greater regional authority are associated with higher percentages of cumulative COVID-19 cases and deaths when compared with nations with lesser regional authority, (2) there are discernable between-group differences in performance for each of the institutional factors assessed, and (3) the relationship between policy punctuations and performance is not readily distinguishable in condensed periods of crisis.

Theory

Policy innovations and punctuations in crises

According to punctuated equilibrium theory (PET) (Jones & Baumgartner, 2005), policymaking tends to be characterized by long periods of stability and incrementalism with occasional episodes of extreme policy change (i.e., policy punctuations). Non-incremental, or extreme policy changes, are generally expected because no political system can perfectly adapt to the numerous issues in a policy environment. This is attributed to informational asymmetries and various forms of resistance built into political institutions. How, then, do we assess policy outcomes to better understand when policy change is adaptive or maladaptive? The key distinction is the size and frequency of punctuations (Baumgartner *et al.*, 2014; Jones *et al.*, 2019).

A key measure of policy effectiveness is a government's responsiveness to problems faced by its constituencies (i.e., adaptive policymaking) (Dunn, 2015; Jones *et al.*, 2019). When policies are adaptive, policymaking should be relatively dynamic with quick responses to challenges in policy environments (Jones *et al.*, 2019). The presence of many policy punctuations, however, indicates maladaptive governance and less effective policymaking (Jones *et al.*, 2019). That is, extreme policy changes suggest political systems that fail to detect and respond to problems as they arise, with initial policy rigidity giving way to large-scale changes once situations have significantly deteriorated. Thus, maladaptive systems are expected to generate larger and more frequent punctuations than adaptive systems—where policy changes are expected to be smaller, though still non-incremental (Jones *et al.*, 2019).

While the stability of policy change is an indicator of performance and policy effectiveness over time, scholars do not address how institutional factors may enable or hinder government performance during crises. This is an important distinction, however. In crises, policy innovations tend to be enacted in response to highly uncertain and urgent conditions (Lesch & Millar, 2021). Thus, policy punctuations are expected and may not necessarily indicate maladaptive policymaking. In fact, in crisis conditions, incremental policy changes may indicate policy rigidity, or political systems that are slow to respond, and therefore, *less* responsive to citizen/situational needs.

Such was the case for countries that displayed delayed and weak policy responses to exponentially growing COVID-19 case rates (i.e., the US, Switzerland, Sweden, etc.), particularly in the early stages of the COVID-19 pandemic (Shafi & Mallinson, 2022).

In times of crisis, non-incremental and large-scale policy changes may be suggestive of strong and dynamic policy responses to situations characterized by high uncertainty and risk, rather than maladaptive policymaking (Cortell & Peterson, 1999; Keeler, 1993). Thus, we seek to evaluate policy dynamics during periods of crisis and understand how these dynamics influence policy performance. Accordingly, we evaluate whether scholarly findings—i.e., larger and more frequent policy punctuations over time suggesting maladaptive policymaking—apply to policymaking during crises. Based on this theoretical argument, we present the following hypothesis:

H₁: Political systems with more punctuated policymaking in times of crisis will be characterized by maladaptive governance (i.e., less effective policy performance) when compared to political systems with less punctuated policymaking.

Institutional factors: friction and centralization

Political responsiveness, demonstrated by adaptive policymaking, is influenced by two institutional factors: friction and centralization (Jones *et al.*, 2019). *Friction* refers to the structural arrangements that impede/accelerate decision-making and *centralization* refers to the concentration of governmental authority. Such arrangements shape governments' abilities to enact change (Cortell & Peterson, 1999). For example, limitations on the autonomy of decision makers and many veto points can limit governance capacity, while centralization of power/authority can enhance it (Breunig & Koski, 2009; Cortell & Peterson, 1999). The presence of friction and centralization generate both strong policy stability (i.e., rigidity) and extreme policy changes (i.e., punctuations); both are associated with reduced responsiveness and maladaptive policymaking (Jones *et al.*, 2019).

Friction in policymaking

Friction within policymaking refers to both institutional friction (i.e., structural barriers to decision-making) and cognitive or cultural friction (i.e., ideologies that oppose adaptive policy change) (Jones *et al.*, 2019). This article focuses on institutional friction, which represents those organizational and institutional barriers that are deliberately established to preserve political stability and slow down decision-making (Flink, 2017). Structural arrangements that represent shared decision-making power, such as federal systems of

government and multi-party governance, are two distinct institutional features that affect the degree of friction in governance and shape governance capacity.

In federal systems, friction arises from institutional decentralization and the distribution of powers between national and subnational units of government (Cortell & Peterson, 1999; Elazar, 1997). The decentralization of political authority characteristic of federal systems offers several potential advantages for governance—informational advantages, responsiveness to local needs, public sector efficiencies, and improved economic performance (Inman, 2007; Kincaid, 1995). However, these potential advantages are offset with multiple veto points (Cortell & Peterson, 1999). Federal systems are institutionally complex with structures of shared decision-making and self-rule among constituent units that can prevent complementary, focused, and coordinated decision-making in crises (Hegele & Schnabel, 2021; Kincaid *et al.*, 2010).

Party fragmentation also affects the degree of institutional friction in governance. Governments with two- or multi-party control are ‘composed of two or more political parties that pursue their own policy goals and issue priorities’ (Sagarzazu & Klüver, 2017, p. 333). In fragmented party systems, institutional friction arises from the constraints imposed by political parties operating interdependently, yet with different, and often competing, policy goals (Jones *et al.*, 2009). In multi-party systems, parties tend to maintain their differences on program issues, resulting in friction and punctuated policymaking (Walgrave & Nuytemans, 2009). Two-party systems are expected to display less friction than multi-party systems. In their efforts to maximize votes and gain the support of median voters, opposing parties tend to converge on program issues—resulting in smoother and less punctuated policymaking. Single-party systems are expected to display the least friction because decisions are made unilaterally and independently without having to resort to internal bargaining (Jones *et al.*, 2009; Sagarzazu & Klüver, 2017).

