

**PANDEMIC POLICYMAKING IN PRESIDENTIAL FEDERATIONS:
EXPLAINING SUBNATIONAL RESPONSES TO COVID-19 IN BRAZIL, MEXICO
AND THE UNITED STATES**

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Abstract

Why do Covid-19 social distancing policies vary so widely across states in federal countries? This mixed-methods study of Brazil, Mexico, and the U.S. finds that state-level variation in the stringency of social distancing policies is driven not by the epidemiological, demographic, or socioeconomic factors commonly emphasized in existing research, but largely by political factors. Introducing a novel framework for explaining pandemic policymaking, the study shows the central importance of political parties, presidential power, and governors' coalitions in determining state-level policy stringency. In the U.S. and Mexico, statistical and qualitative evidence indicates that interstate collaboration among governors, combined with top-down pressures from national party elites and presidents, led to greater policy alignment among coordinated states. In Brazil, by contrast, where there is little evidence of either policy coordination or alignment, state-level policies resulted instead from intrastate factors and diffusion. Together, these findings highlight how a multilevel framework attuned to contrasting combinations of intra-unit, cross-unit and cross-level causal factors strengthens our understanding of pandemic policymaking.

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The Covid-19 pandemic poses one of the greatest policy challenges of our time, requiring decisive and coordinated action from policymakers. Federal political systems, by their nature, often lack uniformity across policy areas, including healthcare (Giraudy and Pribble 2020; McGuire 2010; Moncrieff and Lawless 2016), education (Manna 2006; McGuinn 2016), and crime control (Eaton 2008; Miller 2008; Snyder and Duran Martinez 2009), among others. The flexibility to produce tailored policy outcomes is often praised as a virtue of federalism, but in the context of Covid-19, some see the patchwork of policy responses as a fatal flaw. For instance, Haffajee and Mello (2020, 2) point to the “dark side” of federalism in contrasting the assortment of state-level pandemic responses across the United States with the more homogeneous responses inside unitary countries.

Broad claims about the limits of federalism for addressing Covid-19 fall short for two reasons. First, they ignore the fact that some federations, such as Argentina and Germany, did take early, coordinated and effective action in response to the crisis.¹ Second, this critique obscures the fact that even inside federations seen as emblematic of these limits—such as Brazil, Mexico and the United States—there is clear evidence of policy coordination among some states. In Mexico, for example, coordination among the nine states affiliated with the *Nueva Convivencia Social / New Social Coexistence* (NCS) coalition yielded alignment in their levels of policy stringency. Likewise, in the U.S. several regional coalitions were formed by state governors, with participating states adopting consistently more stringent policies than their non-participating peers. Even in Brazil, where a highly fragmented political party system and weak president generally inhibited cross-state coordination, the nine states of the Northeast region still managed to align their social distancing policies. To explain variation like this in how states responded to the pandemic, we propose and test a framework centered on political factors that help or, alternatively, hinder federations in producing coordinated subnational policy responses. Understanding the determinants of cross-state variation in pandemic responses is especially important because of growing evidence that stringent social distancing policies reduce population mobility and, in turn, Covid-19 transmission (Badr et al., 2020; Banerjee and Nayak, 2020; Lurie et al. 2020; Testa et al. 2021).

The next section describes policy responses in Brazil, Mexico and the U.S. over a 10-month period from March to December 2020. In addition to their shared presidential and federal institutional designs, all three countries were led by populist presidents who were skeptical of both the gravity of the pandemic and scientific expertise. Moreover, the three countries converge in ranking among the most severely affected by Covid-19 worldwide.² These broad institutional, political and epidemiological similarities at the national level serve to highlight the value of a subnational and multilevel perspective for explaining the striking differences in pandemic policymaking observed across the three countries. Next, we propose a framework for explaining pandemic policymaking in presidential federations that centers on factors that facilitate or hinder policy alignment among states, with alignment understood to mean changes in policy stringency that occur in the same direction so that levels of stringency increase or, alternatively, decrease together among aligned states.³ We then describe the data and methods used to test our framework and present the results

¹ For accounts praising Argentina and Germany see Sugarman (2020) and Benhold (2020).

² As of April 17th, 2021, the U.S. led the world in the number of confirmed cases (31,575,640) and deaths (566,224); Brazil ranked third in confirmed cases (13,832,455) behind India and second in deaths (368,749); and Mexico ranked fourteenth in confirmed cases (2,229,939) and third in deaths (211,693). See Johns Hopkins University Coronavirus Resource Center, accessed online April 2nd, 2021 and available at <https://coronavirus.jhu.edu/data/mortality>.

³ While levels of policy stringency are understood to move in the same direction among aligned states, these levels are not necessarily the same, nor do they necessarily change by the same amount. Moreover, aligned states need not adopt the same sets of specific social distancing measures.

of dynamic panel models estimated over different periods of the panel (early, middle, and late) leveraging a rich set of state-level predictors. The results highlight the roles of partisanship, presidential power and intergovernmental politics in driving Covid-19 policies, motivating country case studies that offer further evidence about the political factors that determine state-level policy stringency. We conclude by summarizing our findings about Covid-19 policymaking and by proposing an agenda for future comparative research on the pandemic.

I. Assessing Government Responses to Covid-19 in Brazil, Mexico and the U.S.: A Policy Stringency Index (PSI)

Governments possess numerous policy tools to address the challenges posed by Covid-19. In Brazil, Mexico and the U.S., populist presidents skeptical of scientific expertise shared an unwillingness to have federal governments deploy many social distancing policies, thereby effectively placing the onus of Covid-19 containment on state policymakers (Leonhardt and Leatherby 2020). To capture variation in the stringency of state-level responses to the crisis, we draw on data collected by researchers at the University of Miami⁴ for Brazil and Mexico and the University of Oxford (Fullman et al. 2020) for the U.S. These data detail the timing and character of social distancing policies implemented at the state level during the period under study. For each country, we construct an additive index of 10 policy indicators tracking the implementation of stay-at-home orders, workplace closures, school closures, restrictions on gatherings, cancellations of public events, suspension of public transit, restrictions on internal travel, restrictions on international travel, face-mask requirements and public information campaigns over ten months from March through December 2020. Each indicator ranges from 0 (no policy) to 1 (policy fully implemented), with incremental values indicating partial implementation.⁵ The indicators are summed at the state level and scaled to create a Policy Stringency Index (PSI) with a theoretical range from 0 to 100.⁶ States with low PSIs tend to implement fewer policies and with more limitations, while states with high PSIs tend to implement more policies at broader scales. Although the same PSI score may reflect a number of different policy combinations, in practice, the kinds of policies adopted at different levels of the PSI tend to be similar.⁷ While the PSI is an imperfect measure for comparing state policies, because two states may have identical index scores without having identical policies, the index does offer a valid and useful basis for estimating the effects of political factors, such as intergovernmental coordination, on the direction and intensity of policy responses to Covid-19. After all, states may wish to take coordinated actions to mitigate transmission risk that, owing to contextual considerations, for example, a greater reliance on international travel among border states or on public transit in more urban states, consist of different policy measures, even as they share the same degree of stringency. Comparing PSI scores among such states would enable us to detect *policy alignment*, that is, changes in levels of stringency that occur in the same direction, resulting from intergovernmental coordination across states.

⁴ Data provided by the Observatory for the Containment of COVID-19 in the Americas, University of Miami at: <http://observcovid.miami.edu/americas/>.

⁵ See Appendix A1 for a full discussion of indicators, coding, and sources.

⁶ We opt for a simple additive index to facilitate the display and interpretation of results. Our results are robust to alternative scaling methods, specifically, an index that weights each indicator by the time at which the corresponding policies were first implemented, and also an index constructed from principal components analysis.

⁷ For example, a typical state in the lower quartile of PSI scores in each country will most likely have closed schools and adopted public information campaigns. By contrast, from the full set of 10 policies, the majority of states in the upper quartile of PSI scores will have adopted nine in Mexico, eight in the U.S., and seven in Brazil, with stay-at-home orders (Brazil), restrictions on public transit (Brazil and the U.S.), and restrictions on international travel (Brazil, U.S. and Mexico) being less common. Appendix A2 provides a complete visualization of the policies that make up a state's PSI score on a given date.

Figure 1. Temporal and Geographic Variation in Subnational Pandemic Policies

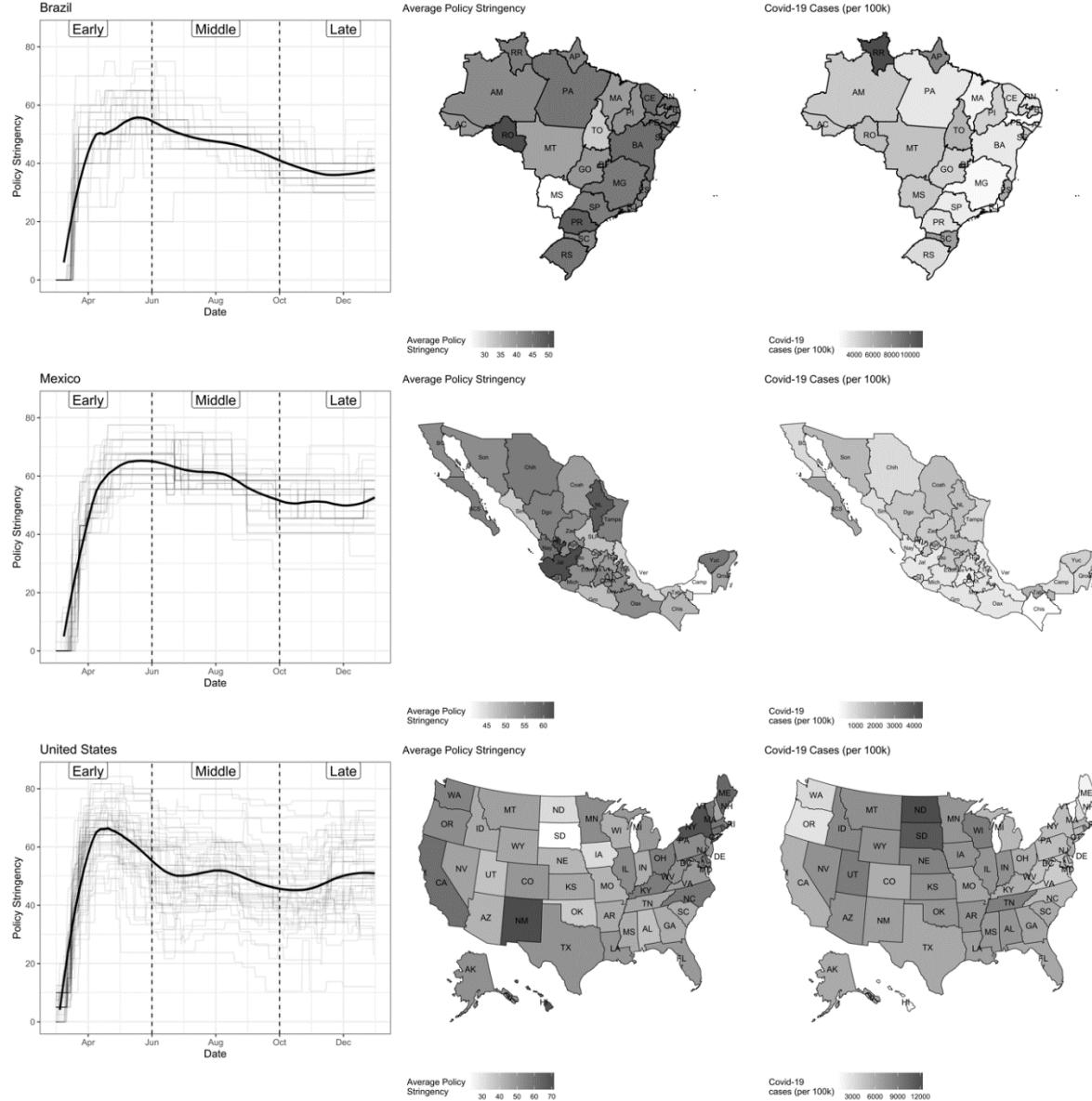


Figure 1 shows the temporal and geographic variation in state-level policy responses to Covid-19 in Brazil, Mexico and the U.S. The first column shows the Policy Stringency Index score for states on a given date with a loess curve overlaid to summarize the country trend over time. The second column presents the average level of policy stringency over the time period of the study (i.e., from late February through the end of June 2020), and the third shows the total number of Covid-19 cases per 100,000 residents in each state at the end of June.

Figure 1 presents the temporal and geographic variation of the PSI in relation to the cumulative incidence of Covid-19. Each row corresponds to a country. The first panel shows the PSI score for each state (grey lines) on a given date, with a loess curve overlaid to summarize the country trend over time. The dashed vertical lines denote three periods of 2020 —early, middle, and late— corresponding roughly to the rapid initial adoption of social distancing policies (March – May), the slower relaxation of these policies (June – September), and their later readoption (October–December). The second panel presents the average level of policy stringency in each state over the

10 months of the study, and the third panel shows the total cumulative number of Covid-19 cases per 100,000 residents in each state at the end of December 2020.⁸

The descriptive analysis illustrates three key points about subnational pandemic policymaking. First, there is considerable variation in policy stringency across both time and place inside the three federations. Second, as evident in the first column, the degree of variation differs across countries, with Brazil and the U.S. showing a wider spread in state-level policies than Mexico. Finally, the variation in policy stringency seen in the first two columns does not appear to be a simple, deterministic function of the incidence of infection displayed in the third column.

II. Subnational Policymaking in Presidential Federations: Intra-Unit, Cross-Unit and Cross-Level Causation

As summarized in Table 1, we identify three types of causation within and across levels of government in federal countries: intra-unit, cross-unit, and cross-level. Each entails a set of causal factors that can drive policymaking at the state level. It bears emphasis that these factors are not mutually exclusive and can coexist inside one country, producing a patchwork of pandemic policy responses.

Intra-unit causation provides a baseline scenario where states act as freestanding units (Giraudy, Moncada and Snyder 2019, 25-26). In this scenario, state-level policymaking is autonomous from influences located at other scales (i.e., at the national or municipal levels) and in other states. Here, policy stringency is driven strictly by factors inside each state, such as the percentage of a state's population that falls into high-risk categories for severe or fatal outcomes, the Covid-19 incidence, and internal political features, such as the governor's leadership skills and style. Intra-unit causation is expected to produce policy alignment among states facing similar Covid-19 threats or, for instance, pressures from similar political groups, even across states that are quite different in other respects. By the same token, intra-unit causation is expected to result in more varied policy responses among states facing dissimilar threats and political pressures, even among states that are otherwise matched across key attributes, such as population, socioeconomic structure, or regional location.

Cross-unit causation occurs among subnational units at the same level of government (e.g., states and municipalities). Building on previous studies of subnational policymaking in federal countries, we distinguish two cross-unit causal factors that can drive policy responses, *diffusion* and *horizontal coordination*. Existing research identifies imitation, emulative learning and competition as the primary forms of policy diffusion (Borges Sugiyama 2011; Meseguer 2005; Shipan and Volden 2008; 2012; Weyland 2004). Diffusion among states stems not from cross-state collaboration, but from policymakers' independent decisions to imitate, compete with or learn from policies implemented in other states. It is precisely this absence of intergovernmental collaboration that distinguishes diffusion from another cross-unit factor: horizontal coordination. Horizontal coordination entails purposive intergovernmental cooperation among policymakers in

⁸ The confirmed case statistic likely undercounts the true cumulative incidence of Covid-19, especially during the early period, given the initial unavailability of testing, inconsistency among test types, and uneven distribution of tests after they became more widely available. Despite these limitations, we present cumulative confirmed cases per 100,000 residents at the end of December 2020 both because these figures likely informed state-level policymaking and because alternative indicators of pandemic severity, such as cumulative Covid-19 mortality, face similar, and arguably greater limitations, including heterogeneity in cause-of-death attribution resulting partly from the same testing limitations as well as variation in the case fatality ratio over time as case management protocols developed (Catalá et al., 2021; Jill & DeJoseph, 2020; Karanikolos & McKee, 2020; Schellekens & Sourrouille, 2020). See Appendix A5 for a replication of our main analyses using Covid-19 deaths to measure the severity of the pandemic.

Table 1. Pandemic Policymaking at the State Level in Presidential Federations: Intra-Unit, Cross-Unit and Cross-Level Causal Factors

Type of Causation	Causal Factors	Implications for State-Level Policy Stringency	Hypothesized Policy Outcomes
Intra-Unit	Epidemiological; socioeconomic; local state capacity; lobbying by local interests; leadership skills and preferences of state government elites	Levels of stringency result from causal factors inside states.	Policy alignment among states with similar internal factors. No alignment among states with dissimilar internal factors.
Cross-Unit	Diffusion	Levels of stringency result from emulation, learning and competition among states.	Policy alignment among spatially-proximate states.
	Horizontal Coordination	Levels of stringency result from collaboration among state governments, often through explicit cross-state coalitions.	Policy alignment among collaborating states.
Cross-Level	Partisan Coordination	Levels of stringency results from orchestration by national party elites and organizations.	Policy alignment among states led by co-partisans.
	Presidential Coordination	Levels of stringency result from presidential agenda-setting and use of partisan and fiscal tools to advance the federal executive's policy preferences.	Policy alignment among states led either by allies of the president or by governments vulnerable to presidential influence.

Note: Policy alignment here refers strictly to the direction of changes in policies across units. In the context of this study, levels of policy stringency among aligned states increase or decrease together. While levels of policy stringency are understood to move in the same direction among aligned states, these levels are not necessarily the same, nor do they necessarily change by the same amount. Moreover, aligned states do not necessarily adopt the same sets of specific policy measures.

units at the same level, as seen, for instance, in coalitions and compacts among state governors, often accompanied by joint public statements by governors about the collaboration. While both forms of cross-state causation are expected to foster policy alignment, it will occur among different kinds of states, depending on whether diffusion or, alternatively, horizontal coordination is at work. Diffusion will likely produce policy alignment among states that are spatially proximate. By contrast, horizontal coordination will likely lead to alignment among states that form or join

coalitions and compacts. While allied states may also be spatially proximate, they are not necessarily so.