Centralization in policymaking

In contrast to institutional friction, centralization should enable quick and effective decision-making in crisis. Centralized governments can implement coordinated decision-making (Kincaid *et al.*, 2010) and centralized policymaking facilitates compliance and reliability (Vantrappen & Wirtz, 2017). While federal structures with higher levels of regional authority are a demonstrated source of institutional friction, unitary systems (i.e., nations with lower levels of regional authority) tend to exhibit the characteristics of centralized authority. In fact, federalism is referred to as ‘antithetical to centralism’ (Baldi, 1999, p. 6), as the distribution of powers between different levels of government results in center-constraining mechanisms. Conversely, in a unitary system, authority is centralized and organized as a hierarchy, with power emanating from the highest level of government to lower levels (Elazar,

1997). It is worth noting that unitary government does not necessarily imply autocratic government. Examples of modern democratic unitary states include France, the United Kingdom, Denmark, and Israel. As unitary government is suggestive of centralization, and centralization is argued to enable rapid and responsive decision-making in times of crisis, it follows that policy performance during crises in unitary governments should be more effective than in federal systems.

In sum, it is expected that institutional friction will be greater in (1) federal nations and (2) governments with higher levels of party fragmentation (Cortell & Peterson, 1999; Jones *et al.*, 2009). Conversely, centralization will be greater in unitary systems and single party systems. Institutional friction is expected to limit governance capacity by both reinforcing the status quo, and—when accumulated political pressure overwhelms institutional friction—leading to sudden significant policy shifts (Jones *et al.*, 2003; Jones & Baumgartner, 2005). Centralization, on the other hand, is expected to enable more rapid decision-making. We argue that this has implications for effective policymaking in crisis. Delayed decision-making can be costly and preclude effective management in crises characterized by high urgency (Lesch & Millar, 2021). Consequently, policy performance in federal systems and fragmented party systems should be inhibited by structural inefficiencies whereas it should be more dynamic in unitary and single party systems. Based on these theoretical arguments, the following hypotheses are presented:

H_{2a}: Federal systems of government will be characterized by more punctuated policymaking in times of crisis than non-federal systems.

H_{2b}: Federal systems of government will be characterized by less effective policy performance in times of crisis than non-federal systems.

H_{3a}: Governments with multi-party control will be characterized by more punctuated policymaking in times of crisis than governments with single- or divided-party control.

H_{3b}: Governments with multi-party control will be characterized by less effective policy performance in times of crisis than governments with single- or divided-party control.

Methods

The following data sources are used in our analyses: the Election Indices dataset (Gallagher, 2021), the Autocratic Regimes dataset (Geddes *et al.*, 2014), the Oxford COVID-19 Government Response Tracker (OxCGRT) (Hale *et al.*, 2020), the Forum of Federations Handbook of Federal Countries 2020 (Griffiths, 2020), the Regional Authority Index (Hooghe *et al.*, 2016; Shair-Rosefield *et al.*, 2021), and World Development Indicators (WDI) (World Bank, 2020).

Dependent variables

The OxCGRT data is used to derive daily COVID-19 case and death rates from January 2020 to December 2020 (i.e., performance) as well as policy change indicators (i.e., punctuation). As a broad index of policy change, the Government Response Index (GRI) is used to derive measures of broad policy change across countries. The GRI reports aggregate levels of policy response across 16 ordinal indicators for the three broad policy dimensions of healthcare system, containment, and economic support policies. Measures of GRI for each country are transformed into a policy change variable and used to evaluate ranges of policy change for each country.

Independent variables

The Election Indices dataset (Gallagher, 2021) reports electoral results for 140 countries and regions and presents multi-component measures of electoral indices including the effective number of parties at the legislative level (Eff Ns), a measure of party fragmentation. First conceptualized by Laakso and Taagepera (1979), Eff Ns is a measure of both the *number* of parties that exist in a political system and the relative *size* of these parties. For instance, though political systems such as the US have numerous registered political parties (e.g., Libertarian Party, Green Party, etc.), only two major parties hold electoral and legislative seats at the national level (Gallagher, 2021). The effective number of parties is a scale measure that ranges from 1 to 199, with one denoting a single-party system and successively higher values denoting multi-party systems.

The Autocratic Regimes dataset (Geddes *et al.*, 2014) reports on types of autocratic regimes (i.e., party, military, dictatorship, and monarchy) and is used to supplement the party fragmentation measure used from the Election Indices dataset. Though the Election Indices dataset captures party fragmentation among those nations with electoral systems, it excludes autocracies (e.g., single-party nations). To produce a more broadly representative measure of party fragmentation, these two datasets are combined to derive the measure of party fragmentation.

The Forum of Federations Handbook of Federal Countries 2020 (Griffiths, 2020) reports on those countries and regions that have federal features. As an international organization working to develop and share expertise on practices of decentralized and federal governance, the Forum of Federations provides a compendium of information on federal nations, compiled by a group of 36 social scientists and researchers. This data is used to develop a dichotomous measure of federal vs. unitary nations.

The Regional Authority Index (RAI) reports on those countries and subnational units that have federal features and moves away from dichotomous

country measures of federal vs. unitary (Hooghe *et al.*, 2016; Shair-Rosenfield *et al.*, 2021). Instead, the RAI conceptualizes federalism as existing on a continuum of higher and lower levels of authority in subnational units of government. The RAI presents a more robust measure of regional authority compared to the Forum of Federations data and is comprised of two dimensions—self-rule and shared rule. Self-rule assesses the degree of authority a subnational government exercises over those within its jurisdiction and is measured by institutional depth (i.e., autonomy), scope of policymaking, autonomy in fiscal matters, borrowing autonomy, and representation. Shared rule assesses the degree of authority a subnational government exercises within the country it belongs to. This is measured by legislative authority, co-determination of national policy, control over fiscal matters, control over borrowing constraints, and constitutional reform. The RAI tracks annual regional government developments over time from 1950–2018 for 96 governments. The World Development Indicators (WDI) datasets (World Bank, 2020) report annually on global development indicators across 267 countries and regions. The following WDI variables are used in the analysis: population density and proportion of population aged 65 and over. Each are included as control variables.