Finally, *cross-level causation* occurs across levels of government. As with cross-unit causation, factors external to states drive policy responses and also foster policy alignment. However, with cross-level causation, policy alignment results not from horizontal interactions between states, but from vertical pressures stemming from higher levels of government.⁹ Building on existing research, we distinguish two cross-level factors: *partisan coordination* and *presidential coordination*. Partisan coordination occurs when a national political party uses instruments such as organizational resources, territorial reach, and influence over career futures of ambitious subnational politicians to coordinate policies by disciplining co-partisan governors. The coordinating capacity of national parties depends on their internal organization, cohesion, the depth and breadth of their local networks of activists and members and the ability to determine the career futures of subnational co-partisans (Carey 1998; Mainwaring 1999; Jones, Sanguinetti and Tommasi 2000; Stepan 2000; Willis, Garman, Haggard 1999; Samuels 2003; Levitsky 2003; Leiras 2006, Van Dyck 2013). Moreover, the territorial scope of partisan coordination will depend on the geographic distribution of co-partisan governors: internally cohesive national parties with many affiliated governors are better equipped to produce policy alignment of broad territorial scope than parties with weak internal cohesion and few affiliated governors.¹⁰ We expect partisan coordination to produce policy alignment among states led by governors affiliated with the same party.

Presidential coordination operates through a combination of partisan, fiscal, agenda-setting and other instruments. Presidents can exert a coordinating influence on state policies through their political parties, and the scope and intensity of their leverage will be set by the same internal party parameters that were just discussed, as well as by the nature of the relationship between presidents and the leaders of their political parties, which are not always collaborative. Presidents may also be able to use the power of the purse to discipline both opposition and co-partisan governors. This tool can be an especially potent way to influence governors who are fiscally dependent on the federal government, because, for example, their states rely heavily on federal transfers or owe large amounts of debt to the national government (Eaton 2004; Díaz-Cayeros 2006; Falleti 2010; Bonvecchi and Lodola 2011; Giraudy 2015). Moreover, presidential coordination can work through agenda-setting. Presidents can use their bully pulpits to downplay the severity of a crisis and push for less stringent policies. Even governors who are not the president's co-partisans may fear high political costs if they act against a popular president's agenda. Presidents can amplify these costs by lodging direct public attacks against non-compliant governors and by encouraging their supporters to pressure governors. Presidential agenda-setting can also foster policy alignment among states by providing a clear national focal point.¹¹ Lastly, presidents have other tools, dependent on their popularity, that they may be able to deploy to elicit policy alignment among governors, including presidential endorsements, campaign visits and fundraisers. Governors in states where elections are imminent, and where re-election is allowed, should be more susceptible

⁹ While this study is limited to vertical pressures on state governments from “above,” that is, the federal level, intergovernmental pressures from “below,” for example from municipal governments, also merit consideration, because large metropolitan areas may pressure state governments to align with their policies.

¹⁰ Still, parties with many affiliated governors may face obstacles to alignment stemming from collective action difficulties posed by a larger number of affiliated units.

¹¹ Presidential focal points need not produce compliance, however. They may trigger a backlash against the president's preferences, resulting in reactive coordinated policies across states, especially when powerful opposition parties have affiliated governors and strong footholds across multiple states where the president's popularity is weak or declining.

to presidential influence than those facing re-election in the distant future or term limits. We expect presidential coordination to result in policy alignment among states led by governors allied with the president and among states where the president enjoys high levels of popular support, even if they are led by governors who are not affiliated with the president's party.

The following sections combine statistical analysis and case studies of state policymaking in Brazil, Mexico and the U.S. to test how well the hypothesized causal factors in Table 1 explain subnational variation in Covid-19 policy stringency. The next section provides a quantitative analysis that explores predictors of the variation in policy responses across states in the three federations. As seen in Figure 1 above, the majority of social distancing policy adoption in each country occurred during the early period of the pandemic, and so we limit the quantitative analysis to the months of March through May. We present similar analyses for the middle and late periods in Appendix A4. The subsequent section offers case studies of each country that, in conjunction with the statistical analysis, provide further leverage for assessing alternative explanations of state-level policy stringency. In the U.S. and Mexico, we find clear evidence of horizontal coordination through compacts among governors as well as partisan and presidential vertical coordination. Together, the case-based evidence suggests that horizontal and vertical forms of coordination, not diffusion or intra-state factors, are the main drivers of state-level policy stringency in the two countries. In Brazil, by contrast, we find less evidence of policy coordination, with state-level pandemic policies mostly resulting instead from a combination of intra-unit factors and diffusion.

III. Testing Predictors of Covid-19 Policy Stringency among States in Brazil, Mexico and the U.S.

We draw on state-level data from multiple sources to assess the predictions of our framework for explaining policy stringency. Starting with the baseline view of states as freestanding units where policies are driven mainly by internal factors, we gather measures of intra-unit variation in each state's need and capacity to respond to Covid-19. To capture the state-level intensity of the pandemic, we include a measure of the change in new Covid-19 cases per 100,000 residents. To capture differences in the size of the population at risk, we include measures of each state's total population, the percentage of the population over the age of 65, and standardized state Gini coefficients. We expect the coefficients on each of these variables to be positive, because higher values indicate larger populations at risk. To measure socioeconomic resources, we use the Smits and Permanyer's (2019) subnational Human Development Index (HDI), which measures degree of development on the dimensions of education, health and standard of living, and expect that states with higher levels of development will adopt more stringent policies. We include a measure of the number of intensive care unit (ICU) beds per 100,000 residents to capture public-health capacity, and we include Lee and Zhang's (2017) index of state capacity to measure more general variation in abilities to respond to Covid-19. Our expectations for these variables are mixed: state capacity may be a precondition for more stringent policies, or, alternatively, leaders in states with higher capacity may feel less pressure to take immediate action, resulting in less stringent policies.

To detect cross-unit causation, we first calculate the average change in the PSI for each state's neighbors. If either horizontal coordination or diffusion is occurring, we expect this coefficient to be positive. Furthermore, we include regional indicators in order to identify spatially proximate horizontal coordination or diffusion, with the general expectation that this coefficient will be positive if either is present.¹² Still, it is possible that cross-unit causation will lead to alignment on

¹² For Brazil, we use the Brazilian Institute of Geography and Statistics' five-region classification scheme. For the U.S., we use the U.S. Census Bureau's four-region classification scheme. For Mexico, we adopt the five-region

lower policy stringency if states seek to prioritize wealth over health. To isolate the effects of cross-unit diffusion and horizontal coordination from regional clustering in the incidence of the infection, we control for the average change in the number of new Covid-19 cases per 100,000 residents in neighboring states. Because of data limitations, the statistical analysis does not allow us to distinguish clearly between diffusion and horizontal coordination as drivers of aligned PSI scores. We address this shortcoming in the case studies by considering evidence of compacts and other forms of collaboration among governors in each country during the early period of the pandemic. We take evidence of cooperation among governors as an indicator that horizontal coordination is the likely mechanism driving similarities in PSI, whereas the absence of such evidence suggests diffusion is the more likely explanation. We use the vote share of the president in each state in the most recent election preceding the study period as a measure of governors' vulnerability to presidential coordination. Because presidential popularity may have an especially strong impact on a governor's re-election prospects, we control for the margin of victory of each governor in their most recent election and also include an indicator of whether term limits prevent the governor from running for re-election. After controlling for these factors, if presidential vote share has a significant effect on state-level policy stringency we interpret this as meaningful evidence of presidential coordination. Because of the strong anti-stringency position shared by the presidents of the three countries, we expect the coefficient for presidential vote share to be negative.

Finally, we include indicators for the party of each state's governor. If, after controlling for all the factors above, a governor's party predicts variation in policy stringency, we take this as evidence of partisan coordination. We use the president's party as the reference (or excluded) category in Mexico and the U.S. In Brazil, we treat the five parties that have only one affiliated governor as the reference category, because partisan coordination across states requires that parties have at least two affiliated governors.¹³

Given the time-series, cross-sectional nature of the data, we explore these dynamics in each country through a lagged dependent variable model (Beck and Katz, 1995, 1996, 2011; Wilkins 2018) estimated using OLS regression with panel-corrected standard errors:

$$y_{i,t} = \theta y_{i,t-1} + X_{i,t}\beta + Z_i\gamma + \epsilon_{i,t}$$

In the model, the policy of state i at time t is a function of the state's policy at time $t-1$, plus the time-varying predictors (i.e., the lagged changes in the number of new Covid-19 cases per 100,000 residents in a state, the average policy stringency of neighboring states, and the average number of new Covid-19 cases per 100,000 residents in neighboring states) and the time-invariant predictors discussed above.¹⁴ To facilitate the presentation and interpretation of our results, we standardize all time-invariant numeric predictors with coefficients for these models corresponding to the marginal effect of a one-standard-deviation change in the predictor, all else equal. Figure 2 presents the results of the regression analyses for Brazil (left), Mexico (center), and the U.S. (right). Each panel presents the point estimates and confidence intervals for predictors measuring intra-unit (top row), cross-unit (middle row), and cross-level (bottom row) sources of variation.

classifications used by Moye-Holz et al. (2018). States in the South region of each country are the excluded reference category in all models.

¹³ See Appendix A2 for a list of parties and corresponding governors in each of the 109 states of Brazil, Mexico, and the U.S.

¹⁴ Breusch-Godfrey tests fail to reject the null of no serial autocorrelation in the residuals for all models.

Intra-unit factors appear to have a strong effect on policy stringency in Brazil, a moderate effect in Mexico, and no observable effect in the United States. In Brazil, states with larger populations, greater levels of human development, less inequality, and higher levels of health system and general state capacity tended to adopt more stringent policies. Similarly, in Mexico, states with larger and older populations tended to adopt more stringent policies, whereas in the U.S. none of the intra-unit predictors are statistically significant. Notably, the incidence of infection, measured by the change in new Covid-19 cases, is never a significant predictor of policy stringency in any country.

In contrast to the mixed effects for intra-unit factors, we see strong evidence of the influence of cross-unit factors across states in all three countries. A state's PSI tends to increase following an increase in the PSI of its neighbors. This relationship is consistent with both policy diffusion and horizontal coordination, and in the case studies below we present qualitative evidence of alliance behavior among governors to help clarify this ambiguity in the statistical results.

The results for cross-level factors vary by country. In Mexico and the U.S., we see evidence consistent with partisan coordination, as states with governors who are not affiliated with the president's party tend to enact more stringent policies. In the U.S., we also find evidence consistent with presidential coordination, because PSI scores tend to decrease in states where President Donald J. Trump received a higher share of the presidential vote in 2016. In Mexico, surprisingly, President Andrés Manuel López Obrador's vote share in a state is marginally associated with *higher* levels of policy stringency ($p<0.10$), whereas a governor's own margin of victory in their last election is associated with lower levels of policy stringency ($p<0.10$). These findings may reflect the fact that governors and the president are all limited to a single term in Mexico, effectively eliminating future electoral considerations as a driver of policy responses. Finally, in Brazil's multi-party system we see little evidence consistent with either presidential or partisan coordination.¹⁵

In Appendix A4, we replicate these analyses for the middle (June – September) and late (October–December) periods. Broadly, we find that the effects of intra-unit factors diminish over time. The policies of neighboring states continue to influence policy stringency in the U.S. and Mexico, but not in Brazil, during the middle period and are unrelated to stringency in the later period. During the two periods, cross-level factors maintain a consistent relationship with policy stringency in the U.S. but are largely unrelated to it in Brazil and Mexico.

Overall, our statistical analysis suggests that cross-unit factors exert a strong influence on policy stringency in all three countries, especially in the early period of the pandemic. Intra-unit factors appear to matter more in Brazil than in Mexico or the U.S. Finally, the influence of cross-level factors persists across all three periods in the U.S., whereas in Mexico the influence of cross-level factors is most evident during the early period.

¹⁵ The one exception is the three states with governors from the center right Brazilian Social Democracy Party (PSDB), which tend to hold less stringent policies over this period.

Figure 2: Testing Hypothesized Predictors of State-Level Pandemic Policies in Brazil, Mexico and the United States

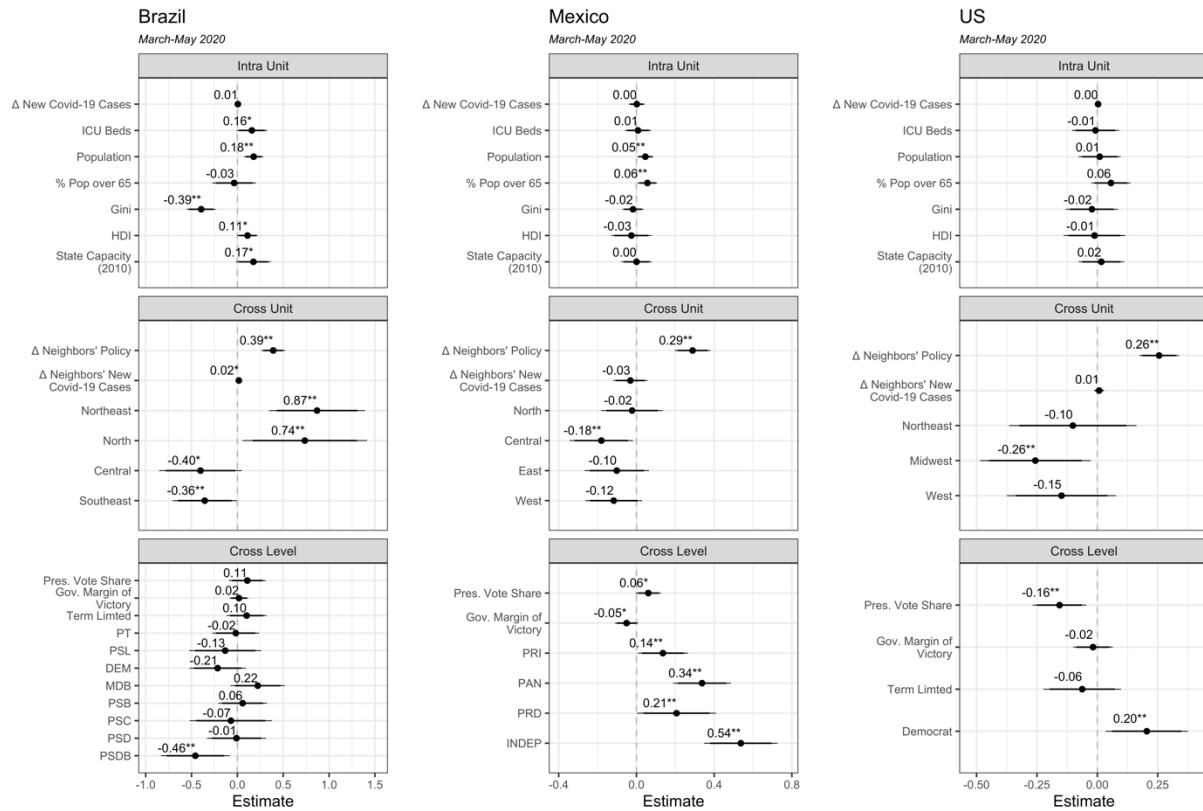


Figure 2 presents the coefficient plots from the regression models for Brazil, Mexico and the U.S. with 90 percent confidence intervals (* $p < 0.10$) provided by the thick bars and 95 percent confidence intervals (** $p < 0.05$) provided by the thin bars.

IV. Pandemic Policymaking in Brazil, Mexico and the U.S.: Case Study Evidence

We present case studies of pandemic policymaking in the U.S., Mexico and Brazil to further assess the factors that drive state-level policy stringency. Because the statistical analysis does not allow us to discriminate clearly between the two types of hypothesized cross-unit causation, that is, diffusion and horizontal coordination, we assess evidence of collaboration among governors within the three countries. The evidence indicates that horizontal, partisan and presidential coordination—not diffusion or intra-unit factors—are the most plausible drivers of state policies in Mexico and the U.S. In Brazil, by contrast, we find less evidence of any form of coordination, with intrastate factors—especially inequality, population size, healthcare capacity and human development—as well as diffusion providing stronger explanations for policy outcomes.

Horizontal, Partisan and Presidential Coordination in the U.S.

President Trump famously downplayed reports of the first confirmed case of Covid-19 in the U.S. by affirming that the federal government had it “completely under control.”¹⁶ This marked the start of a pattern of obfuscation and surreal proposals—including the idea of injecting disinfectants into the body to combat the virus—that stretched into the presidential elections of November 2020.¹⁷

¹⁶ <https://www.npr.org/sections/latest-updates-trump-covid-19-results/2020/10/02/919432383/how-trump-has-downplayed-the-coronavirus-pandemic>

¹⁷ <https://www.nbcnews.com/politics/donald-trump/trump-suggests-injection-disinfectant-beat-coronavirus-clean-lungs-n1191216>

And, although Trump declared that how states respond to Covid-19 is the “decision of the President,”¹⁸ our statistical results suggest that his power to influence state policies was far more limited and conditional on a number of political factors. Figure 3 explores further the cross-level policy coordination, both partisan and presidential, suggested by the results of the regression analyses. The dots indicate the level of stringency of each state’s policies on a given date, with the four lines corresponding to loess curves summarizing the typical policy in “Blue states,” that is, where Trump lost the popular vote in 2016, with (1) Democratic governors (solid black line)¹⁹ and (2) Republican governors (dashed black line),²⁰ and also in “Red states,” that is, where Trump won the popular vote in 2016, with (3) Democratic governors (solid grey line)²¹ and (4) Republican governors (dashed grey line).²² Consistent with Trump’s approach to Covid-19, governors, regardless of partisan affiliation, tended to adopt less stringent policies in Red states (the two gray lines) than in Blue states (the two black lines). Still, we also see that, conditional on Trump’s electoral performance in their state, Democratic governors (the two solid lines) tended to adopt more stringent policies than their Republican peers (the two dotted lines). Democratic and Republican governors in Blue states both adopted more stringent responses in the early months of Covid-19. However, in Blue states, as the pandemic progressed, Republican governors were quicker to relax policies than their Democratic peers. In the months following the presidential election in early November, however, these Republican governors were also quicker to readopt more stringent policies.