A summary explanation of each of the variables is shown in Table 1. *Cases* and *Deaths* are dependent variables that refer to normalized measures of cumulative COVID-19 cases (per thousand population) and normalized measures of cumulative COVID-19 deaths (per thousand population) respectively. *Kurt* refers to each country's GRI L-kurtosis value for the range of percent daily GRI policy changes from January 22, 2020, to December 31, 2020. *RAI* refers to a country's level of regional authority (i.e., a continuous and robust measure of federalism). *Eff Ns* refers to a scale measure of party fragmentation in each government's legislature or parliament (Laakso & Taagepera, 1979). *PopDens* refers to population density and

Table 1. Explanation of variables.

Abbreviated variable	Variable name	Description
Kurt	GRI L-Kurtosis	Measure of Kurtosis Derived from Percent Daily GRI Policy Changes in each Country from January 22, 2020, to December 31, 2020
RAI	Regional Authority Index	Level of Regional Authority
Fed	Federal Nations	Federal = 1, Unitary = 0
Eff Ns	Party Fragmentation	Party Fragmentation in each Government's Legislature/Parliament
PopDens	Population Density	Population Density
AgedPop	Aged Population	Percent Aged (65+) Population
Cases	COVID-19 Cases	Cumulative COVID-19 Cases (Per Thousand Population)
Deaths	COVID-19 Deaths	Cumulative COVID-19 Deaths (Per Thousand Population)

AgedPop refers to percent aged (65+) population in each country; both are included in the equations as controls to account for the purported effects that these variables have on COVID-19 outcomes (Dowd *et al.*, 2020; Rocklöv & Sjödin, 2020).

Data analysis

Prior to conducting data analysis, all data sources were combined and variables transformed. A detailed explanation of the data merging and transformation is found in Appendix A. After excluding observations with missing data from our analysis, our final merged dataset consisted of 80 observations at the country level.

To understand the relationship between friction, centralization, policy punctuations, and policy performance, both descriptive and multivariate regression models are presented. First, in the descriptive analysis, box plots display the relationship between each of the institutional factors and policy punctuations. Next, multivariate regression models estimate the relationship between the institutional factors, policy punctuations, and policy performance.

L-Kurtosis as a measure of policy punctuations

Policy stasis and punctuation has historically been assessed with annual budget distributions, where distributions of budget change represent policy change over time (Jones *et al.*, 1998; Jones *et al.*, 2009; Mallinson, 2016). L-kurtosis measures of these univariate distributions provide evidence to support policy punctuations when distributions are leptokurtic (Baumgartner *et al.*, 2014). Compared with normal distributions, which represent dynamic and continuous change, leptokurtic distributions are characterized by a strong central peak (suggesting a greater than normal number of incremental changes), weak shoulders (suggesting fewer than normal moderate changes), and large tails (suggesting greater than normal radical changes) (Baumgartner *et al.*, 2014).

L-kurtosis is a commonly used measure in PET scholarship as it generates estimates that are more robust to data outliers than the standard measure of kurtosis (Breunig & Koski, 2006). L-kurtosis values range from zero to one. Values equal to 0.123 suggest a normal or Gaussian distribution, indicating dynamic and continuous policy change. Values below 0.123 suggest a platykurtic distribution, indicating policy stability and the relative absence of policy punctuations. And values above 0.123 indicate leptokurtosis and the presence of many punctuations. Progressively higher values of L-kurtosis above 0.123 will be suggestive of increasingly leptokurtic policy change.

As leptokurtic distributions represent punctuated policymaking, the expectation is that a comparison of univariate distributions of policy

change across governments offers important insights on policy performance over time. In this case, policy change distributions of adaptive—and better performing governments—should be less leptokurtic (lower L-kurtosis values) than the policy change distributions of maladaptive governments (represented by higher L-kurtosis values). To identify the degree of leptokurtosis for the policy change distributions of each country, an L-kurtosis value is calculated from the range of percent daily GRI policy changes. This is further explained in Appendix A.

COVID-19 cases and deaths as a measure of policy performance

While Jones *et al.* (2019) equate the number and size of policy punctuations with policy performance over time, this article aims to evaluate whether these assumptions hold true in crisis. To evaluate this hypothesis, cumulative COVID-19 case and death rates are used as a proxy for policy performance and compared to L-kurtosis values across countries. The assumption being that lower cumulative COVID-19 cases and deaths are suggestive of better policy performance and should correspond with lower L-kurtosis values.

Descriptive analyses

For the descriptive analyses, L-kurtosis values of daily policy change distributions are calculated across 80 countries. Boxplots of GRI L-kurtosis values are displayed for each country, categorized into three levels of regional authority (low, moderate, and high) and party fragmentation (single, divided, and multi-party). The boxplots of L-kurtosis values for each country are displayed alongside plots of cumulative COVID-19 deaths (per thousand) for each country. This enables a comparison of policy responses and policy performance with the following question in mind—do political systems with more leptokurtic distributions of policy change (i.e., greater policy punctuations) correspond with higher cumulative death rates?

Multivariate regression models

The descriptive analysis is followed by multivariate regression models that empirically evaluate the relationships between each of the institutional factors, policy punctuations and policy performance. The multivariate regression models are as follows:

$$\begin{aligned} \text{Cases}_i = & \alpha + \beta_1 * \text{Kurt}_i + \beta_2 * \text{RAI}_i + \beta_3 * \text{EffNs}_i + \beta_4 * \text{PopDens}_i \\ & + \beta_5 * \text{AgedPop}_i + \varepsilon_i \end{aligned}$$

$$\begin{aligned} \text{Deaths}_i = & \alpha + \beta_1 * \text{Kurt}_i + \beta_2 * \text{RAI}_i + \beta_3 * \text{EffNs}_i + \beta_4 * \text{PopDens}_i \\ & + \beta_5 * \text{AgedPop}_i + \varepsilon_i \end{aligned}$$

The regression models above are evaluated for robustness by substituting the measure of regional authority (*RAI*), a continuous and robust measure of federalism, with a dichotomous measure of federalism (*Fed*, federal = 1, unitary = 0). Results for both models are reported in the multivariate analyses section below.