These partisan and presidential factors can be explored further by focusing on Michigan and Wisconsin, states with Democratic governors where Trump won narrowly in 2016.²³ In both states, Trump appealed to his base by publicly approving anti-stringency protests and calling for the governors to “liberate” their states by loosening restrictive policies, especially workplace and business closures.²⁴ The protests in Michigan included armed militias assembled both outside and inside the State House. Both governors faced growing cross-pressure stemming externally from the President and internally from Republican-controlled state legislatures. The Wisconsin Supreme Court nullified Governor Tony Evers’ attempt to extend stay-at-home orders in May 2020, arguing that he could not invoke emergency powers for these purposes without input from the legislature. That same month, the Republican-led legislature in Michigan sued Governor Gretchen Whitmer after declining her request for another extension of emergency powers. These two cases show how presidents can deploy a mix of tools to influence state policies, including rallying vocal supporters to pressure governors from inside states. Such leverage will likely be strongest when governors face popular presidents who command large electoral majorities in their states.

¹⁸ President Donald J. Trump’s Twitter account. April 13, 2020. See Appendix A6.C.

¹⁹ Trump lost the popular vote in sixteen states with Democratic governors: California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Maine, Minnesota, Nevada, New Jersey, New Mexico, New York, Oregon, Rhode Island, Virginia, Washington.

²⁰ Trump lost the popular vote in four states with Republican governors: Maryland, Massachusetts, New Hampshire and Vermont.

²¹ Trump won the popular vote in eight states with Democratic governors: Kansas, Kentucky, Louisiana, Michigan, Montana, North Carolina, Pennsylvania, Wisconsin.

²² Trump won the popular votes in twenty-two states with Republican governors: Alabama, Alaska, Arizona, Arkansas, Florida, Georgia, Idaho, Indiana, Iowa, Mississippi, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, West Virginia, Wyoming.

²³ Trump’s margins of victory over Hillary Clinton were 0.23% in Michigan and 0.77% in Wisconsin.

²⁴ President Trump’s Twitter account. May 1, 2020. See Appendix A6.C.

Figure 3: Policy Stringency across "Blue States" and "Red States" in the U.S.

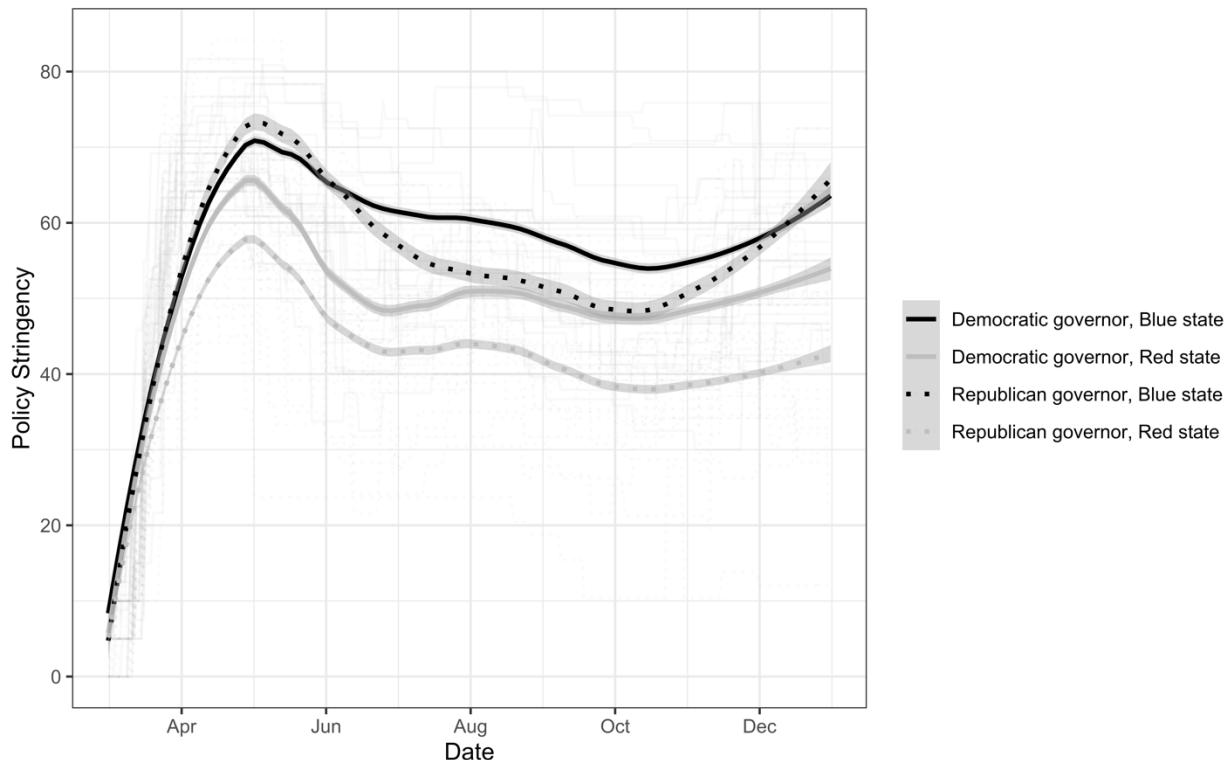


Figure 3 shows loess curves plotting the trend in policy stringency by the party of the governor and the performance of President Trump in the 2016 election. Solid lines correspond to states with Democratic governors. Dotted lines correspond to states with Republican governors. Grey lines reflect "Red" states where Trump won, and black lines reflect "Blue" states where Trump lost.

We also find clear evidence of horizontal coordination, suggesting that the policy alignment across neighboring states detected in the statistical analysis of the U.S. was driven not by diffusion but by coordination across state governments. In April 2020, several intra-party coalitions emerged among groups of U.S. states to coordinate regional responses to the pandemic. The "Western States Pact" was launched by the Democratic governors of California, Oregon and Washington, who were soon joined by their co-partisans in Colorado and Nevada. A parallel initiative emerged on the East Coast, where the governors of Connecticut, Delaware, Massachusetts, New York, Pennsylvania and Rhode Island formed a "multi-state council" that included representatives from each state's health and business sectors. This East Coast coalition consisted of Democratic governors with the exception of Charlie Baker, the Republican governor of Massachusetts, a historically solid Blue state. By contrast, a bi-partisan coalition formed in the Midwest among the Republican governors of Indiana and Ohio and the Democratic governors of Illinois, Kentucky, Michigan, Minnesota and Wisconsin. The fact that Indiana and Ohio were the only Red states with Republican governors to join any coalition is further evidence that states less vulnerable to presidential coordination were more likely to coordinate horizontally.

Figure 4 presents loess curves showing the changes in levels of policy stringency among the 28 states participating in regional coalitions compared to the 32 states that were not part of any regional coalition (solid grey line). Prior to the formation of the coalitions, states that later joined one tended to align in adopting more stringent policies. After the coalitions formed in mid-April, states across the country began relaxing policies, but members of the Western and especially the Northeastern coalition tended to maintain their alignment around more stringent policies. Members

of the Midwestern coalition appear to have followed a path similar to non-coalition states, until late October, when these states again adopted more stringent policies.

Figure 4. Horizontal Coordination among Regional Coalitions of Governors in the U.S.

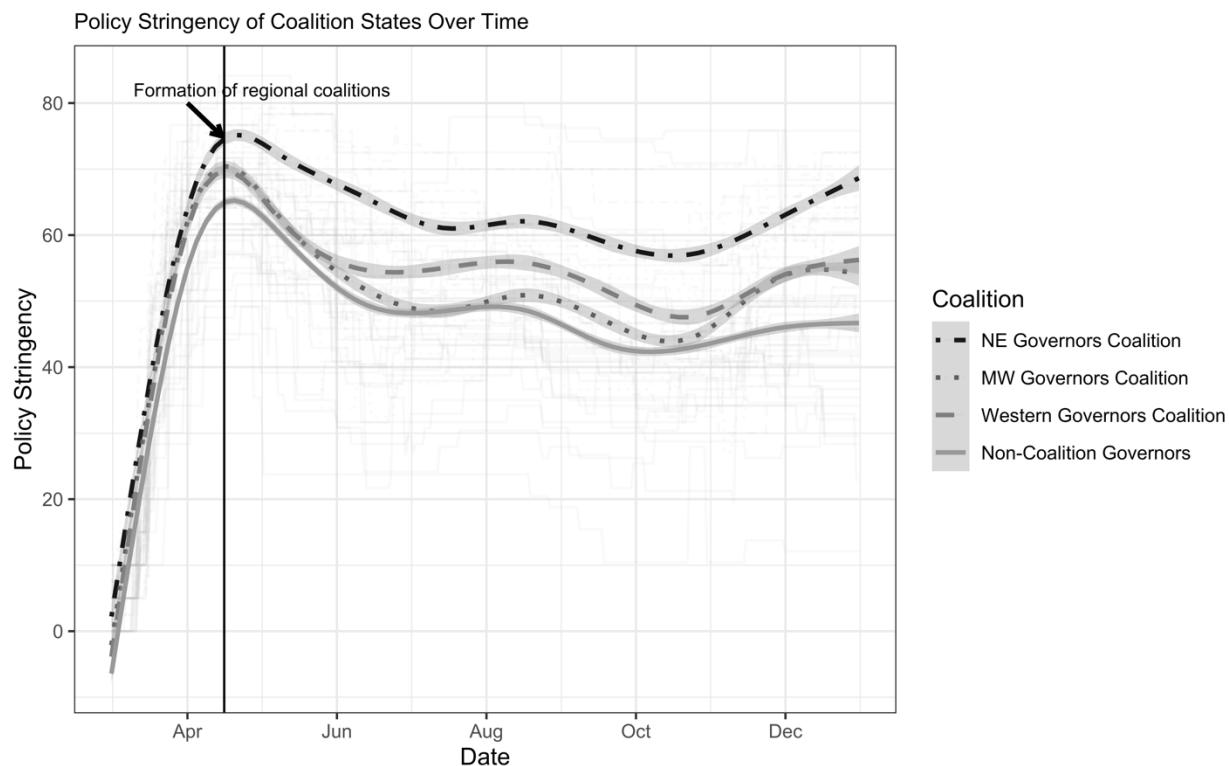


Figure 4 shows loess curves displaying the trends in policy stringency across states in three regional coalitions of U.S. governors (Northeastern governors: dot-dashed line; Midwestern governors: dotted line; Western governors: dashed lines) compared to the rest of the country (gray solid line)

These coalitional dynamics suggest that spatial proximity can help spur horizontal coordination both within and across party lines. As New York Governor Andrew Cuomo (D) noted, the East Coast coalition reflected “a regional approach because we are a regional economy” (Office of the Governor of New York 2020). Still, the Eastern and Western coalitions also underscore the importance of partisan ties for horizontal coordination. Both coalitions emerged on the same date, April 13, 2020, shortly after Trump's statement that he, not the governors, would decide when states would ease their restrictive policies and that he would prioritize economic reactivation over warnings from public health experts against policy relaxation (Stoddart, 2020). Trump made these statements amid survey evidence showing a sharp partisan divide in levels of trust in medical science: in April 2020, 53% of Democrats indicated that they trusted medical scientists to act in the public interest compared to only 31% of Republicans (Funk, Kennedy, and Johnson, 2020). The political salience of this partisan polarization concerning medical expertise was evident in the tone of a tweet from California Governor Gavin Newsom (D) about the intent of the Western Pact: “The West Coast is – and will continue to be – guided by SCIENCE. We issued our stay-at-home orders early to keep the public healthy. We’ll open our economies with that same guiding principle.”²⁵

²⁵ Twitter account of CA Governor Gavin Newsom, April 27, 2020. See Appendix A6.C.

In sum, the U.S. case study builds on our statistical findings by helping adjudicate between competing hypothesized causal factors. Qualitative evidence strongly indicates that policy alignment in the U.S. resulted not from intra-unit factors or diffusion, but from cross-unit, horizontal coordination through governors' coalitions, as well as from cross-level partisan and presidential coordination.

Horizontal and Partisan Coordination in Mexico

In Mexico, President López Obrador, like Trump in the U.S., responded dismissively to the pandemic, repeatedly violating his own government's advice on social distancing by holding political rallies, kissing supporters, and even urging Mexicans to go out shopping and patronize restaurants in order to support the country's economy. Moreover, he brandished various amulets that he claimed would shield him from the virus, including a prayer card, a six-leaf clover, and a \$2 US bill (Dyer 2020; Ward 2020). Despite the president's preference for lax policies, we find little evidence that he was able to influence state-level policies beyond the six states led by governors affiliated with his National Regeneration Party (MORENA). Instead, states governed by opposition parties aligned in implementing stringent policies. As the results of the statistical analysis show, during the early period of the pandemic states governed by the center-left Institutional Revolutionary Party (PRI), and especially by the center-right National Action Party (PAN), consistently implemented more stringent policies than states governed by López Obrador's left MORENA party. Guided by these statistical results, we look inside the PAN to see if there is evidence of horizontal coordination among its affiliated governors.

From the onset of the pandemic, the nine PAN governors forged a unified set of pandemic policies by working together through the party's association of governors, the Association of National Action Governors (GOAN). On March 14, 2020, the PAN governors announced a set of "seven joint and coordinated measures" in response to Covid-19. These measures, which aimed to "establish a system for cooperation, consultation and action" among the PAN governors and committed them to "not underestimating the potential risks of the pandemic to the population," lodged a clear challenge to López Obrador's dismissive posture toward the virus.²⁶ In May 2020, GOAN issued a collective pledge by the PAN governors not to jeopardize the health of students by allowing schools to reopen, followed by a joint statement against reopening the economies of their states until the number of infections declined to levels deemed safe by public health criteria.²⁷ These public statements by the PAN governors were supplemented by in-person meetings in the states of Guanajuato in mid-June and, one month later, Querétaro. Both meetings were documented and publicized by GOAN in professionally-produced short videos that featured each governor delivering a message of solidarity, resilience and hope. The videos were posted to YouTube, circulating widely on social media.²⁸ We interpret these joint statements and meetings under the auspices of GOAN as evidence that horizontal coordination, not diffusion, best explains the alignment of policy stringency observed across Mexico's nine PAN-governed states.

In early June, at the start of the middle period of our study, a new, multiparty form of horizontal coordination emerged in Mexico. The federal Ministry of Health had recently introduced a centralized "Covid-19 stoplight" (*semáforo*) with a 4-fold scheme of colors that ranked the risk of

²⁶ Twitter account of *Asociación de Gobernadores de Acción Nacional* (GOAN), March 14, 2020. See Appendix A6.B.

²⁷ Twitter account of *Asociación de Gobernadores de Acción Nacional* (GOAN), May 5 and May 13, 2020. See Appendix A6.B.

²⁸ See <https://www.youtube.com/watch?v=H-ABW0r1lIU&feature=youtu.be>; and <https://www.youtube.com/watch?v=Bf5IK49PXdY&feature=youtu.be>.

reopening each state's economy. Red indicated the highest risk, orange the next highest, followed by yellow and then green. The public unveiling of this top-down coordinating instrument by the federal government's Deputy Secretary of Prevention and Health Promotion, Hugo López-Gatell, galvanized an angry response by governors affiliated with opposition parties in the central and northern regions, including four PAN governors. They objected to the stoplight's indiscriminate initial ranking of 31 of the country's 32 states as "red," that is, at the maximum level of risk.²⁹ The opposed governors argued that the stoplight unfairly put on them the onus and responsibility for adverse public health developments that occurred after any relaxation of restrictions on business and other economic activities.

On June 5, a multiparty group of eight governors opposed to the federal government's stoplight met in the town of Tequila, Jalisco. The participants included the three PAN governors of Durango, Guanajuato and Tamaulipas, the two PRI governors of Coahuila and Colima, the two independent governors of Jalisco and Nuevo León, and the Party of the Democratic Revolution (PRD) governor of Michoacán. These eight governors issued a joint plan for fighting Covid-19, calling for a *Nueva Convivencia Social/New Social Coexistence* (NCS). The governors rejected the federal government's "unilaterally constructed" stoplight, announced their states would move forward with gradual economic reopening as conditions allowed, committed to expanded testing for Covid-19, and promised to set clear guidelines for reversing the economic reopening by implementing new lockdowns if necessary (Yañez 2020). A fourth PAN governor, Mauricio Vila Dosal of Yucatán, soon joined the NCS coalition, announcing that his state would shift from red to orange and begin reactivating its economy (Expansión Política 2020).³⁰ Notably, none of the six governors affiliated with the president's MORENA party joined this initiative to resist the federal government's attempt at top-down coordination.

Figure 5 shows how policies changed in the nine states that formed the NCS coalition relative to the 23 states not in the coalition. The left-hand panel shows the trends over time for coalition (black) and non-coalition (grey) states, with the black vertical line denoting the formation of the coalition. The righthand panel shows the coalition states outlined in black and the total change in policy from the creation of the coalition on June 5 to June 30, 2020. Over this period, policy stringency decreased in six of the nine coalition states by an average of eight points. Outside the coalition, 10 of 23 states relaxed their policies, 10 tightened their policies, and three made no changes, resulting in a far lower average decrease in stringency of just -0.52 points. These results suggest that the NCS indeed served as an effective vehicle for horizontal coordination and for resisting the federal government's attempt to impose a uniform set of policies. Our analysis thus identifies horizontal and partisan coordination as the main factors that explain policy alignment in Mexico.

²⁹ Zacatecas was the only state rated at a level of risk below the maximum level. See Appendix A6.B.

³⁰ See also Appendix A6.B.

Figure 5. Horizontal Coordination in Mexico: Changes in Policy Stringency among States affiliated with *Nueva Convivencia Social*

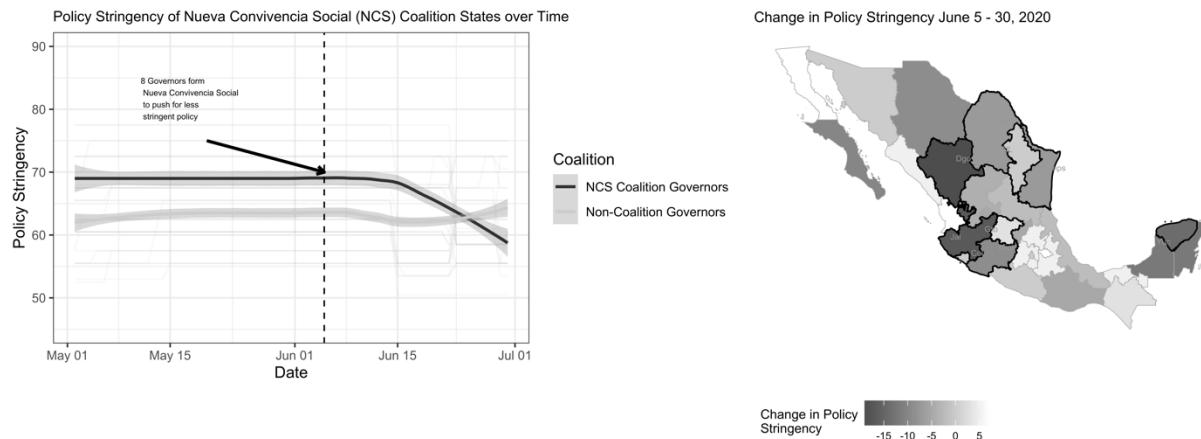


Figure 5 shows change in policy stringency among the nine states led by governors who formed the Nueva Convivencia Social coalition. The first panel shows loess curves depicting the trends over time among states with coalition governors (black) and non-coalition governors (gray). The second panel displays the change in policy stringency by state, with darker shades corresponding to larger decreases in policy stringency.