In addition to evaluating how policy performance (i.e., cumulative cases/deaths) is related to policy punctuations and institutional arrangements, it is also important to assess whether there is a relationship between policy punctuations and institutional arrangements. To evaluate the relationship between each of the institutional arrangements (i.e., system of government, party fragmentation) and policy punctuations, a multiple linear regression model was estimated with GRI L-kurtosis as a dependent variable and each of the institutional arrangements as independent variables:

$$Kurt_i = \alpha + \beta_1 * RAI_i + \beta_2 * EffNs_i + \varepsilon_i$$

This model was also evaluated for robustness by substituting the regional authority measure with a dummy federalism variable.

Results

Descriptive analyses

The following descriptive plots display (1) the relationship between governments with varying levels of regional authority (i.e., federalism) and policy punctuations, and (2) the relationship between governments with varying levels of party fragmentation and policy punctuations.

The box plots shown in [Figure 1](#) display the range of GRI L-kurtosis values for 80 countries with varying levels of regional authority (i.e., low, moderate, and high regional authority) and average GRI L-kurtosis values for each group. Normalized cumulative COVID-19 deaths (per thousand) are displayed below each of the box plots.

Univariate distributions of policy change are consistently leptokurtic (L-kurtosis > .123)—and therefore characterized by substantial policy punctuations across all countries regardless of system of government. Nations with low regional authority (non-federal) are characterized by similar leptokurtic distributions of policy change (L-kurtosis = .86) to those with high regional authority (.85) suggesting no discernible between-group differences in punctuated policymaking. Though non-federal systems of government have a comparable average L-kurtosis value when compared with federal systems, the L-kurtosis values between countries are more widely dispersed. For example, Singapore demonstrates the least leptokurtic distribution of policy change (.74), and Honduras demonstrates the most leptokurtic distribution of policy change (.95). Federal nations on the other hand, are characterized by distributions of policy change that cluster closer around the mean.

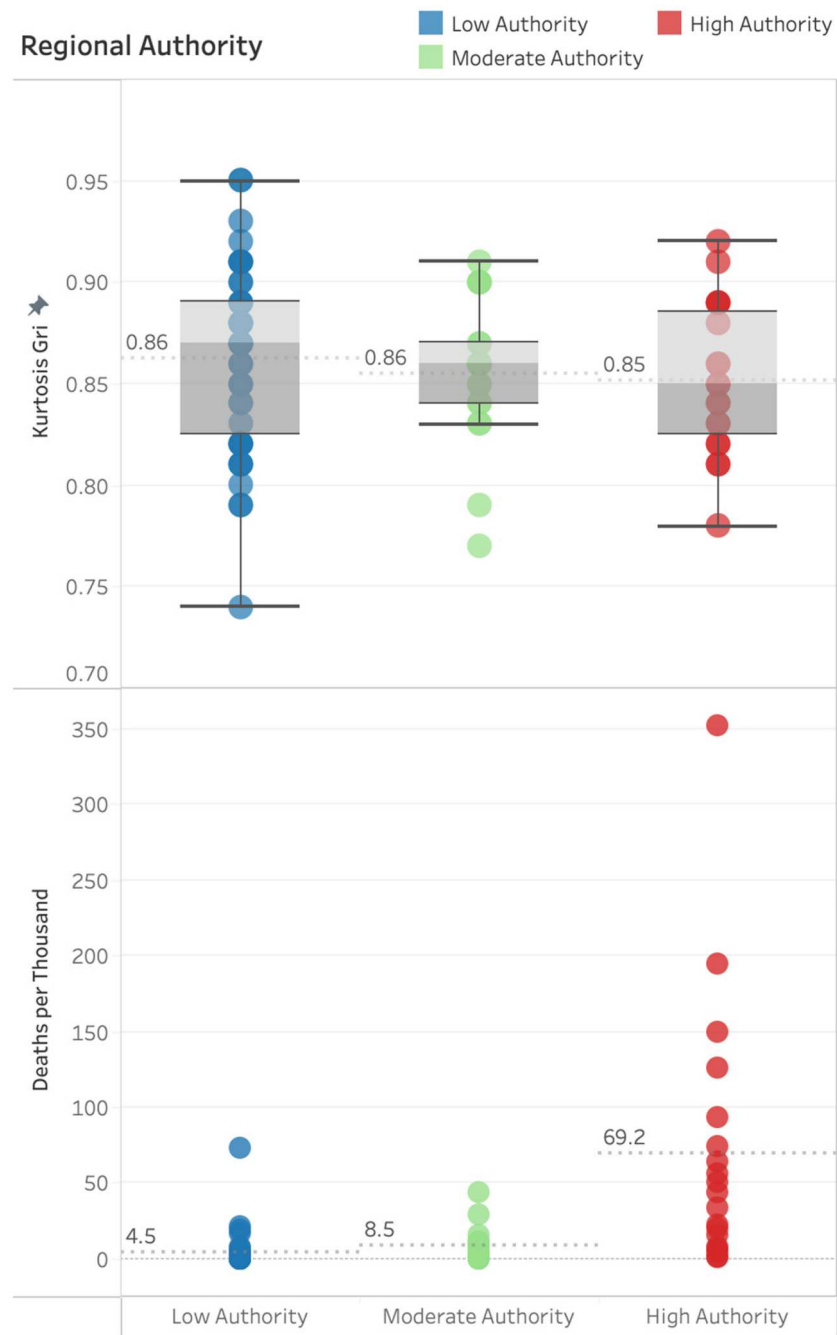


Figure 1. Box plots of GRI L-Kurtosis and federalism.