Uncoordinated Policies in Brazil

Like his counterparts in Mexico and the U.S., the President of Brazil, Jair Bolsonaro, attempted to downplay Covid-19, referring to it as “a little flu” (Arcanjo 2021). Early in the pandemic, Bolsonaro met with crowds of supporters, promoted hydroxychloroquine as a cure, censored epidemiological data, and tried to block states from implementing policies that would shut their economies (de Andrade and Amaral 2020; Journal Nacional 2020; Rodrigues 2020a).³¹ Brazil has had three different Health Ministers since the start of the pandemic. The first was fired for criticizing Bolsonaro’s anti-stringency posture, the second quit after just three weeks, and the third was an Army General with no medical expertise (Moreira 2020). The constant policy conflicts among Bolsonaro, members of his administration, other branches of government, and subnational political leaders, amounted to an incoherent federal policy. Moreover, Bolsonaro’s effort to coordinate state policies vertically via a provisional measure (MP 926 of 2020),³² which attempted to move authority over lockdown measures from the state to the federal level, failed when a Supreme Federal Court judge ruled on April 8, 2020 that the President lacked this power (Savarese and Biller 2020; Shalders 2020).

We find little evidence of presidential coordination in Brazil. Our quantitative indicator for presidential coordination—Bolsonaro’s share of votes in each state in the 2018 presidential election—does not have a significant relationship with policy stringency. Even governors closely allied with Bolsonaro have not adopted policies in line with his preferred lax approach. For example, the governor of Rondônia, Coronel Marcos Rocha, was not only a member of Bolsonaro’s former party (Social Liberal Party/PSL) and one of the few remaining governors to

³¹ See Appendix A6.A for examples.

³² http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2020/Mpv/mpv926.htm

support him,³³ but Bolsonaro had won the second round of the 2018 election by a commanding margin in Rondônia, where he earned the third highest share of votes (72.17%) across all states. Despite these factors, which would have made Rondônia a “most likely case” for the weak pandemic policies preferred by Bolsonaro if presidential policy coordination were occurring, Rondônia surprisingly pursued Brazil’s most consistently stringent policies. Bolsonaro’s decision to leave the PSL in late 2019 may have further weakened his capacity to achieve presidential coordination, as the three states with governors affiliated with his former party tended to pursue more stringent policies than states governed by other parties. Moreover, numerous other governors who supported Bolsonaro during the 2018 election subsequently spoke out against his position regarding Covid-19.³⁴

A similar pattern of feeble cross-level coordination is evident among Brazil’s political parties. The country’s fragmented, multiparty system has notoriously weak parties, with constant shifting of politicians among parties (Desposato 2004). Bolsonaro himself has been affiliated with nine different parties over his three-decade political career, and the 27 current governors of Brazil are affiliated with 13 parties. Even Brazil’s largest and most established party, the leftist Workers’ Party (PT), does not seem to coordinate policies—not only is the indicator for PT not significant in the quantitative analysis, but we find no evidence of collaboration among PT governors.³⁵

While our quantitative analysis provides no evidence of cross-level causation in Brazil, it does offer some evidence that cross-unit factors drive policy alignment across neighboring states. The regional indicators in the quantitative analysis indicate that states in the Central and Southeast regions pursued less stringent policies, whereas states in the North and Northeast implemented more stringent policies, all relative to the policies of states in the South. Additionally, we find that changes in neighboring states’ policies have an impact on policy stringency—the coefficient on the indicator for changes in neighboring states’ policies is 0.39 ($p < 0.05$). Still, these quantitative cross-unit indicators do not allow us to tell which type of cross-unit causation, that is, diffusion or, alternatively, horizontal coordination, is the more plausible driver of the observed policy alignment.

To address this limitation of the statistical analysis, we consider qualitative evidence of collaboration among governors in making pandemic policies, especially among the nine governors of the Northeast region who participated before the pandemic in a consortium of Northeastern states.³⁶ This coordination among governors seems to have resulted in aligned levels of policy stringency, with the significant Northeast region coefficient of 0.87 having the largest magnitude of any coefficient in the Brazil model. Beyond the Northeastern governors’ consortium, however, we find little evidence of horizontal coordination. Consequently, we interpret the results of the quantitative analysis that, outside the Northeast, cross-unit factors are associated with state-level policy alignment in Brazil as evidence of diffusion, not horizontal coordination.

³³ See Appendix A6.A for examples.

³⁴ See Appendix A6.A for examples.

³⁵ The four governors affiliated with the PT could be expected to pursue more stringent policies because their states are not only among the country’s poorest, but also their party is associated historically with expansive welfare policies. Still, we find no evidence of more stringent policies among the PT-governed states.

³⁶ Governor of Alagoas, Renan Filho (MDB); Governor of Bahia, Rui Costa (PT); Governor of Ceará, Camilo Santana (PT); Governor of Maranhão, Flávio Dino (PCdoB); Governor of Paraíba, João Azevêdo (Cidadania, formerly PSB); Governor of Pernambuco, Paulo Câmara (PSB); Governor of Piauí, Wellington Dias (PT); Governor of Rio Grande do Norte, Fátima Bezerra (PT); and Governor of Sergipe, Jackson Barreto (PMDB). <http://www.consorciordeste-ne.com.br/compras-conjuntas-combate-a-pandemia/>

During the period of our study, Brazilian governors met several times to discuss the pandemic, policy responses, and how to handle President Bolsonaro's anti-science position. In late March, 25 of the country's 27 governors met and formed an alliance with congressional leaders and federal ministers in order to maintain state lockdowns despite Bolsonaro's public opposition. Still, the purpose of this broad, multi-party alliance was not to coordinate state-level policies but instead to resist presidential coordination by defending the ability of governors to choose their policies independently (GI 2020). Similarly, around the same time, the governors of four states in the Southeast—Espírito Santo, Minas Gerais, Rio de Janeiro and São Paulo, each affiliated with a different political party—joined forces to challenge Bolsonaro's attempt to impose a national-level policy (Rodrigues 2020b). Again, this initiative is best understood not as evidence of horizontal coordination aiming to align state-level pandemic policies but instead as a defensive move by governors to protect their policy autonomy from the president's attempt to impose policies.

As affirmed by the Supreme Federal Court in its April ruling against Bolsonaro's provisional measure, states and municipalities can implement their own public health measures, and, as of April 2021, they had used their autonomy to pass more than 45,000 municipal policies and 2,000 state policies concerning Covid-19.³⁷ In turn, the stringency of these policies, as suggested by our quantitative analysis, is predicted best by intra-unit factors. These factors—which include healthcare as well as overall state capacity, the proportion of the population at greater risk of Covid-19, and economic inequality—are more strongly related to policy alignment in Brazil than in either Mexico or the U.S. In sum, we find no evidence in Brazil of either presidential or partisan cross-level coordination of state policies, and only modest evidence of cross-unit causation driven more by diffusion than by horizontal coordination, with the exception of the Northeastern states.

V. Conclusion and Suggestions for Future Research

The Covid-19 pandemic poses an urgent challenge to governments across the world. Claims that countries with federal systems are inherently disadvantaged in pursuing coordinated and stringent policy responses to this challenge, however, do not hold up to empirical scrutiny. Our descriptive findings reveal striking variation in policy responses to Covid-19 across and within Brazil, Mexico and the U.S. Whereas some states in the three countries pursued only weak measures, others implemented and maintained stringent policies. This variation was driven not by epidemiological, demographic or socioeconomic factors, but mainly by political factors that determine the capacity of federations to achieve policy alignment across states. We propose an analytic framework focusing on three types of causation—*intra-unit*, *cross-unit*, and *cross-level*—as explanations for subnational policymaking in federations. The stringency of state-level pandemic policies depends, in turn, on the ability of governors to forge cross-state coalitions, the internal organization of political parties, and presidential power.

By combining cross-national and subnational comparative analysis, we describe and explain contrasting patterns of policy alignment among states in Brazil, Mexico and the U.S. While Mexico and the U.S. show evidence of both cross-unit and cross-level policy coordination, Brazil offers less evidence of any form of coordination, with subnational policies driven mainly by intra-state factors and diffusion. Still, pandemic policymaking in Mexico and the U.S. also differs in important ways. In the U.S., presidential, partisan and horizontal coordination all played significant roles in driving policy alignment, whereas, in Mexico, just horizontal and partisan coordination were the dominant coordinating forces. By explaining variation in subnational policies across federations, our findings validate and extend existing comparative research on

³⁷ Leis Municipais, accessed online 17 April, 2020 at: <https://leismunicipais.com.br/coronavirus>.

“varieties of federalism” (Gibson 2004; Stepan 2000; Obinger et. al. 2005). Moreover, by setting U.S. federalism in a cross-national perspective, this article gets beyond the “U.S. exceptionalism” in much research on comparative federalism, which either treats the U.S. in isolation or compares it not with other presidential federations but with parliamentary federations like Australia, Canada and Germany.³⁸

This article opens multiple new avenues for future research on the comparative politics of the Covid-19 pandemic, and, more broadly, on how federal systems respond to public health emergencies. Interbranch conflict offers one key area for further comparative study. In some U.S. states, for example Louisiana, Michigan and Wisconsin, Democratic governors pursuing stringent pandemic policies faced strong resistance from state legislatures controlled by Republicans. In Wisconsin, moreover, the state judiciary ultimately blocked the governor’s move to continue using emergency executive powers to make pandemic policies. Although state legislatures in Brazil and Mexico seem to have had little impact on pandemic policymaking, in Brazil the Supreme Federal Court upheld the authority of states and their governors to make pandemic policies autonomously, free from presidential interference. Future research should explore how interbranch conflicts such as these influence policymaking during the Covid-19 pandemic and other public-health emergencies.

A second fruitful issue for future research concerns the role of policy diffusion across subnational units. In Brazil, Mexico and the U.S., levels of policy stringency among neighboring states were strongly and positively correlated. Moreover, in Brazil and the U.S., though not in Mexico, we found evidence of broader, “neighborhood” effects, with regional location serving as a strong and significant predictor of state-level policy stringency. While the specific types of coordination on which this article focuses—partisan, presidential and horizontal alliances among governors—can explain some of this regional clustering, a focus on additional factors that may foster policy alignment across states, such as emulation, learning and other forms of diffusion, could provide a stronger explanation. Testing hypotheses about these and other potential determinants of policy outcomes will require more granular data about how state government policymakers choose and design public health policies.

Third, more fine-grained research is needed on the intersection between the political determinants of subnational policies that we identify and demographic, economic and epidemiological factors. Adolph et al. (2020) find that, in the U.S., the Covid-19 mortality rate and the racial composition of states, in addition to the governor’s party affiliation, help explain the easing of subnational social distancing measures. Racial, ethnic and economic contexts can vary considerably *within* states, including across and inside cities whose mayors differ in their power to define local public health policies. More systematic data on public health policymaking at the municipal and city levels will make it easier to assess whether the political factors we identify as drivers of state-level pandemic policies also help explain policies within states.

Lastly, future research should widen the focus from policy choice to enforcement and compliance with pandemic and other public health policies (Testa et al, 2021). How effectively do state and local governments enforce social distancing policies? Do these policies actually change individual behavior and, if so, how much and through what mechanisms? Answering questions such as these will provide a far stronger foundation for understanding the consequences of subnational policies for population health outcomes.

³⁸ For one example, see Leach 1982.

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Online Appendix to “Pandemic Policymaking in Presidential Federations: Explaining Subnational Responses to Covid-19 in Brazil, Mexico and the United States”

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A1. Variable Coding

Administrative variables

Country

- Variable name: `country`
- Description: Indicates either U.S., Mexico, or Brazil

State name

- Variable name: `state_name`
- Description: Indicates name of subnational state

State short

- Variable name: `state_short`
- Description: Indicates either a two-letter code for each subnational state (U.S. and Brazil) or an abbreviation for each subnational state (Mexico)

State code

- Variable name: `state_code`
- Description: Indicates a numeric code for each subnational state
- Notes:
 - U.S.: Range: 1-56
 - Mexico: Range: 1-32
 - Brazil: Range: 1-27

Date

- Variable name: `date`
- Description: Indicates the date
- Range: 2020-02-25 - 2020-06-30

Days

- Variable name: `days`
- Description: Number of days since first reported covid case in country

Weeks

- Variable name: `weeks`
- Description: Number of weeks since first reported covid case in country

Region

- Variable name: `region`
- Description: Indicates the larger region of each subnational state
- Notes:
 - U.S.: Northeast; South; Midwest; West
 - Mexico: North; Central; East; West; South
 - Brazil: Northeast; North; Central; Southeast; South

Subregion

- Variable name: `sub_region`
- Description: Indicates the sub region of each subnational state in the U.S.
- Notes:
 - U.S.: East North Central; East South Central; Mid Atlantic; Mountain West; New England; Pacific West; South Atlantic West; North Central; West South Central

Policy variables

School closure

- Variable name: `policy_school_closure`
- Description: Indicates whether schools were open, partially closed, or completely closed across a subnational unit.
- Brazil:
 - Observed Range: 0-1
 - Median: 1.0
 - Mean: 0.9
- Mexico:
 - Observed Range: 0-1
 - Median: 1.0
 - Mean: 0.9
- U.S.:
 - Observed Range: 0-1
 - Median: 1.0
 - Mean: 0.8
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Notes:

Workplace closure

- Variable name: `policy_workplace_closure`
- Description: Indicates whether non-essential workplaces were open, partially closed, or completely closed.
- Brazil:
 - Observed Range: 0-1
 - Median: 0.5

- Mean: 0.5

- Mexico:

- Observed Range: 0-1
- Median: 0.5
- Mean: 0.4

- U.S.:

- Observed Range: 0-1
- Median: 0.7
- Mean: 0.5

- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>

- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>

- Notes:

Public events cancelled

- Variable name: `policy_public_events_cancelled`

- Description: Indicates whether public events were not, were partially, or were completely cancelled.

- Brazil:

- Observed Range: 0-1
- Median: 1.0
- Mean: 0.8

- Mexico:

- Observed Range: 0-1
- Median: 1.0
- Mean: 0.7

- U.S.:

- Observed Range: 0-1
- Median: 0.8
- Mean: 0.7

- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>

- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>

- Notes:

Restrict gatherings

- Variable name: `policy_restrict_gatherings`

- Description: Indicates the extent to which gatherings were restricted.

- Brazil:

- Observed Range: 0-1
- Median: 0.5
- Mean: 0.3

- Mexico:

- Observed Range: 0-1
- Median: 0.8
- Mean: 0.7

- U.S.:

- Observed Range: 0-1
- Median: 0.8
- Mean: 0.7
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Notes:

Stay at home

- Variable name: `policy_stay_at_home`
- Description: Indicates the extent of stay at home policies.
- Brazil:
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0.02
- Mexico:
 - Observed Range: 0-1
 - Median: 0.5
 - Mean: 0.6
- U.S.:
 - Observed Range: 0-1
 - Median: 0.3
 - Mean: 0.3
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Notes:

Public transit suspension

- Variable name: `policy_public_transit_suspended`
- Description: Indicates the extent to which internal subnational state travel was restricted.
- Brazil:
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0.06
- Mexico:
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0.2
- U.S.:
 - Observed Range: 0-1
 - Median: 0.3
 - Mean: 0.2
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>

Internal travel controls

- Variable name: `policy_internal_travel_controls`
- Brazil:
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0.2
- Mexico:
 - Observed Range: 0-1
 - Median: 0.3
 - Mean: 0.3
- U.S.:
 - Observed Range: 0-1
 - Median: 0.5
 - Mean: 0.4
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>

Any school closure

- Variable name: `policy_school_closure_imp_any`
- Description: Indicates whether any policy was implemented on school closure, whether recommended, partially, or fully
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 1.0
 - Mean: 0.9
- Mexico:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 1.0
 - Mean: 0.9
- U.S.:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 1.0
 - Mean: 0.9
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Full school closure

- Variable name: `policy_school_closure_imp_full`
- Description: Indicates whether a policy was fully implemented on school closure
- Brazil:
 - Possible Range: 0-1

- Observed Range: 0-1
- Median: 1.0
- Mean: 0.9

-Mexico:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1.0
- Mean: 0.9

-U.S.:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1.0
- Mean: 0.6

- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>

- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>

- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Any workplace closure

- Variable name: `policy_workplace_closure_imp_any`
- Description: Indicates whether any policy was implemented on workplace closure, whether recommended, partially, or fully
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 1
 - Mean: 0.8

-Mexico:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1.0
- Mean: 0.9

-U.S.:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1.0
- Mean: 0.8

- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>

- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>

- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Full workplace closure

- Variable name: `policy_workplace_closure_imp_full`
- Description: Indicates whether a policy was fully implemented on workplace closure
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 0

- Mean: 0.3

-Mexico:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 0
- Mean: 0.0

-U.S.:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 0
- Mean: 0.2

- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Any public events cancellation

- Variable name: `policy_public_events_cancelled_imp_any`
- Description: Indicates whether any policy was implemented on public events cancellation, whether recommended, partially, or fully
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 1.0
 - Mean: 0.8

-Mexico:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1.0
- Mean: 0.9

-U.S.:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1
- Mean: 0.9

- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Full public events cancellation

- Variable name: `policy_public_events_cancelled_imp_full`
- Description: Indicates whether a policy on public events cancellation was fully implemented
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 1.0
 - Mean: 0.8

-Mexico:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1.0
- Mean: 0.6

-U.S.:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1
- Mean: 0.5

- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Any policy restricting gatherings

- Variable name: `policy_restrict_gatherings_imp_any`
- Description: Indicates whether any policy was implemented restricting gatherings, whether recommended, partially, or fully
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 1.0
 - Mean: 0.5