As federal systems of government are characterized by greater institutional friction and less centralized authority when compared to non-federal systems—and therefore expected to be characterized by more policy punctuations—the observed results are surprising. Nations appear to have pursued similarly punctuated policymaking, regardless of political system type, at least in terms of the COVID-19 crisis.

The observed relationship between political systems and policy performance shows discernible between group differences. Based on cumulative COVID-19 deaths as a measure of policy performance, federal systems of government (i.e., those with high regional authority) underperformed non-federal systems (i.e., those with low regional authority) with an average of 69.2 deaths per thousand compared to 4.5 deaths per thousand. Most notably, the largest federal nations—the US (351 deaths per thousand), Brazil (195), and India (149)—demonstrated the highest number of deaths overall. However, even with these outliers removed, federal systems of government show over eight times the number of deaths (38.5 per thousand) compared to non-federal systems (4.5 per thousand).

The box plots shown in [Figure 2](#) display the range of GRI L-kurtosis values for countries with various levels of party fragmentation, average GRI L-kurtosis values for each group (i.e., single-, divided-, and multi-party), and cumulative COVID-19 deaths (per thousand).

Similar to the box plots for systems of government, box plots for party fragmentation show similar levels of punctuated policymaking across each of the groups. Though the expectation is that governments with multi-party control will feature greater friction than those with either single- or divided party control and therefore be characterized with more leptokurtic distributions of policy change (i.e., greater policy punctuations), this relationship is not demonstrated in [Figure 2](#). Rather, the average L-kurtosis value for governments with multi-party control is on par (.86) with governments with divided-party control (.87) and single-party control (.85).

With regards to party fragmentation levels and policy performance, we again observe discernible between group differences. Nations with divided party control fared the worst when it came to cumulative COVID-19 deaths with an average of 40.3 deaths per thousand compared to 15.5 in nations with multi-party control and 0.8 in nations with single party control.

Multivariate analyses

Cumulative COVID-19 cases

Results for the cumulative COVID-19 cases models are shown in [Table 2](#). The first model uses the Regional Authority Index (RAI), a continuous measure of federalism, and the second model uses a dichotomous Federalism variable (Federal = 1, Unitary = 0) as a robustness check.

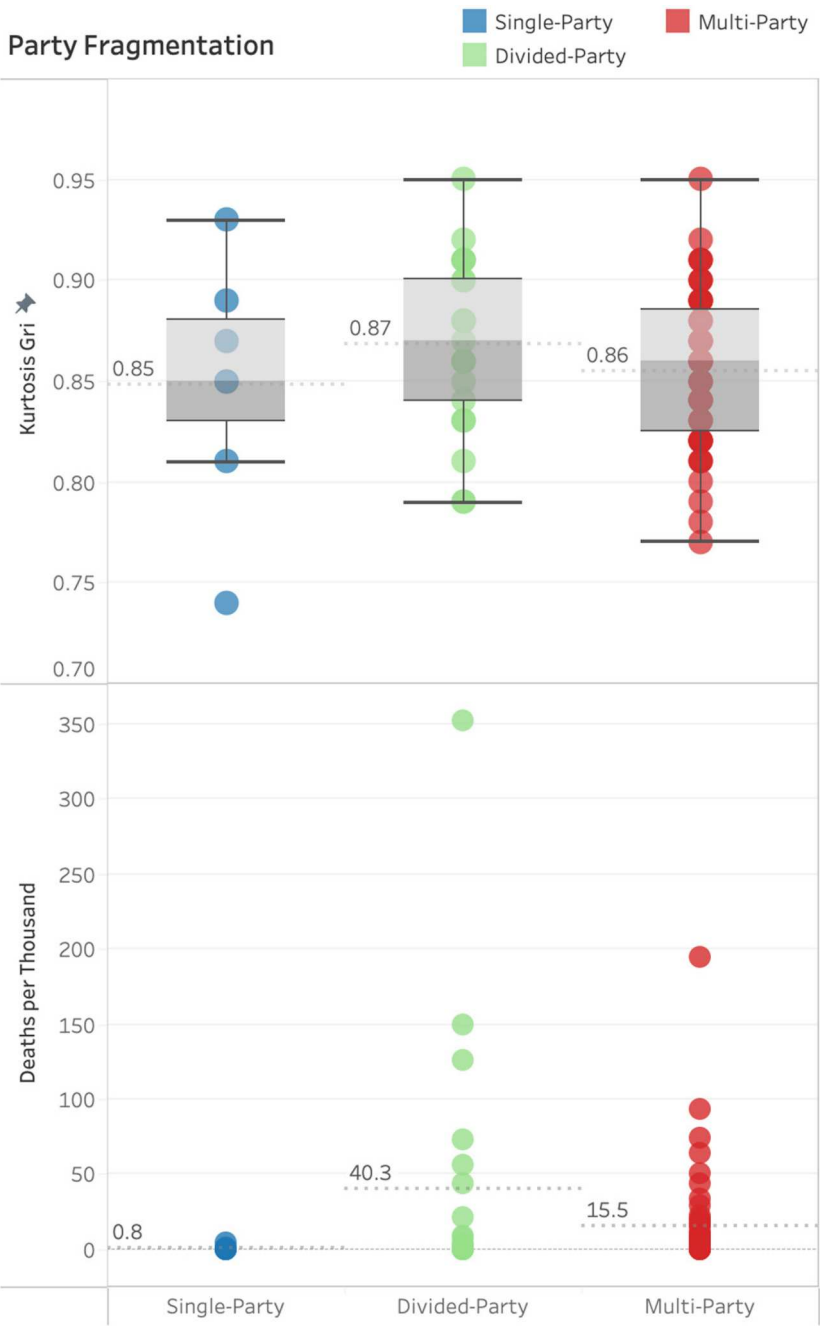


Figure 2. Box plots of GRI L-Kurtosis and party fragmentation.

Table 2. Cumulative cases multivariate regression models.

	Cumulative cases ^a (log-transformed)	Cumulative cases ^b (log-transformed)
GRI L-Kurtosis	-10.544 (7.705)	-20.401*** (5.807)
Regional Authority Index	0.129*** (0.025)	—
Federal Nations	—	2.001*** (0.550)
Effective Number of Parties	0.144 (0.089)	0.116 (0.072)
Population Density	-0.000 (0.000)	0.000 (0.000)
Percentage Population 65+	0.035 (0.041)	0.048 (0.029)
Intercept	11.282 (6.997)	20.798 (5.242)
Adjusted R^2	.39	.34
Obs.	80	80

Note: Robust standard errors are reported in parenthesis.

^aLog Cases_{*i*} = $\alpha + \beta_1 * Kurt_i + \beta_2 * RAI_i + \beta_3 * Eff\ Ns_i + \beta_4 * PopDens_i + \beta_5 * AgedPop_i + \epsilon_i$.

^bLog Cases_{*i*} = $\alpha + \beta_1 * Kurt_i + \beta_2 * Fed_i + \beta_3 * Eff\ Ns_i + \beta_4 * PopDens_i + \beta_5 * AgedPop_i + \epsilon_i$.

When using a continuous measure of federalism (i.e., regional authority), the cumulative COVID-19 cases model suggests a log-linear relationship and indicates a collective significant effect between cumulative COVID-19 cases and the predictor variables, $F(74) = 11.23$, $p < .001$, $R^2 = .39$. The regression model provides evidence to support research hypothesis H_{2b} . Nations with greater regional authority are associated with higher percentages of cumulative COVID-19 cases than nations with lesser regional authority ($t = 5.56$, $p < .001$). The model fails to support hypotheses H_1 or H_{3b} , finding no significant relationship between punctuated policymaking or party fragmentation and cumulative COVID-19 Cases.

When using a dichotomous measure of federalism, the cumulative COVID-19 cases model again suggests a log-linear relationship and indicates a collective significant effect between cumulative COVID-19 cases and the predictor variables, $F(134) = 15.27$, $p < .001$, $R^2 = .34$. Similar to the model above, the regression model provides evidence to support research hypothesis H_{2b} . Federal nations were associated with higher percentages of cumulative COVID-19 cases than unitary nations ($t = 3.92$, $p < .001$). The model fails to support hypotheses H_1 or H_{3b} . Though there is a significant relationship between punctuated policymaking and cumulative COVID-19 Cases, the results run counter to our expectations—those nations which featured more punctuated policymaking are associated with *lower* percentages of cumulative COVID-19 cases.

Cumulative COVID-19 deaths

Results for the cumulative COVID-19 deaths models are shown in Table 3. Consistent with the cases models, the first model uses the RAI, and the

Table 3. Cumulative deaths multivariate regression models.

	Cumulative deaths ^a (log-transformed)	Cumulative deaths ^b (log-transformed)
GRI L-Kurtosis	-3.655 (6.121)	-13.236* (5.100)
Regional Authority Index	0.138*** (0.021)	-
Federal Nations	-	1.955*** (0.499)
Effective Number of Parties	0.096 (0.088)	0.128 (0.081)
Population Density	-0.000 (0.000)	-0.001** (0.000)
Percentage Population 65+	0.002 (0.039)	0.059 (0.031)
Intercept	2.127 (5.618)	10.532 (4.667)
Adjusted R^2	.42	.31
Obs.	80	80

^aLog Deaths_{*i*} = $\alpha + \beta_1 * Kurt_i + \beta_2 * RAI_i + \beta_3 * Eff\ Ns_i + \beta_4 * PopDens_i + \beta_5 * AgedPop_i + \epsilon_i$.

^bLog Deaths_{*i*} = $\alpha + \beta_1 * Kurt_i + \beta_2 * Fed_i + \beta_3 * Eff\ Ns_i + \beta_4 * PopDens_i + \beta_5 * AgedPop_i + \epsilon_i$.

second model uses a dichotomous Federalism variable as a robustness check.

The cumulative COVID-19 deaths model suggests a log-linear relationship when using the continuous measure of federalism, $F(74) = 12.21$, $p < .001$, $R^2 = .42$. Similar to the cumulative cases model, the cumulative deaths model supports research hypothesis H_{2b} , though failing to support hypotheses H_1 or H_{3b} . Higher levels of regional authority (i.e., federalism) are associated with higher percentages of cumulative COVID-19 deaths than lower levels of regional authority ($t = 6.45$, $p < .001$). There is no significant relationship between policy punctuations or party fragmentation and cumulative COVID-19 deaths.

The cumulative COVID-19 deaths model with the dichotomous measure of federalism confirms the results above. The model features a log-linear relationship and indicates a collective significant effect between cumulative COVID-19 deaths and predictor variables, $F(134) = 13.31$, $p < .001$, $R^2 = .31$. Again, the regression model provides evidence to support research hypothesis H_{2b} . Federal nations were associated with higher percentages of cumulative COVID-19 deaths than unitary nations ($t = 3.92$, $p < .001$). The model fails to support hypotheses H_1 or H_{3b} , showing a significant relationship between punctuated policymaking and cumulative COVID-19 deaths, though not in the expected direction. Nations featuring more punctuated policymaking are associated with *lower* percentages of cumulative COVID-19 deaths.

Additional robustness checks. Additional robustness checks using a subsample of democracies are reported in Appendix A, Table A2. In these

Table 4. GRI L-Kurtosis multivariate regression model with institutional factors.

	GRI Kurtosis ^a	GRI Kurtosis ^b
Regional Authority Index	–0.000 (0.000)	–
Federal Nations	–	–0.015 (0.009)
Effective Number of Parties	–0.002 (0.002)	–0.004** (0.001)
Intercept	0.872 (0.009)	0.890 (0.006)
Adjusted R^2	.02	.08
Obs.	80	80

Note: Robust standard errors are reported in parenthesis.