-Mexico:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1.0
- Mean: 0.9

-U.S.:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1
- Mean: 0.8

- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Full policy restricting gatherings

- Variable name: `policy_restrict_gatherings_imp_full`
- Description: Indicates whether a policy on restricting gatherings was fully implemented
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0.1

-Mexico:

- Possible Range: 0-1
- Observed Range: 0-1

- Median: 0
- Mean: 0.1

-U.S.:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 0
- Mean: 0.4
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Any stay-at-home policy

- Variable name: `policy_stay_at_home_imp_any`
- Description: Indicates whether any stay-at-home policy was implemented, whether recommended, partially, or fully
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0

-Mexico:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1.0
- Mean: 0.9

-U.S.:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 1
- Mean: 0.7
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Full stay-at-home policy

- Variable name: `policy_stay_at_home_imp_full`
- Description: Indicates whether a full stay-at-home policy was implemented
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0
- Mexico:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0.4

-U.S.:

- Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0.21
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
 - Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
 - U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Any transit suspension policy

- Variable name: `policy_public_transit_suspended_imp_any`
- Description: Indicates whether any policy was implemented suspending public transit, whether recommended, partially, or fully
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0.1

-Mexico:

- Possible Range: 0-1
- Observed Range: 0-1
- Median: 0
- Mean: 0.5

-U.S.:

- Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 1
 - Mean: 0.5
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
 - Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
 - U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Full transit suspension policy

- Variable name: `policy_public_transit_suspended_imp_full`
 - Description: Indicates whether a policy suspending public transit was fully implemented
 - Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 0.03
 - Mean: 0
- Mexico:
- Possible Range: 0-1
 - Observed Range: 0
 - Median: 0
 - Mean: 0
- U.S.:
- Possible Range: 0-1

- Observed Range: 0-1
- Median: 0
- Mean: 0.02
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Any transit suspension policy

- Variable name: `policy_internal_travel_controls_imp_any`
- Description: Indicates whether any policy was implemented restricting internal travel, whether recommended, partially, or fully
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0.3
- Mexico:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 1
 - Mean: 0.6
- U.S.:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 1
 - Mean: 0.6
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- U.S.: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Full transit suspension policy

- Variable name: `policy_internal_travel_controls_imp_full`
- Description: Indicates whether any a policy restricting internal travel was implemented fully
- Brazil:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 0
 - Mean: 0.2
- Mexico:
 - Possible Range: 0-1
 - Observed Range: 0
 - Median: 0
 - Mean: 0
- U.S.:
 - Possible Range: 0-1
 - Observed Range: 0-1
 - Median: 0

- Mean: 0.2
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- US: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Policy Index

- Variable name: `policy_index`
- Description: Ten-item additive index of individual policy items
- Brazil:
 - Possible Range: 0-100
 - Observed Range: 0-75
 - Median: 45
 - Mean: 42.62
- Mexico:
 - Possible Range: 0-100
 - Observed Range: 0-77.50
 - Median: 55
 - Mean: 45.50
- U.S.:
 - Possible Range: 0-100
 - Observed Range: 0-84.17
 - Median: 50.42
 - Mean: 49.85
- Brazil: University of Miami <http://observcovid.miami.edu/brazil/>
- Mexico: University of Miami <http://observcovid.miami.edu/mexico/>
- US: University of Oxford <https://github.com/OxCGR/USA-covid-policy>

Covariates Variables

Presidential vote share

- Variable name: `politics_pres_vote_share`
- Description: Percentage share of votes at the state level for the current president during previous election
- Possible Range: 0-100
- Observed Range: 22.95-77.22%
- Median: 49.49%
- Mean: 48.09%
- US: Data on the US's presidential and gubernatorial elections were collected by the authors in the file `raw_us_politics.'
- Mexico: Data on Mexico's presidential and gubernatorial elections were collected by the authors in the file `raw_mex_politics.' Vote share data were collected from the Mexican Instituto Nacional Electoral (INE) from (<https://www.ine.mx/voto-y-elecciones/resultados-electorales/>).
- Brazil: Data on Brazil's presidential and gubernatorial elections come from the [`cepespR`] (<https://github.com/Cepesp-Fgv/cepesp-r>) R package and are supplemented with additional data collected by the authors stored in the `raw_br_politics` file.

- Notes:

Political trust

- Variable name: `trust_pca_ps`
- Description: Level of trust in political institutions
- Brazil:
 - Observed Range: -0.10 – 0.12
 - Median: -0.005
 - Mean: 0.001
- Mexico:
 - Observed Range: -0.13 – 0.14
 - Median: -0.004
 - Mean: 0.007
- U.S.:
 - Observed Range: -0.13 – 0.20
 - Median: -0.05
 - Mean: -0.05
- We use six items from LAPOP's 2019 surveys in Brazil, Mexico, and the U.S. that measure respondent trust in their country's system of government, executive, legislature, political parties, media, and elections. We scale these items using a principal components analysis with varimax rotation to create a single measure of political institutions trust.

Party alignment of governor

- Variable name: `politics_alignment_party`
- Description: Whether the party of the governor matches the party of the president
- Possible Range: 0-1
- Observed Range: 0-1
- Median: 0
- Mean: 0.32
- US: Data on the US's presidential and gubernatorial elections were collected by the authors in the file `raw_us_politics`.
- Mexico: Data on Mexico's presidential and gubernatorial elections were collected by the authors in the file `raw_mex_politics`.
- Brazil: Data on Brazil's presidential and gubernatorial elections come from the [`cepespR`](<https://github.com/Cepesp-Fgv/cepesp-r>) R package and are supplemented with additional data collected by the authors stored in the `raw_br_politics` file.
- Notes:

New COVID-19 cases

- Variable name: `covid_new_cases`
- Description: New confirmed COVID-19 cases per day
- Possible Range: 0 =<
- Observed Range: 0-393454
- Median: 1209
- Mean: 12629

- US: We use the 'R` package [COVID19](<https://cran.r-project.org/web/packages/COVID19/index.html>) to obtain daily state level data on Covid 19 compiled from [Johns Hopkins Center for Systems Science and Engineering](<https://github.com/CSSEGISandData/COVID-19>)
- Mexico: We download daily state level data on COVID-19 for Mexico from the [CoronaMex] Github (https://github.com/coronamex/datos/raw/master/datos_abiertos/serie_tiempo_estados_fecha_confirmacion.csv.gz)
- Brazil: We download daily state level data on COVID-19 for Brazil from the [coronavirusbrazil](<https://github.com/mralbu/coronavirusbrazil>) R package.
- Note:

New COVID-19 cases per 100k

- Variable name: `covid_new_cases_per100k`
- Description: New confirmed COVID-19 cases per day per 100000 people
- Possible Range: 0 =<
- Observed Range: 0-3299.04
- Median: 44.14
- Mean: 185.06
- US: We use the 'R` package [COVID19](<https://cran.r-project.org/web/packages/COVID19/index.html>) to obtain daily state level data on Covid 19 compiled from [Johns Hopkins Center for Systems Science and Engineering](<https://github.com/CSSEGISandData/COVID-19>)
- Mexico: We download daily state level data on COVID-19 for Mexico from the [CoronaMex] Github (https://github.com/coronamex/datos/raw/master/datos_abiertos/serie_tiempo_estados_fecha_confirmacion.csv.gz)
- Brazil: We download daily state level data on COVID-19 for Brazil from the [coronavirusbrazil](<https://github.com/mralbu/coronavirusbrazil>) R package.
- Note:

New COVID-19 deaths

- Variable name: `covid_new_deaths`
- Description: New confirmed COVID-19 deaths per day
- Possible Range: 0 =<
- Observed Range: 0-24855.0
- Median: 55.0
- Mean: 692.4
- US: We use the 'R` package [COVID19](<https://cran.r-project.org/web/packages/COVID19/index.html>) to obtain daily state level data on Covid 19 compiled from [Johns Hopkins Center for Systems Science and Engineering](<https://github.com/CSSEGISandData/COVID-19>)
- Mexico: We download daily state level data on COVID-19 for Mexico from the [CoronaMex] Github (https://github.com/coronamex/datos/raw/master/datos_abiertos/serie_tiempo_estados_fecha_confirmacion.csv.gz)

- Brazil: We download daily state level data on COVID-19 for Brazil from the [coronavirusbrazil](<https://github.com/mralbu/coronavirusbrazil>) R package.

- Note:

New COVID-19 deaths per 100k

- Variable name: `covid_new_deaths_per100k`
- Description: New confirmed COVID-19 deaths per day per 100000 people
- Possible Range: 0 =<
- Observed Range: 0-168.32
- Median: 1.75
- Mean: 9.25
 - U.S.: We use the `R` package [COVID19](<https://cran.r-project.org/web/packages/COVID19/index.html>) to obtain daily state level data on Covid 19 compiled from [Johns Hopkins Center for Systems Science and Engineering](<https://github.com/CSSEGISandData/COVID-19>)
 - Mexico: We download daily state level data on COVID-19 for Mexico from the [CoronaMex] Github (https://github.com/coronamex/datos/raw/master/datos_abiertos/serie_tiempo_estados_fecha_confirmacion.csv.gz)
 - Brazil: We download daily state level data on COVID-19 for Brazil from the [coronavirusbrazil](<https://github.com/mralbu/coronavirusbrazil>) R package.
- Note:

Subnational Human Development Index

- Variable name: `social_shdi`
- Description: Subnational human development index score for health
- Possible Range: 0-1
- Observed Range: 0.69-0.96
- Median: 0.80
- Mean: 0.83
 - U.S.: We download state-level health SHDI data from the Global Data Lab (<https://globaldatalab.org/shdi/shdi/>)
 - Mexico: We download state-level health SHDI data from the Global Data Lab (<https://globaldatalab.org/shdi/shdi/>)
 - Brazil: We download state-level health SHDI data from the Global Data Lab (<https://globaldatalab.org/shdi/shdi/>)
- Note:

Myers State Capacity Index

- Variable name: `statecap_myers_latest`
- Description: The latest subnational state capacity measure
- Possible Range:
- Observed Range:
- Median:
- Mean:

- US: We download state-level capacity data from the State Capacity Scores website (<https://statecapacityscores.org/the-data/>)
- Mexico: We download state-level capacity data from the State Capacity Scores website (<https://statecapacityscores.org/the-data/>)
- Brazil: We download state-level capacity data from the State Capacity Scores website (<https://statecapacityscores.org/the-data/>)

State GINI

- Variable name: `social_gini`
- Description: State-level GINI coefficient

Brazil

- Observed Range: 0.49-0.65

- Median: 0.60

- Mean: 0.59

Mexico

- Observed Range: 0.40-0.50

- Median: 0.45

- Mean: 0.45

U.S.

- Observed Range: 0.42-0.51

- Median: 0.46

- Mean: 0.46

A2. Political Parties by Country

Table A2.1 Political Parties by Country

Country	Party name	Party (trans)	Party acronym	Reference group
Brazil	Progressistas	Progressives	PP	Y
	Partido Democrático Trabalhista	Democratic Workers' Party	PDT	Y
	Partido Comunista do Brasil	Communist Party of Brazil	PC do B	Y
	Partido Novo	New Party	NOVO	Y
	Aliança	Alliance		Y
	Democratas	Democrats	DEM	N
	Movimento Democrático Brasileiro	Brazilian Democratic Movement	MDB	N
	Partido da Social Democracia Brasileira	Brazilian Social Democracy Party	PSDB	N
	Partido dos Trabalhadores	Workers' Party	PT	N
	Partido Social Cristão	Social Christian Party	PSC	N
Mexico	Partido Social Democrático	Social Democratic Party	PSD	N
	Partido Social Liberal	Social Liberal Party	PSL	N
	Partido Socialista Brasileiro	Brazilian Socialist Party	PSB	N
	Movimiento Regeneración Nacional	National Regeneration Movement	MORENA	Y
U.S.	Partido Revolucionario Institucional	Institutional Revolutionary Party	PRI	N
	Partido Acción Nacional	National Action Party	PAN	N
	Partido de la Revolución Democrática	Party of the Democratic Revolution	PRD	N
	Republican Party			Y
	Democratic Party			N

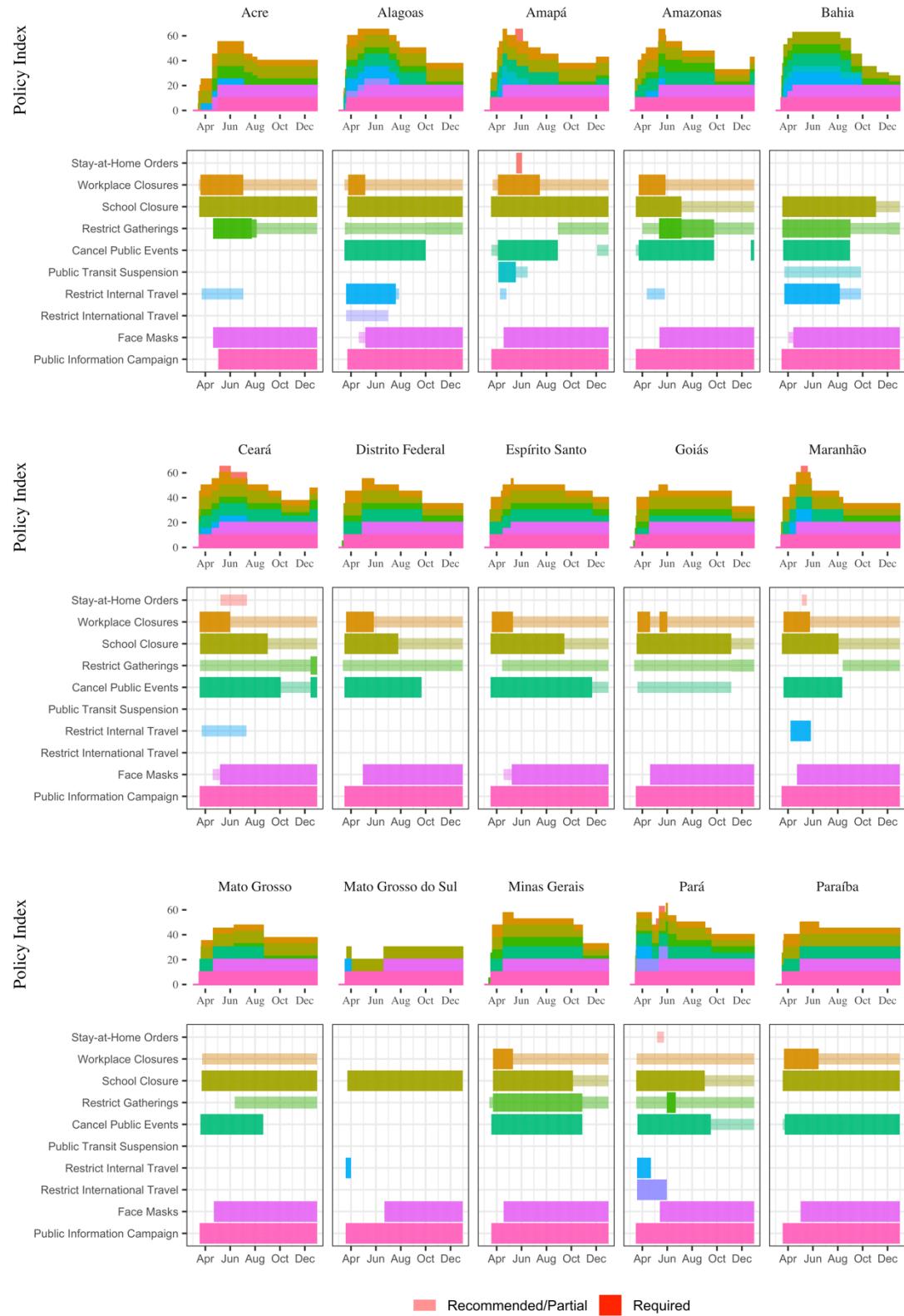
Note. In Mexico, 12 states have PRI governors: Campeche, Coahuila, Colima, Guerrero, Hidalgo, México, Oaxaca, San Luis Potosí, Sinaloa, Sonora, Tlaxcala, Zacatecas. Nine states have PAN governors: Aguascalientes, Baja California Sur, Chihuahua, Durango, Guanajuato, Nayarit, Querétaro, Tamaulipas, Yucatán. Two states have PRD governors:

Michoacán and Quintana Roo. Three states are led by independent governors: Jalisco, Morelos and Nuevo León. In Brazil, the reference category consists of the governors of five of the country's 27 states: Acre, Amapá, Maranhão, Minas Gerais, and Rondônia, who are affiliated with the PP, PDT, PC do B, NOVO, and *Aliança*, respectively. The distribution of the 22 Brazilian states across the eight parties which have more than one affiliated governor is as follows: Goiás, Mato Grosso, Tocantins (DEM); Alagoas, Distrito Federal, Pará (MDB); Espírito Santo, Paraíba, Pernambuco (PSB); Amazonas, Rio De Janeiro (PSC); Paraná, Sergipe (PSD); Mato Grosso Do Sul, Rio Grande Do Sul, São Paulo (PSDB); Roraima, Santa Catarina (PSL); Bahia, Ceará, Piauí, Rio Grande Do Norte (PT).