^a $Kurt_i = \alpha + \beta_1 * RAI_i + \beta_2 * Eff\ Ns_i + \varepsilon_i$.

^b $Kurt_i = \alpha + \beta_1 * Fed_i + \beta_2 * Eff\ Ns_i + \varepsilon_i$.

robustness tests, we remove autocracies from the analyses, as we recognize that some autocracies may exhibit unitary traits despite being formally recognized as federations (i.e., Russia, Ethiopia, United Arab Emirates). Additionally, institutionalized autocracies may include factions that share power, resembling multi-party systems in specific decision-making processes, despite being classified as single-party regimes. By conducting our analyses on democracies alone, we can determine whether such nuances present in autocracies are driving our results. Through our robustness checks, we find that our results remain consistent even with autocracies removed.

Kurtosis and institutional arrangements

Turning to our test of the relationship between institutional arrangements and the degree of policy punctuation, results are shown in Table 4. Results for the first model, using RAI to measure federalism, were not statistically significant. This model failed to support both research hypotheses H_{2a} and H_{3a} . Results for the second model, featuring the dichotomous federalism variable were statistically significant. Results for this model indicate a significant collective effect between GRI L-kurtosis, federal countries, and party fragmentation, $F(137) = 6.76, p < .01, R^2 = .08$. This model fails to support both research hypotheses H_{2a} and H_{3a} . Though the model coefficients demonstrate a significant effect of party fragmentation on policy punctuations, the relationship is the reverse of what is expected. Countries with greater party fragmentation (i.e., multi-party systems) are associated with less punctuated policymaking ($t = -2.87, p = .01$). However, it is worth noting that the predictive power of the model is quite low. An adjusted R^2 of .08 shows that the variation in this model accounts for only approximately eight percent of the variation in policy punctuations. Therefore, it is plausible that various other factors influence policy punctuation.

Discussion

An evaluation of the institutional arrangements that shape governance capacity in periods of crisis yields useful insights. The expectation that federal nations and those with greater party fragmentation will be characterized by more punctuated policymaking than their counterparts does not appear to hold true for COVID-19 policies. Based on box plots of the L-kurtosis of policy change distributions across nations, nations appear to have pursued similarly punctuated policymaking. Federal nations, on average, are characterized by punctuated policymaking that is on par with non-federal nations. Similarly, policymaking across single-, divided-, and multi-party governments reveals no discernible between-group differences. One possible explanation for this is the urgency that characterized the COVID-19 crisis. The pandemic was a highly salient crisis with global media coverage and devastating immediate consequences. Regardless of political system type or party affiliation, the crisis necessitated both significant policy shifts in response to growing case and death rates in each country, as well as incremental adjustments in policy as community spread stabilized. As the pandemic was characterized by waves driven by emerging variants, nations responded to each wave with corresponding policy shifts and adjustments.

Both party fragmentation and regional authority (i.e., federalism) impact governance capacity differently. While party fragmentation generates friction in the policymaking process, this friction does not extend to implementation. Federalism, however, generates friction in both policymaking—owing to the separation of authority between national and subnational governments—and in implementation. It is perhaps, then, not unsurprising that despite similar levels of punctuated policymaking, federal nations—owing to implementation issues at regional levels—displayed less effective policy performance, as demonstrated by eight times the cumulative COVID-19 deaths (even with outliers removed), when compared to non-federal systems.

When considering the low policy performance of federal governments, there may be several factors at play here, including the interplay of governance capacity and legitimacy—both of which are required for an effective governmental crisis response (Christensen *et al.*, 2016). The dysfunctional political dynamics that have characterized federal systems have diminished not only governance capacity, but also legitimacy (Carter & May, 2020). Though capacity is essential to effective crisis management, legitimacy is likewise essential as it influences the acceptance of policy directives and compliance with national guidelines at the citizen level (Lægreid & Rykkja, 2019; Van Bavel *et al.*, 2020). Consistent messaging from national and subnational governments, and public health officials, promotes confidence in institutions—and therefore legitimacy—during crises (Houston & Harding, 2013; Van Bavel *et al.*, 2020). Whereas inconsistent messaging generates an absence

of trust, which can hinder effective policy response and public compliance (Van Bavel *et al.*, 2020).

While some federal countries (i.e., Germany, Australia), had relative successes in navigating the COVID-19 pandemic (Haseltine, 2021; Johnson, 2020), others suffered from inconsistent messaging and legitimacy issues, including Brazil (Thavendran, 2020), Switzerland (Bélanger & Lavenex, 2021), and the US (Carter & May, 2020). Effective governing arrangements involve shared goals, institutional arrangements that direct resources and attention towards these goals, and the mobilization of interest support. However, in the case of the COVID-19 policy response in the US, the federal separation of powers has heavily influenced governance capacity by generating dysfunctional institutional dynamics and undermining the ways in which institutional structures and procedures function in practice; with deleterious effects on policy implementation (Carter & May, 2020).

In the US, policy responses to the pandemic, including financing and the coordination of key policy measures (i.e., personal protective equipment, hospital investments, testing, contact tracing, etc.) have largely been left to the states. The US national government, though unable to mandate a centralized policy response, was able to extend support with funding and coordination (Huberfeld *et al.*, 2020). However, a heavily polarized political environment resulted in an imbalanced and uncoordinated response effort, with the federal government providing uneven support to states based on political affiliation, and many states struggling as a result (Carter & May, 2020; Huberfeld *et al.*, 2020). Additionally, the pandemic response in the US failed to acknowledge the potential risks associated with virus transmission and articulate a well-defined vision for attending to such risks (May & Jochim, 2013). The result was an uncoordinated and disjointed policy response lacking in consistency, legitimacy, and viability (Carter & May, 2020; Huberfeld *et al.*, 2020).