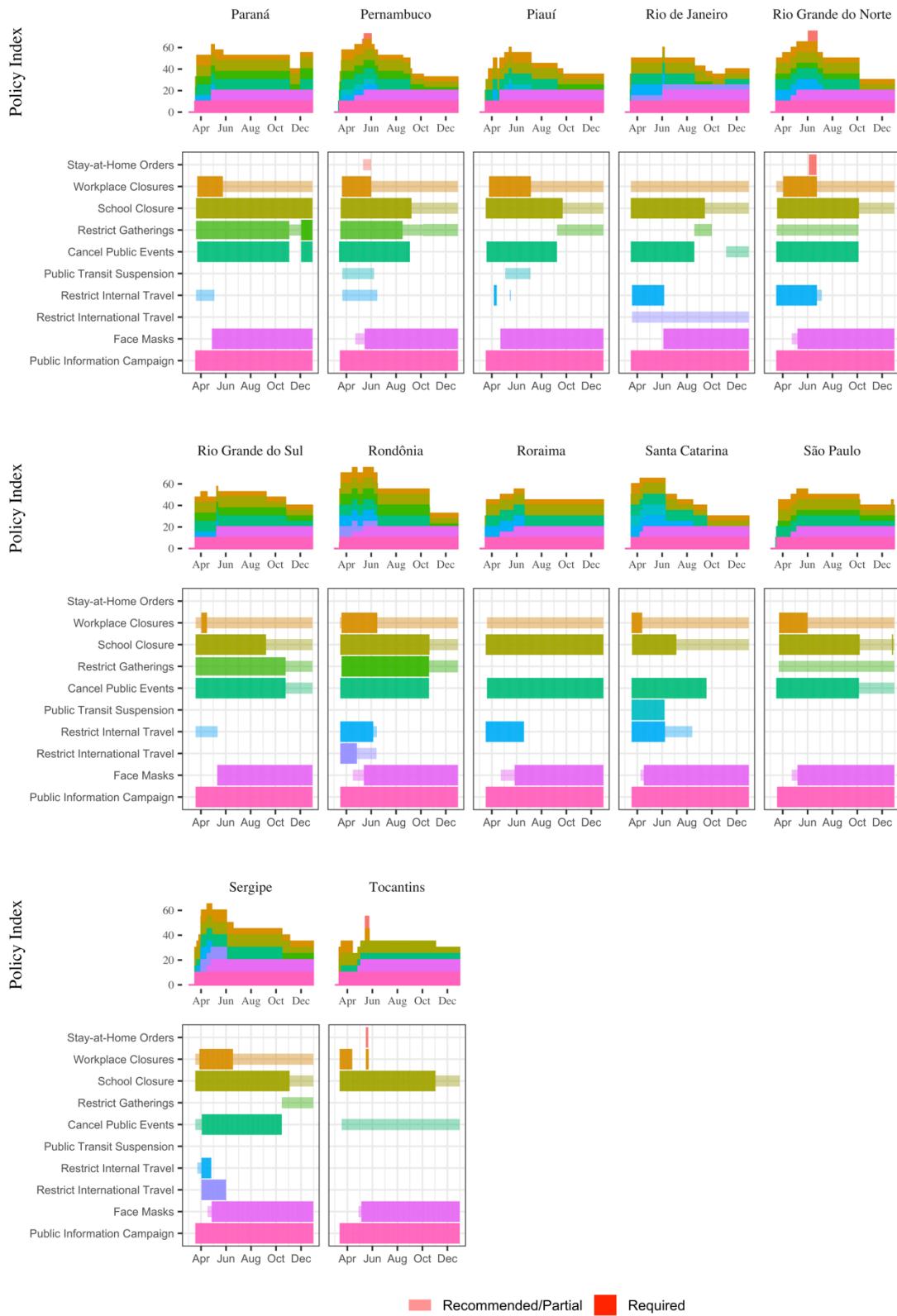
A2. State Profiles of Social Distancing Policies in Brazil, Mexico, and the U.S.

In this section we provide an overview of the underlying policies that make up the policy stringency index (PSI) scores for each state in Brazil, Mexico, and the U.S. over time. Each panel corresponds to a state. Within each panel, the top portion shows the policy index score for that state, with colored bars corresponding to the policies in effect. For clarity, the bottom portion of each panel presents each policy separately over time, with the width of the lines corresponding to the degree of implementation (“Recommended/Partial” or “Required”).

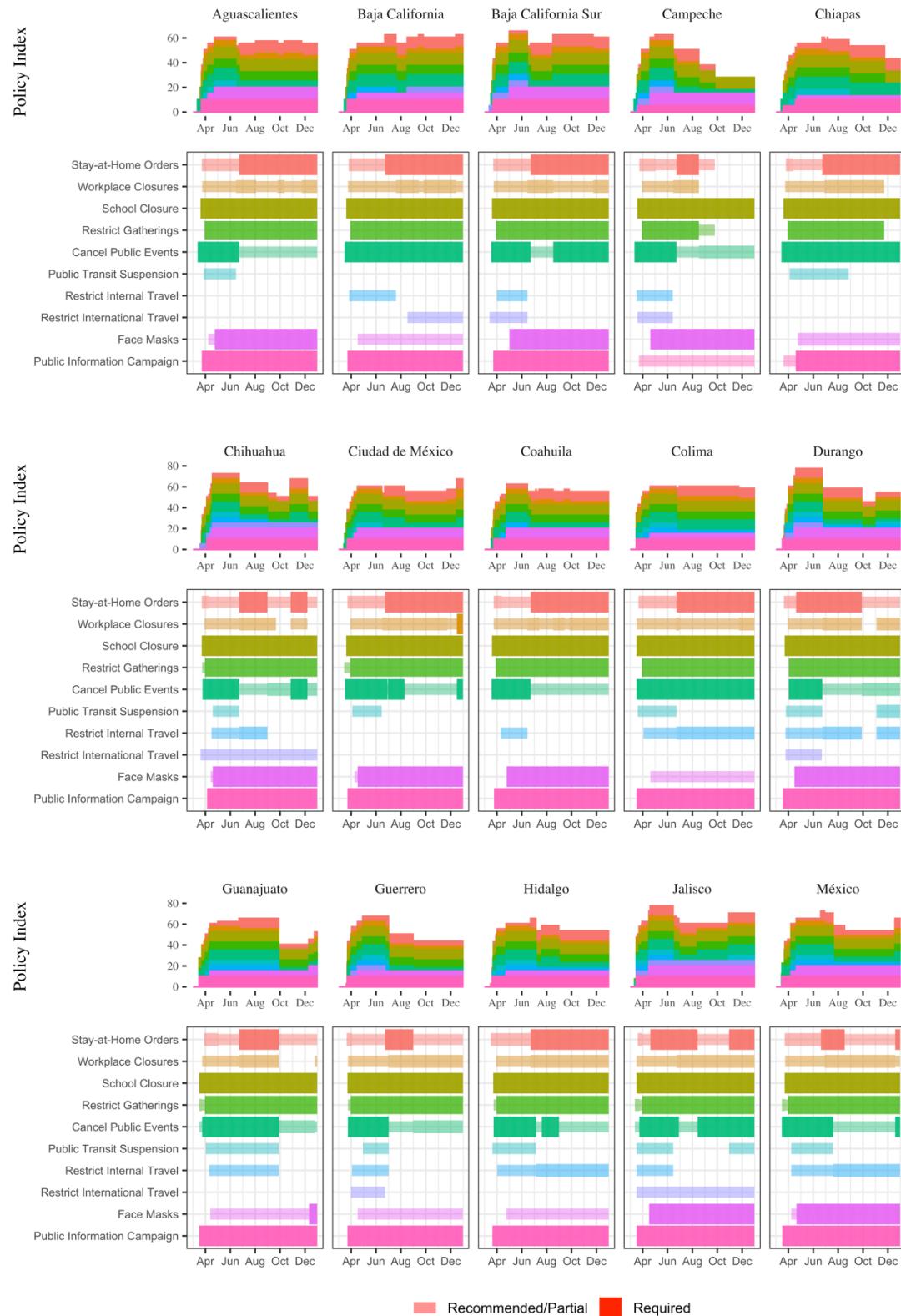
A2.A.1 Social Distancing Policies in Brazil (Acre- Paraíba)



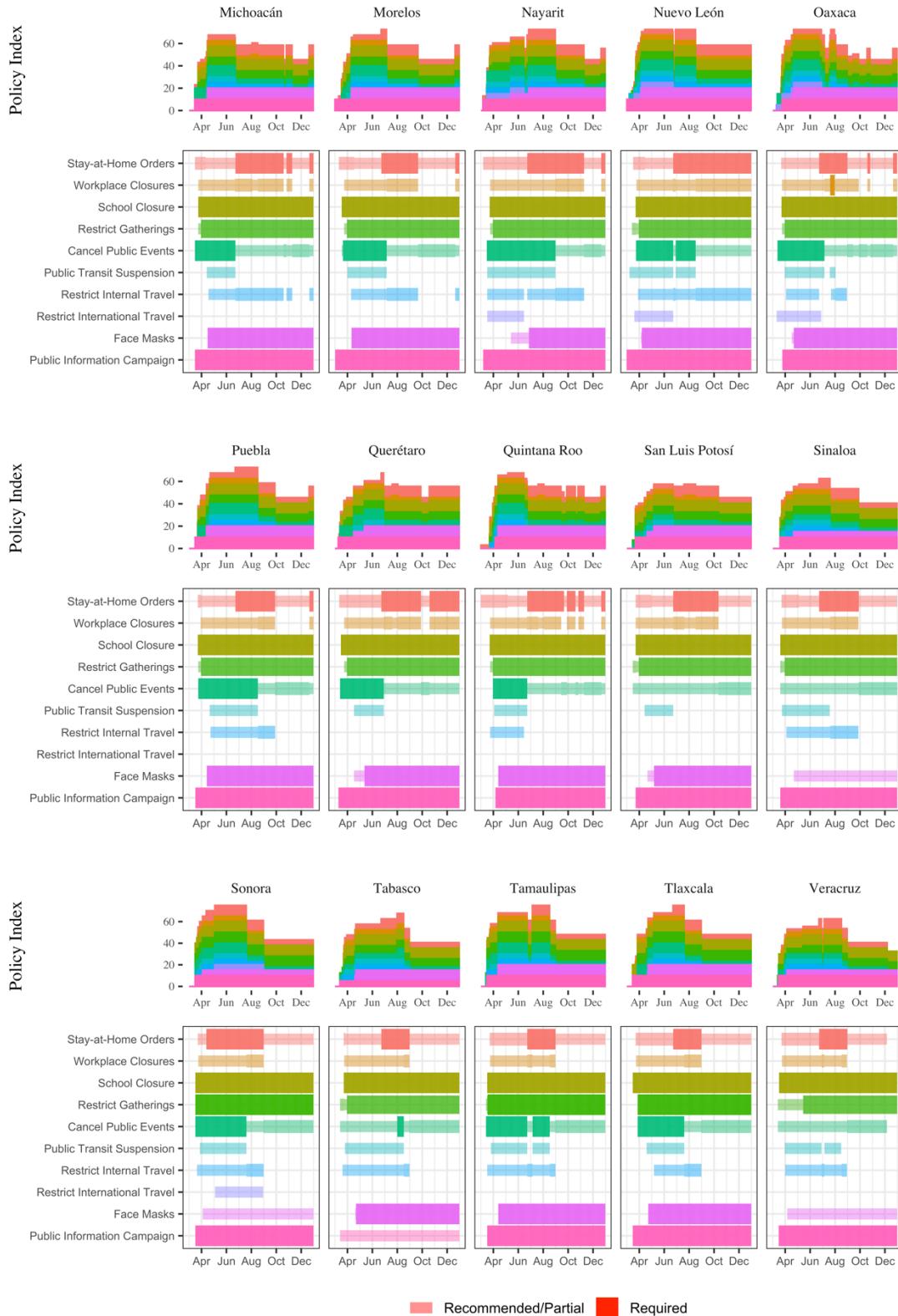
A2.A.2 Social Distancing Policies in Brazil (Paraná - Tocantins)



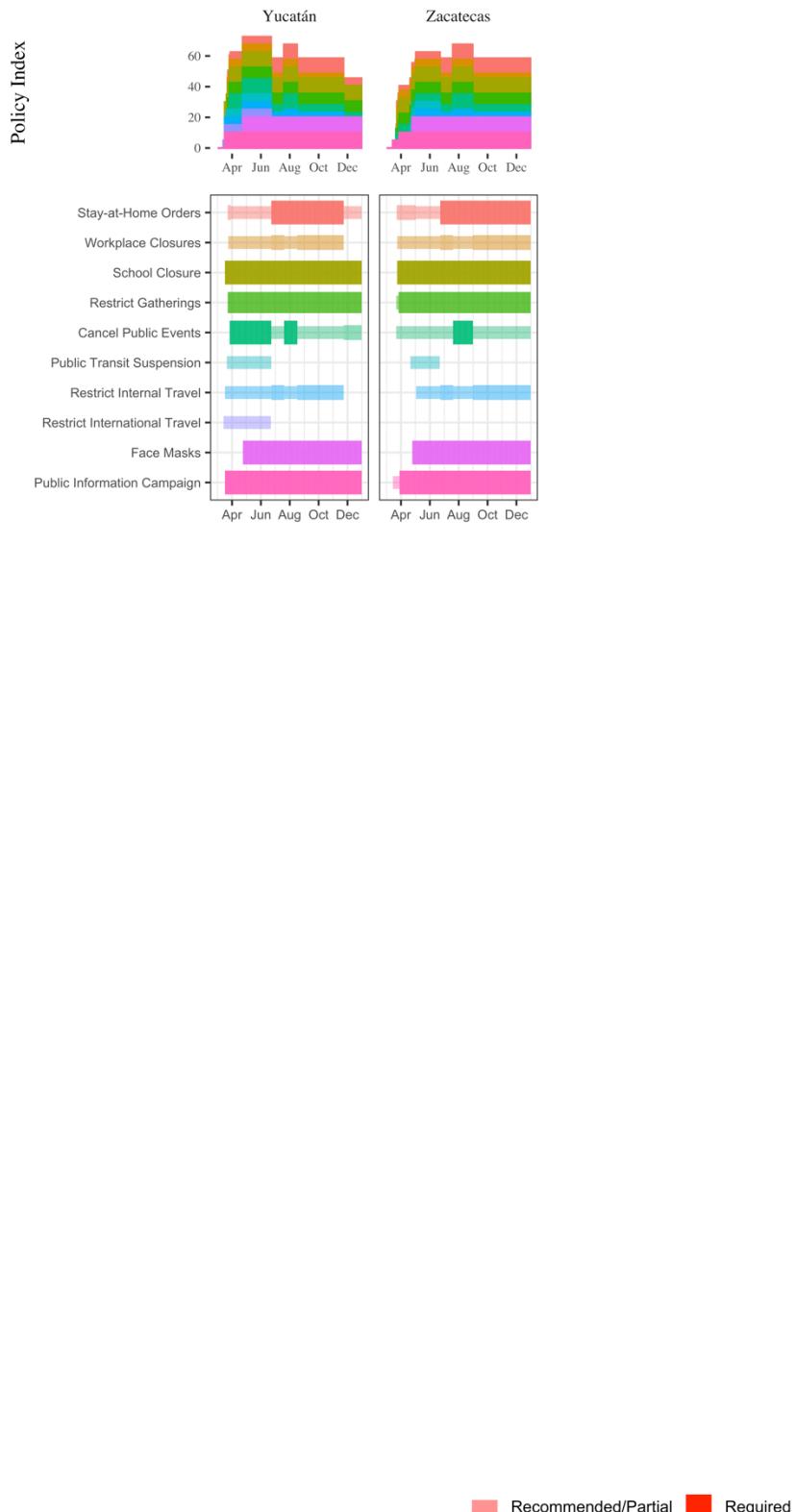
A2.B.1 Social Distancing Policies in Mexico (Aguascalientes – México)



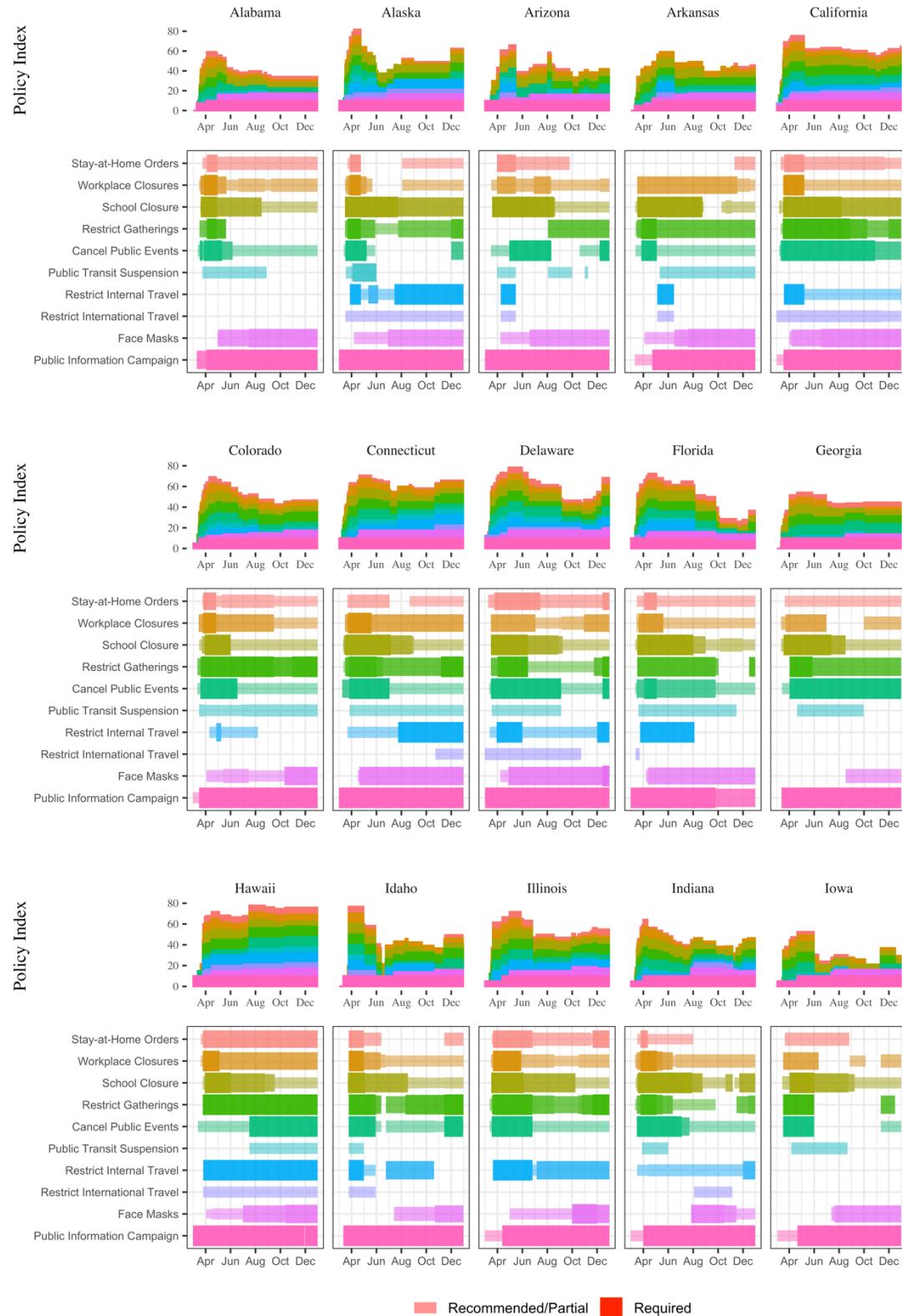
A2.B.2 Social Distancing Policies in Mexico (Michoacán – Veracruz)



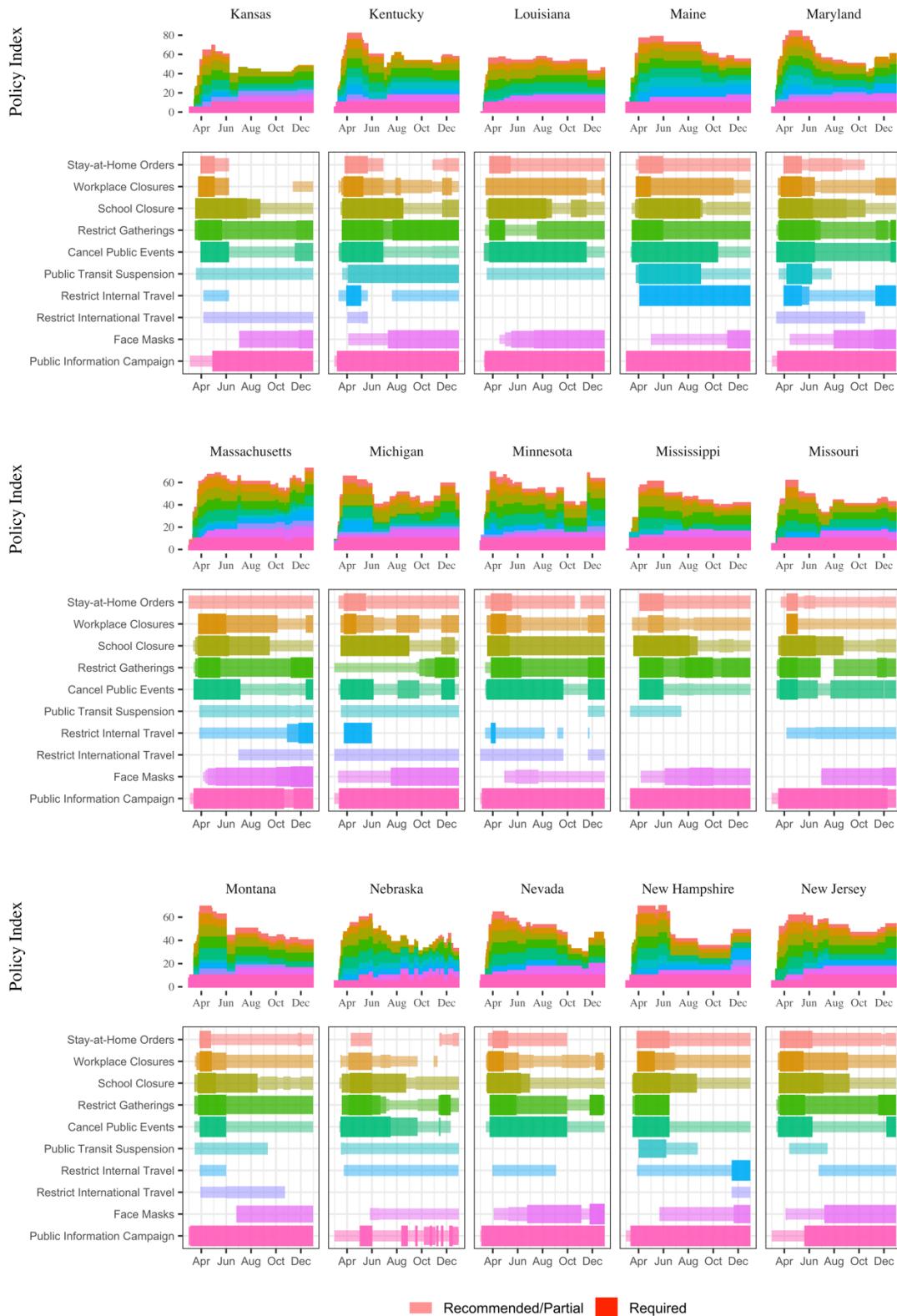
A2.B.3 Social Distancing Policies in Mexico (Yucatán - Zacatecas)



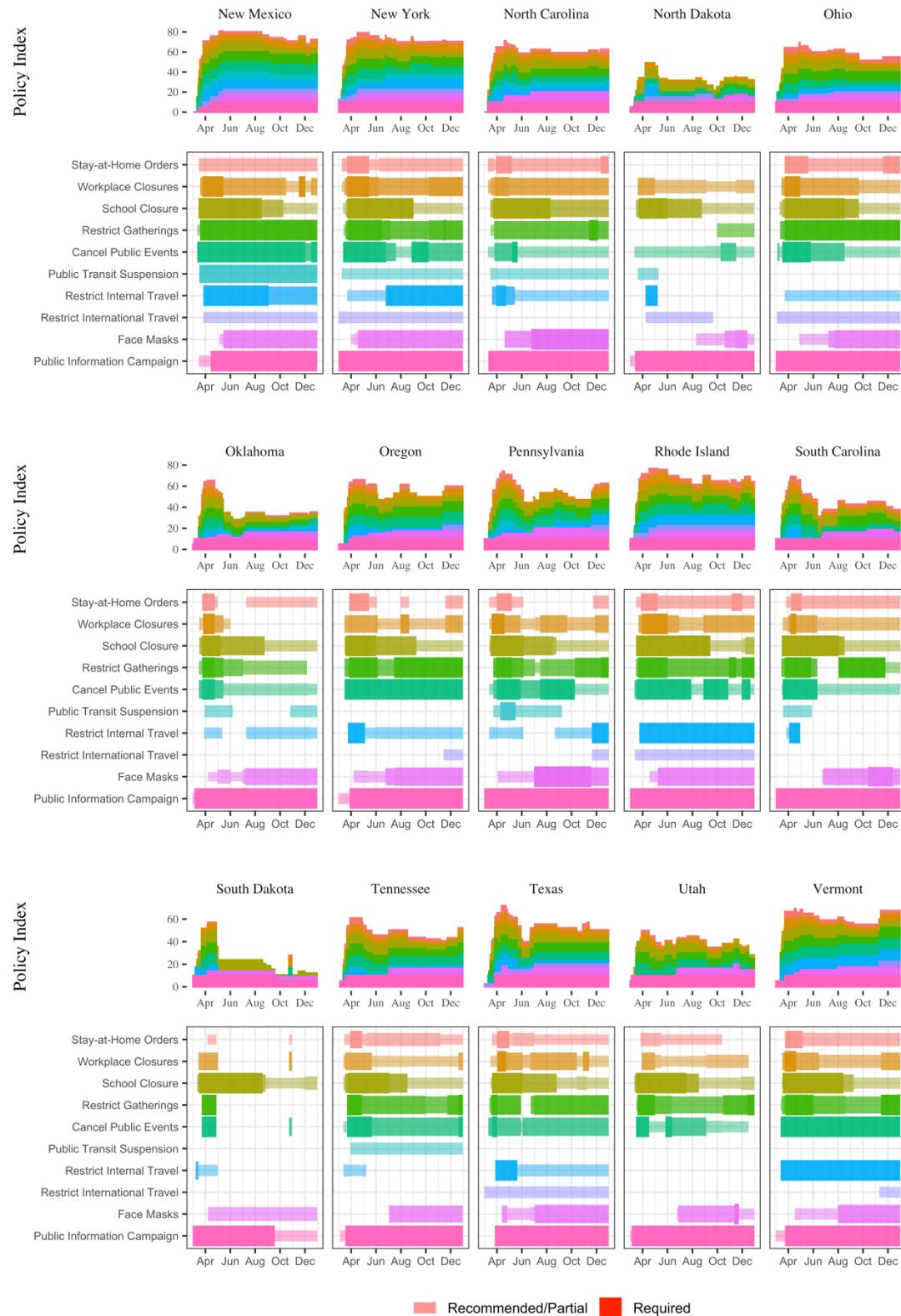
A2.C.1 Social Distancing Policies in the United States (Alabama - Iowa)



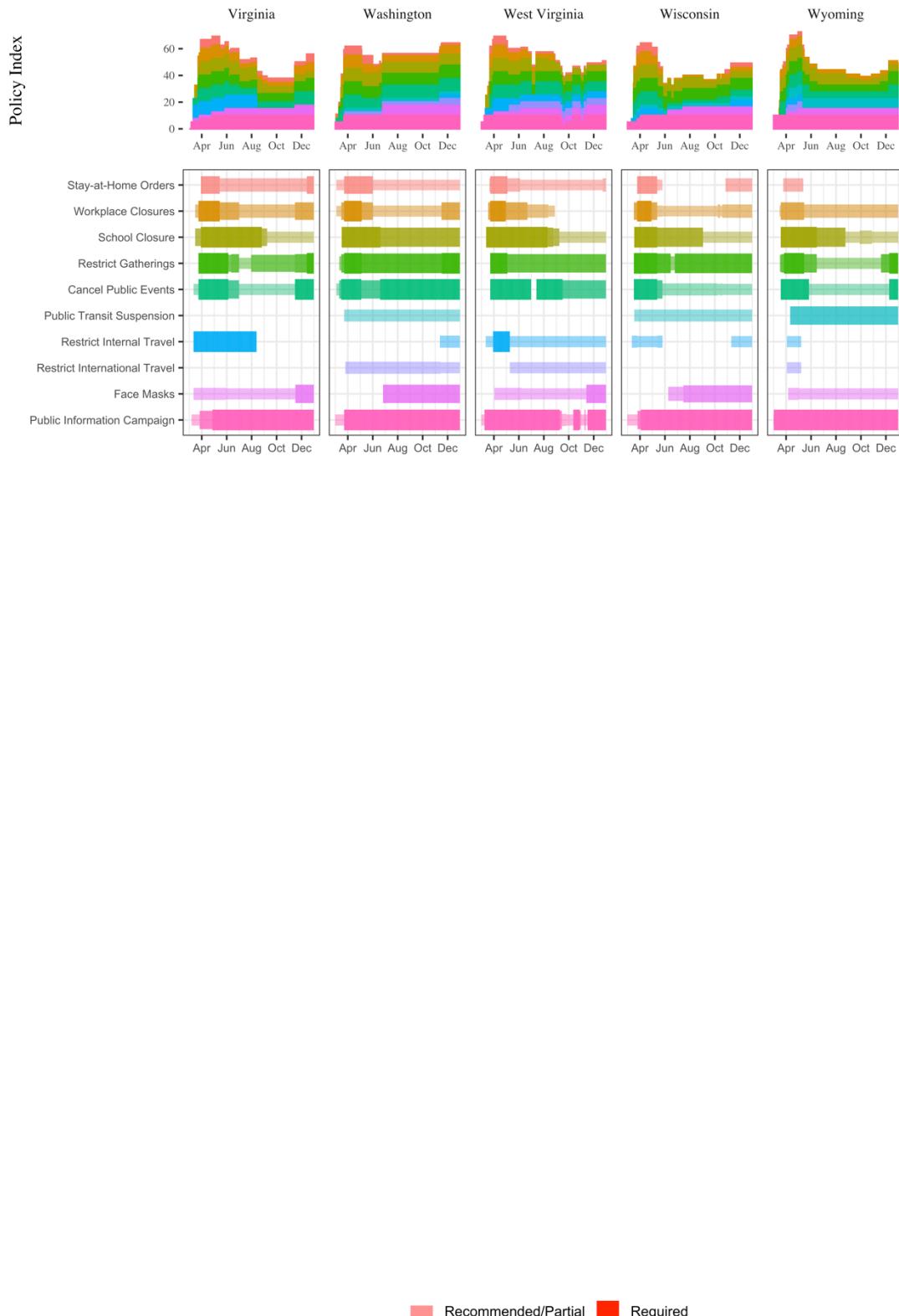
A2.C.2 Social Distancing Policies in the United States (Kansas – New Jersey)



A2.C.3 Social Distancing Policies in the United States (New Mexico - Vermont)



A2.C.4 Social Distancing Policies in the United States (Virginia - Wyoming)



A4. Testing Predictors of State-Level Policy Responses to Covid-19 in Brazil, Mexico and the U.S. during the later months of the pandemic

This section extends the analysis presented in the main text to examine the middle and later periods of the Pandemic, corresponding roughly to periods of policy relaxation and readoption in Brazil, Mexico and the U.S. We employ the same dynamic panel specification presented in Figure 2 of the main text. Figure A4.A presents the results for the middle period (June-September). Figure A4.B presents the results for the later months (October -December). Intra-unit factors remain significant predictors of policy stringency in Brazil across both periods with both the Myers Index of state capacity and the share of the population over the age of 65 predicting higher levels of policy stringency. By contrast, none of the intra-unit factors predict policy stringency in Mexico in either period, and, surprisingly, the subnational index of human development, which measures degree of development on the dimensions of education, health and standard of living, is associated with lower levels of policy stringency in the U.S. One possible explanation for this negative relationship is that Covid-19 cases and death rates tended to be lower in states with high levels of human development during these periods, perhaps leading to more aggressive relaxation of policies. The effect of cross-unit factors appears diminished across all countries in the middle and later periods, as does the effect of cross-level factors in Brazil and Mexico. In the U.S. these cross-level factors remain significant predictors of policy stringency across all stages of the pandemic.

A4.A Testing Predictors of State-Level Policy Responses to Covid-19 in Brazil, Mexico and the U.S.: June - September

Figure A4.A: Testing Hypothesized Predictors of State-Level Pandemic Policies in Brazil, Mexico and the United States: June - September

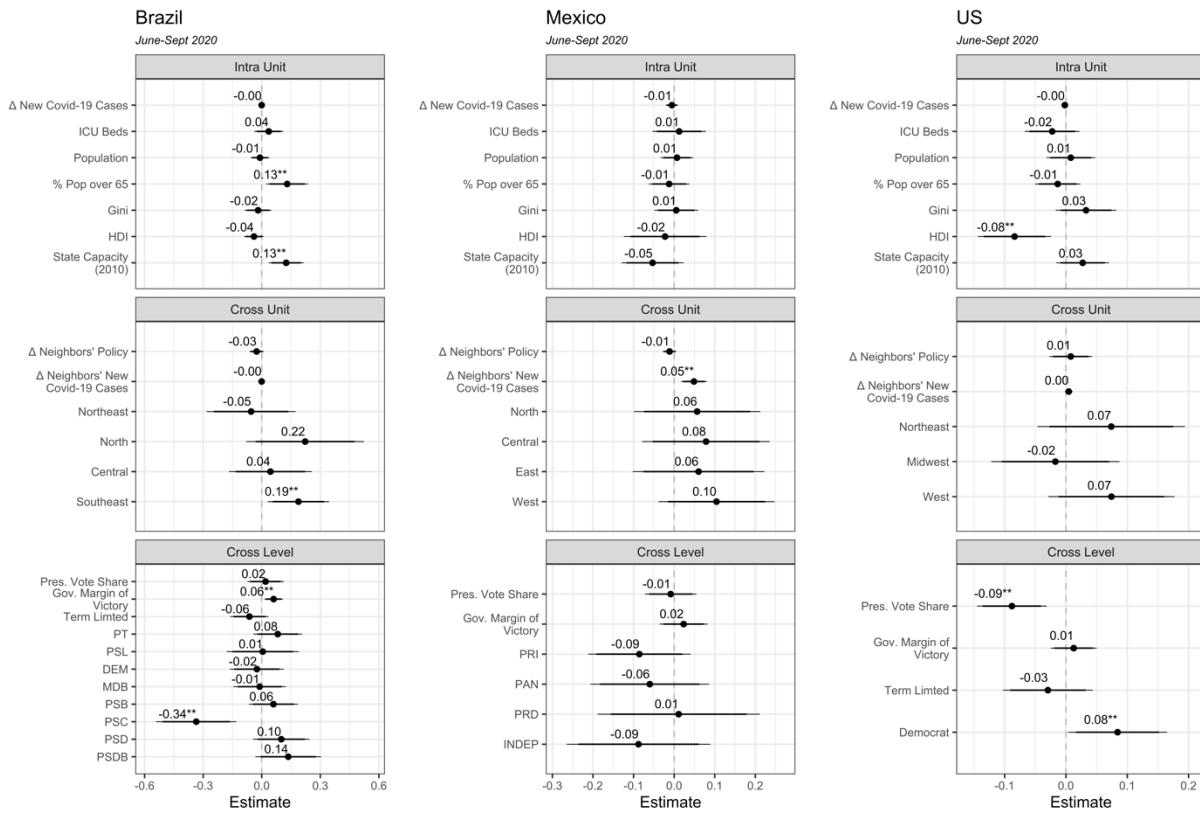


Figure A4.A presents the coefficient plots from the regression models for Brazil, Mexico and the U.S. estimated over the period of June – September 2020 with 90 percent confidence intervals (* $p < 0.10$) provided by the thick bars and 95 percent confidence intervals (** $p < 0.05$) provided by the thin bars.