The US was not the only federal nation to be characterized by dysfunctional institutional dynamics that precluded effective policy implementation—other examples include India, Italy, Canada, Russia, and Nigeria (Choutagunta *et al.*, 2021; Facchin, 2020; Shvetsova *et al.*, 2021). India, though able to enforce strict policy containment measures through federal mandates, enacted a uniform national policy that posed undue financial burden on states with a low incidence of virus transmission, limited resources, and restrained healthcare capacity (Choutagunta *et al.*, 2021). Italy's policy response, though comprehensive, was characterized by delayed and fragmented policy implementation with a nationwide lockdown announced a full four weeks after its first identified case and an overall pandemic policy response wrought with communication and coordination failures (Facchin, 2020). Across federal nations, the US, Brazil, Canada, Russia, and Nigeria were characterized by disengaged national governments, with protective

policy measures being issued by subnational governments. This national disengagement has been linked to several political disincentives including the clarity of accountability in presidential systems, proximity of national elections, and multi-party control (Shvetsova *et al.*, 2021).

Perhaps the most surprising finding is the relationship between party fragmentation and COVID-19 deaths. Based on the results, it appears that nations with greater party fragmentation have experienced fewer deaths—which begs further investigation. Divided party governments fared the worst in terms of COVID-19 deaths, followed by multi-party nations. However, single party governments—a major proportion of which are autocracies (e.g., China, Cuba, Laos, etc.)—appear to have performed the best. But is this really the case? The reliability of COVID-19 data reporting amongst autocracies has been called into question, with scholars questioning whether autocracies have been more *efficient* in COVID-19 containment or *under-reported* their COVID-19 data (Cassan & Van Steenvoort, 2021). In the case of the latter, it is likely that under-reported data may be influencing the modelled relationship between party fragmentation and cases/deaths.

The findings of this article are subject to several limitations. For one, though the use of a continuous measure of federalism (i.e., regional authority) compared to a dichotomous measure (federal vs. unitary) presents a more nuanced evaluation of governance capacity, the RAI provides measures for 96 nations. When merged with the other datasets used in this study, our regression analysis was limited to 80 observations. Though this is greater than the generally accepted lower bound of sample size, a larger sample size would enable a more robust analysis. Second, our unit of analysis is at the country level and as a result, we evaluate policy change and outcomes at a national level. Though the RAI provides a robust measure of decentralization, it does not account for variations in how policies are administered in federal regimes. For example, in Germany, there was close coordination between federal and state authorities (Kuhlmann & Franzke, 2022), whereas in Spain and Italy, the coordination level was much lower (Mattei & Del Pino, 2021). Still in other countries (i.e., Austria, Czechia, and France), the central administrations overrode regional powers and forced coordination (Greer *et al.*, 2022).

Third, the use of secondary data presents a notable limitation. The preceding results are subject to the transparency of reporting across countries. Though there has been a concerted global effort to share data to inform international virus mitigation efforts, several nations (i.e., China, Guatemala, Iran) have come under criticism for potential inaccuracies in data reporting, attributable to constraints such as a lack of diagnostic capacity and government transparency (Calgua, 2022; Osmani, 2020). Fourth, the use of COVID-19 as a policy issue in our analysis has implications for the external validity of our study. As COVID-19 represents a crisis characterized by high levels of visibility, urgency, and uncertainty, the subsequent policy response has

varied considerably across countries based on diverging policymaker assessments of risk (Shafi & Mallinson, 2022). When compared to other crises with lower levels of visibility, urgency, and uncertainty, results may vary, and further research is needed to tease out the effects of these nuances.

Finally, the focus on virus containment, with COVID-19 cases and deaths used as a proxy for policy performance is an additional limitation. Policy performance can have several dimensions with competing priorities generating significant policy debate. For instance, virus containment goals were starkly at odds with economic stability and performance during the pandemic. Governments that prioritized containment policies did so at the expense of economic activity, as is evident by the closure of non-essential businesses in the early stages of the pandemic (Song *et al.*, 2021). Besides economic stability, other indicators of government performance include combatting misinformation, maintaining public peace, and assuaging widespread fears and hysteria. Though this article focuses on policy performance as measured by cases and deaths, other indicators of performance have been prominent policy concerns. Further research is required to understand how different policy responses have influenced other indicators of policy performance and the impacts of prioritizing containment goals over economic, social, and political considerations.

Conclusion

Considering the relatively poor performance, on average, of federal nations compared to unitary, despite the presence of less punctuated policymaking, the empirical results strongly support the importance of both governance capacity and legitimacy in policy responses to crisis. The preceding analysis allows readers to go beyond broad evaluations of performance in democratic and non-democratic nations over the long term and develop a better understanding of the institutional factors that influence governance capacity—and ultimately, policy performance. It also presents avenues for future research. While findings are robust and suggest that federal governments have performed less effectively than non-federal nations, this diminished policy performance is not neatly attributed to punctuated and maladaptive policymaking. There is a case to be made that the combined effects of capacity and legitimacy have contributed to the diminished policy outcomes seen in federations. For this reason, the literature would benefit from analyzing the combined effects of both governance capacity and legitimacy, particularly the role that political messaging has played in federal nations' handling of pandemic response. Further, disjointed policymaking at national and subnational levels, as observed in the US, raises questions regarding dissonance in policymaking and political messaging between levels of government—and the effects on public compliance at local levels.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The data that support the findings of this study are openly available in Harvard Data-verse at <https://doi.org/10.7910/DVN/RH8DMW>.

Notes on contributors

Saahir Shafi is an Assistant Professor of Public Policy and Administration at California State University, Sacramento. Her research focuses on policy responses to crises across countries, political rhetoric and policymaking, developments in drug policy, and networked governance.

Daniel J. Mallinson is an Associate Professor of Public Policy and Administration at Penn State Harrisburg. His research focuses on policy diffusion, drug policy (primarily cannabis), energy policy, and the science of teaching and learning.

ORCID

Saahir Shafi  <http://orcid.org/0000-0002-8779-3773>

Daniel J. Mallinson  <http://orcid.org/0000-0002-8094-6685>

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