A4.B Testing Predictors of State-Level Policy Responses to Covid-19 in Brazil, Mexico and the U.S.: October - December

Figure A4.B: Testing Hypothesized Predictors of State-Level Pandemic Policies in Brazil, Mexico and the United States: October - December

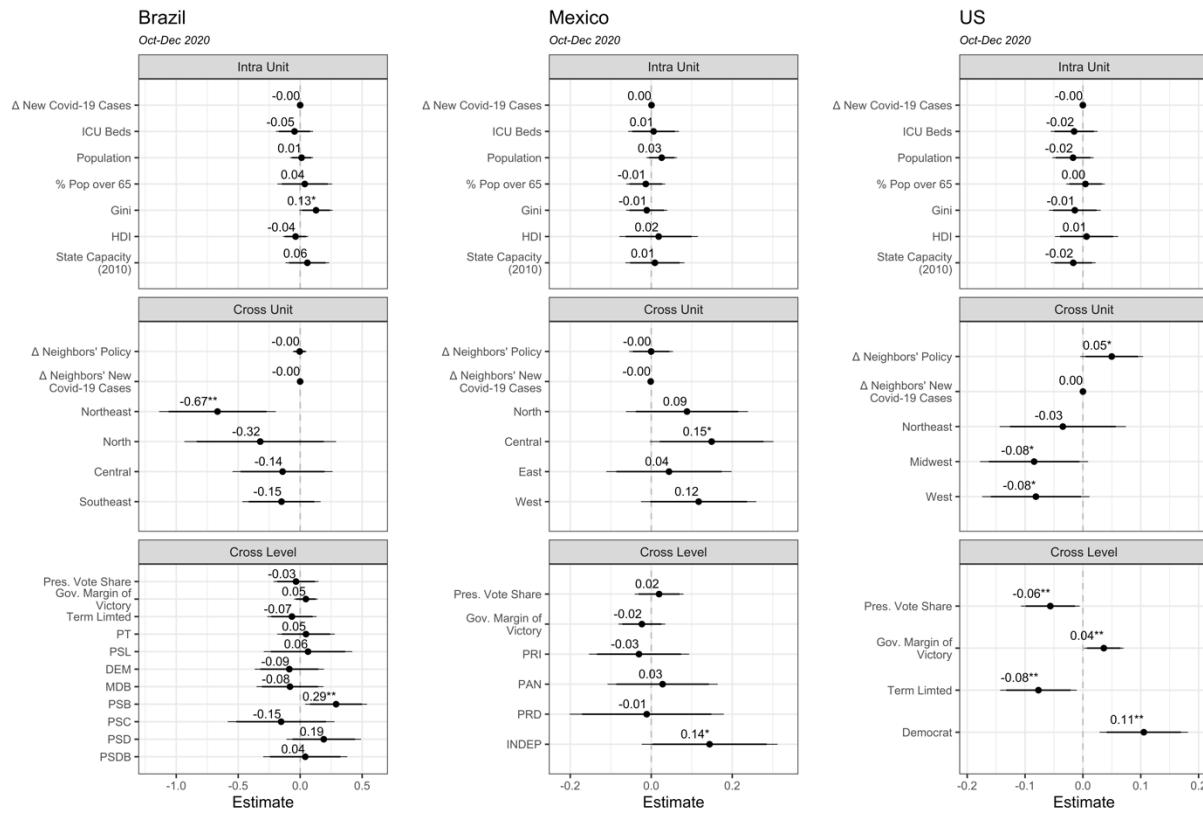


Figure A4.B presents the coefficient plots from the regression models for Brazil, Mexico and the U.S. estimated over the period of October – December 2020 with 90 percent confidence intervals (* $p < 0.10$) provided by the thick bars and 95 percent confidence intervals (** $p < 0.05$) provided by the thin bars.

A5. Alternative Regression Specification Testing Predictors of State-Level Policy Responses to Covid-19 in Brazil, Mexico and the U.S. during the early months of the Pandemic

This section explores the robustness of our analysis of factors that predict policy stringency during the early stages of the pandemic in Brazil, Mexico, and the U.S. Specifically, we assess the degree to which our results change when controlling for the change in new Covid-19 related *deaths* in each state and their neighbors, instead of Covid-19 related cases. As we note in the main text, we prefer specifications using Covid-19 cases because of potential heterogeneity in cause of death attributions across countries and states. Figure A5.A presents the results of the analysis controlling for changes in Covid-19 deaths instead of changes in Covid-19 cases. The results when using Covid-19 deaths are quite similar to those reported in the main text. The key difference is that changes in the number of new deaths in neighboring states are significant predictors of more stringent policy in Mexico and the U.S., which we take as further evidence of the importance of cross-unit diffusion during this period.

Figure A5.A: Testing Predictors of State-Level Policy Responses to Covid-19 in Brazil, Mexico and the U.S. controlling for Covid-19 Deaths

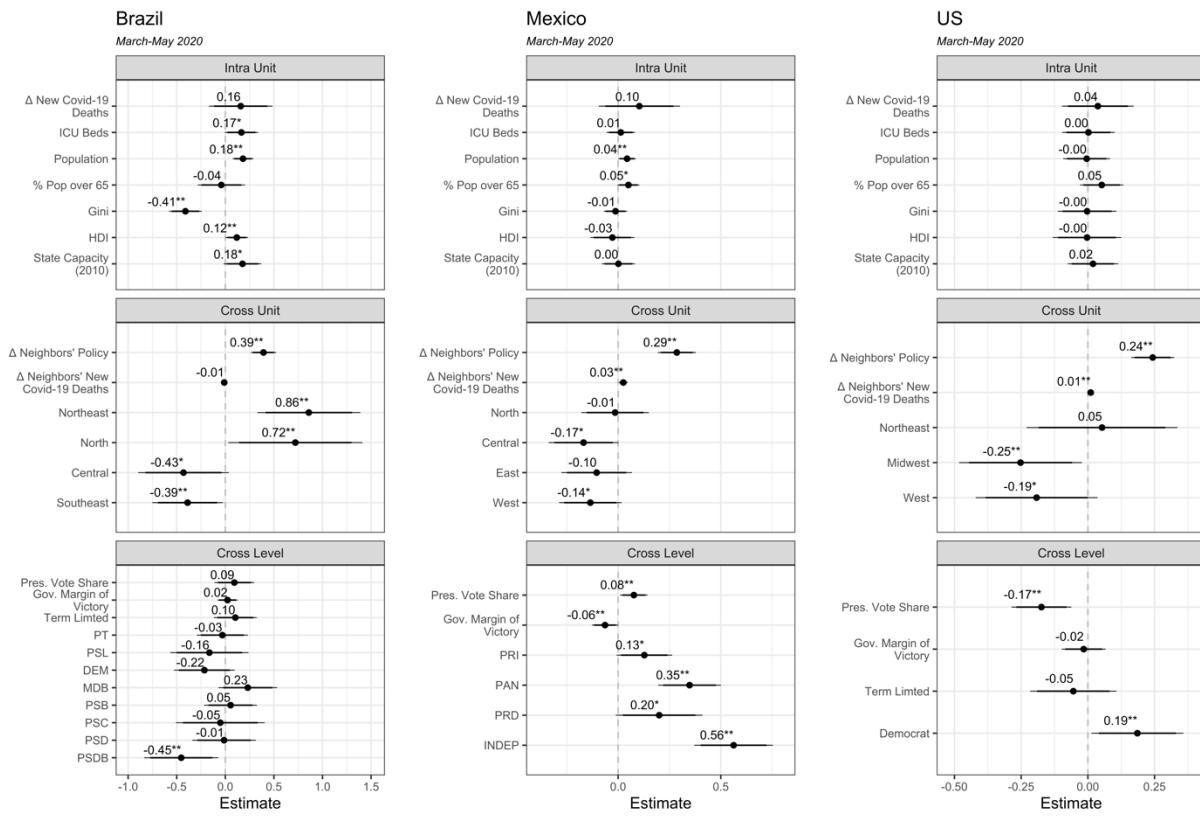


Figure A4.A presents the coefficient plots from the regression models for Brazil, Mexico and the U.S. estimated over the period of March—May 2020 with 90 percent confidence intervals (* $p < 0.10$) provided by the thick bars and 95 percent confidence intervals (** $p < 0.05$) provided by the thin bars.

A6. Twitter and Other Social Media Evidence about State-Level Policy Responses to COVID-19 in Brazil, Mexico and the United States

A6.A Brazil

Jair M. Bolsonaro

@jairbolsonaro

Replying to [@jairbolsonaro](#)

2- Cada vez mais o uso da Cloroquina se apresenta como algo eficaz. Dois renomados médicos no Brasil se recusaram a divulgar o que os curou da COVID-19. Seriam questões políticas, já que um pertence a equipe do Governador de SP?

7:01 AM · Apr 8, 2020 · Twitter for Android

7.1K Retweets 401 Quote Tweets 42.3K Likes

Reply Retweet Like Share



Jair M. Bolsonaro @jairbolsonaro

- Atividades essenciais:
- Academias de esporte, salões de beleza e barbearias.

DECRETO Nº 10.344, DE 11 DE MAIO DE 2020

Altera o Decreto nº 10.282, de 20 de março de 2020, que regulamenta a Lei nº 13.979, de 6 de fevereiro de 2020, para definir os serviços públicos e as atividades essenciais.

O PRESIDENTE DA REPÚBLICA, no uso da atribuição que lhe confere o art. 84, **caput**, inciso IV, da Constituição, e tendo em vista o disposto na Lei nº 13.979, de 6 de fevereiro de 2020,

DECRETA:

Art. 1º O Decreto nº 10.282, de 20 de março de 2020, passa a vigorar com as seguintes alterações:

"Art. 3º

§ 1º

.....
LIV - atividades de construção civil, obedecidas as determinações do Ministério da Saúde;

LV - atividades industriais, obedecidas as determinações do Ministério da Saúde;

LVI - salões de beleza e barbearias, obedecidas as determinações do Ministério da Saúde; e

LVII - academias de esporte de todas as modalidades, obedecidas as determinações do Ministério da Saúde.

....." (NR)

Art. 2º Este Decreto entra em vigor na data de sua publicação.

Brasília, 11 de maio de 2020; 199º da Independência e 132º da República.

JAIR MESSIAS BOLSONARO
Walter Souza Braga Netto
Jorge Antônio de Oliveira Francisco

6:30 PM · May 11, 2020 · Twitter for iPhone

Sample of Bolsonaro's tweets promoting hydroxychloroquine and his attempt to override the authority of governors.



The Spectator Index @spectatorindex · Aug 24

Do you have confidence in Brazil's president Jair Bolsonaro?

Yes

47.7%

No

52.3%

178,265 votes · Final results

7.1K

11.1K

7.6K

↑



Coronel Marcos Rocha
@celmarcosrocha

Replying to @spectatorindex

Brazil with Bolsonaro has become a country of respect.
Brazil is developing like never before in all areas. We
have a President who speaks and acts as the people
have always dreamed. Fighting corruption and
overcoming the sadness that Lula left.

10:57 AM · Aug 24, 2020 · Twitter for Android

1 Retweet 1 Quote Tweet 9 Likes



Governor Rocha of Rondônia, one of Bolsonaro's steadfast allies.



Wilson Witzel ✅

@wilsonwitzel

Entre a saúde dos brasileiros e a política, o presidente Jair Bolsonaro preferiu a política. Que Deus nos ajude. Parabéns pelo belo trabalho à frente do Ministério da Saúde, [@lhmandetta](#). Nossa luta contra o coronavírus continua. Que o novo ministro siga as orientações da OMS.

5:29 PM · Apr 16, 2020 · Twitter for iPhone

806 Retweets 386 Quote Tweets 8.4K Likes



Bolsonaro's former ally, Governor Witzel of Rio de Janeiro, speaks out against him.



João Doria ✅

@jdoriajr

[@jairbolsonaro](#) chama coronavírus de gripezinha e eu que sou lunático?
Lidere seu País, presidente. Faça seu papel. Os governadores do Brasil estão fazendo o seu.



Folha de S.Paulo ✅ @folha · Mar 21

Bolsonaro chama Doria de 'lunático' e diz a governadores rivais que 'eleições de 2022 ainda estão longe' [www1.folha.uol.com.br/poder/2020/03/...](http://www1.folha.uol.com.br/poder/2020/03/)

9:42 PM · Mar 21, 2020 · Twitter for iPhone

9.2K Retweets 6.1K Quote Tweets 70.5K Likes



Bolsonaro's former ally, Governor Doria of São Paulo, speaks out against him.



Asociación de Gobernadores de Acción Nacional @GOAN_MX · Mar 14

Ante la emergencia de salud los 9 gobiernos de [@GOAN_MX](#) establecimos un sistema de cooperación, consulta y actuación.

Anunciamos 7 medidas espejo.

Actuamos con oportunidad, efectividad, y firmeza, en coordinación con todos los niveles de gobierno.

La salud es primero.

4

definir las contingencias sociales necesarias según la fase viral decretada.

5

Exhortamos a la población a tomar las medidas de higiene adecuadas, limitar el contacto físico y evitar los actos masivos.

6

Instruimos a los sistemas estatales de salud implementar de inmediato las mejores prácticas sanitarias para atender pacientes y proteger al personal de primer contacto.

7

Monitoreo permanente para garantizar márgenes adecuados de los inventarios de medicamentos e insumos que nos permitan atender de manera adecuada a los pacientes.

Establecemos una coordinación estrecha con el sector privado y social para tomar las medidas de prevención adecuadas.



22

240

314



Asociación de Gobernadores de Acción Nacional @GOAN_MX · May 5

La decisión del regreso a clases debe anteponer la salud de los menores de edad a otros factores

Antes de tomarla, es importante conocer los elementos que el [@GobiernoMX](#) evalúa para decidir la fecha, en su caso, de reanudación

Consensuemos lo que sea mejor para los estudiantes.

11

119

214





Asociación de Gobernadores de Acción Nacional
@GOAN_MX

A raíz del anuncio de [@DeSalubridad](#), advertimos que no es posible reabrir más actividades económicas hasta que el descenso en el nivel de contagios lo permita y se den los protocolos sanitarios para hacerlo con seguridad.

Sería delicado e irresponsable.

[Translate Tweet](#)

12:49 AM · May 13, 2020 · [Twitter for iPhone](#)

290 Retweets 37 Quote Tweets 616 Likes



Asociación de Gobernadores de Acción Nacional @GOAN_MX · May 13
Replying to [@GOAN_MX](#)

Anticipamos que, escuchando a los especialistas en salud, y asumiendo la autoridad sanitaria que representamos, determinaremos lo conducente en nuestras entidades según las condiciones locales.

La salud y vida de las personas es primero.



37



136



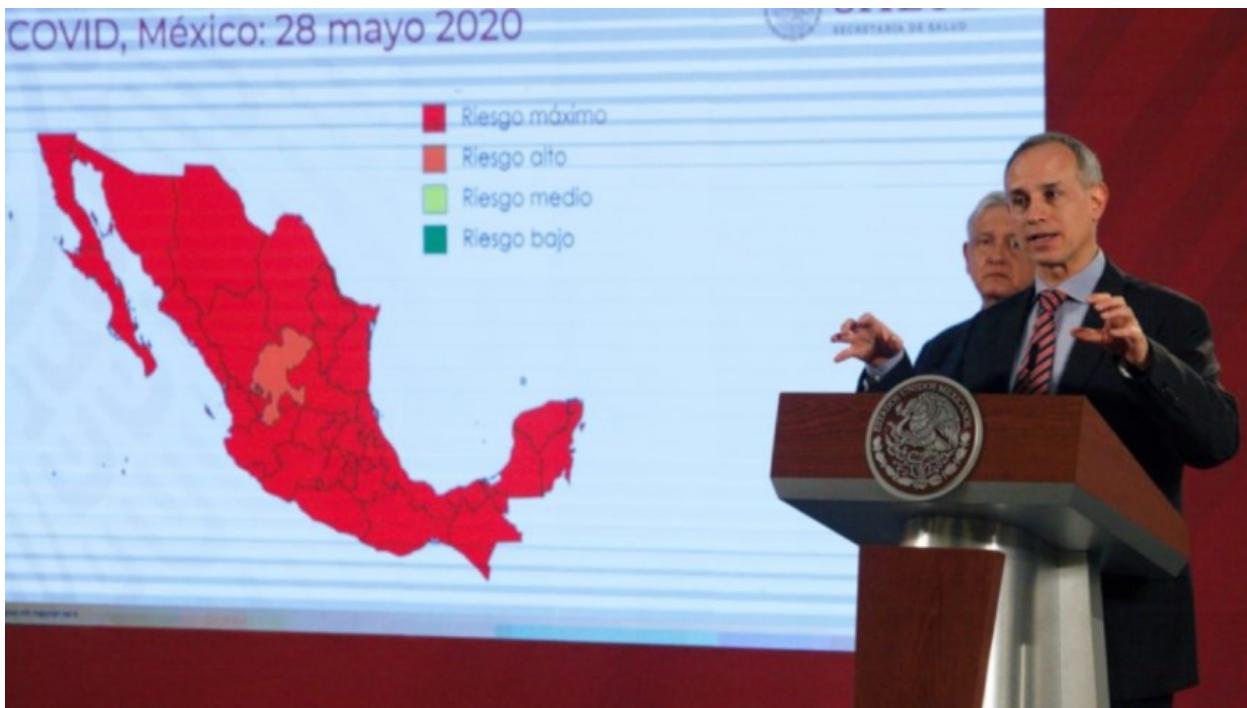
341



Sample of Tweets from the National Action Party's (PAN) governors' association highlighting the coordinated policy responses of PAN governors to Covid-19.



Source: <https://www.youtube.com/watch?v=H-ABW0r1lIU&feature=youtu.be>



Mexico's Deputy Secretary of Prevention and Health Promotion, Hugo López-Gatell, unveils the federal government's semáforo, showing 31 of the country's 32 states with "maximum risk" from Covid-19, as President López Obrador looks on.



Meeting of the eight governors participating in the Nueva Convivencia Social (NCS) Alliance, Tequila, Jalisco, June 5, 2020.

A6.C United States



Donald J. Trump  @realDonaldTrump · Apr 13

For the purpose of creating conflict and confusion, some in the Fake News Media are saying that it is the Governors decision to open up the states, not that of the President of the United States & the Federal Government. Let it be fully understood that this is incorrect....

45.6K

41.7K

150.7K



Donald J. Trump  @realDonaldTrump · Apr 13

....It is the decision of the President, and for many good reasons. With that being said, the Administration and I are working closely with the Governors, and this will continue. A decision by me, in conjunction with the Governors and input from others, will be made shortly!

29K

25.9K

106.4K



Gavin Newsom  @GavinNewsom · Apr 27

Today, Colorado and Nevada joined CA, OR, and WA in our Western States Pact.

The West Coast is -- and will continue to be -- guided by SCIENCE. We issued our stay at home orders early to keep the public healthy. We'll open our economies with that same guiding principle.

3.6K

13.3K

70.1K



Donald J. Trump 

@realDonaldTrump



The Governor of Michigan should give a little, and put out the fire. These are very good people, but they are angry. They want their lives back again, safely! See them, talk to them, make a deal.

8:42 AM · May 1, 2020



199.1K

98.4K people are Tweeting about this



Donald J. Trump 
@realDonaldTrump



The Great State of Wisconsin, home to Tom Tiffany's big Congressional Victory on Tuesday, was just given another win. Its Democrat Governor was forced by the courts to let the State Open. The people want to get on with their lives. The place is bustling!

8:11 AM · May 14, 2020



104.2K



36K people are Tweeting about this