

ANALYZING POLITICAL AND ECONOMIC VARIATION IN UNITED STATES' COVID-19 RESPONSE

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ABSTRACT

In this study, the response and impact of COVID-19 is analyzed on a state by state level. Using data from 1/1/2020 through 7/16/2021, every state's restriction and response during this time period on a daily basis are compiled. Conclusions are drawn regarding the differences in actions taken by Republican and Democratic governors, finding conclusive evidence and numerical specifics on their differences, including that Republican governors, on average, spent less than half as much time as Democrats in stage 3, 4, and 5, lockdowns, the most restrictive ones. Further nuance and predictors are found by comparing states with legislatures controlled by a different party than their governors, showing divided state control to be a moderating factor on governors' actions for both parties. Statistical significance is found between increased unemployment claims and the most stringent lockdowns for every single state that enacted such a restriction, as well as the vast majority of states in stage 3 and 4.

1. INTRODUCTION

The 2019 novel coronavirus, COVID-19 has redefined almost every aspect of public policy in the United States and globally. Over the course of its existence and spread within the United States, COVID-19 has been met with fractured and extremely different responses across state lines. In general, states with Democratic governors have favored more restrictive measures, while Republican governors avoided them, saying they are trying to maintain economic growth. In much of the debate over COVID-19, it

has been argued that restrictive measures inherently impede economic growth.

However, there exists little research to prove either point predicts accurately, and both are based on projections. Furthermore, neither perspective considers the possibility that having heavy measures during a surge will enable lighter ones later on. The fractured responses across states, and their various changes in those measures enable the possibility of comparing economic data within a single state and comparing them across states who have entered similar stages at similar times.

There are many questions that can be posed with this topic. What impact does party affiliation have on COVID-19 restrictions a governor enacts? Which party? How does a lack of party control in other state institutions or a moderate political climate affect these actions? Furthermore, a closer examination of each party's responses can yield information to help predict future crisis response and electoral outcomes. What was the true economic impact of pandemic lockdowns? Do less rigorous restrictions, such as mask mandates, also hamper economic growth?

2. BACKGROUND

Literature on COVID-19 has been developed and published at a rapid pace in all fields. This study will focus primarily on the economic impacts. In the United States, medical research has highlighted that historically marginalized groups are far more at risk of infection and death from COVID-19 than other members of society (Egede and Walker, 2020). Furthermore economic consequences resulting from COVID-19 will lead to an increase in addiction and adjacent medical consequences as well as exacerbate ongoing political crises (McKee and Stuckler, 2020). Research on governmental trust and the pandemic is another developing field, with research on misinformation in Italy (Lovari, 2020) and government credibility in Hong Kong (Hartley and Jarvis, 2020) finding that government trust levels affect the efficacy of containment measures. Similarly, research in the US highlights that misinformation from government figures has exacerbated existing problems (Limaye et al, 2020). Studies on shutdowns and economic impacts are emerging from India and Europe, although their nationally unified response can be heavily contrasted with the United States. In Scandinavia, the differences in economic contraction were slight regardless of whether a country implemented containment measures (Anderson, Hansen, Johannesen, and Sheriden, 2020). Research in Germany finds that COVID-19 shutdowns were responsible for 60% of new unemployment (Bauer and Weber, 2020). Multifaceted research in India

highlights how economic growth, and a subsequent increase in pollution, has made some populations more susceptible to COVID-19 (Mele and Magazzino, 2020). Additional research finds that COVID-19 has reduced both economic growth and power consumption in India, making these findings even more interesting (Kanitkar, 2020). However, the results base of these studies differs greatly with the US, where polarization and federalism has led to completely different responses across state lines. Currently there exists little research comparing individual state's responses and their economic impact. Although it seems confirmed that economic contractions have happened because of COVID-19 regardless of containment measures, the vast differences in those containment measures may have an effect.

3. METHODOLOGY

To conduct this study, multiple measures of economic health will be compared with a quantified summary of statewide Coronavirus Policies. The fractured response of each state provides a unique opportunity to compare economic impacts of various responses across the country.

Information on the lockdowns in each state will be gathered from the official press releases of the leaders of each state, compiled by the National Governors Association and Johns Hopkins University. I have developed a scale to measure the severity to the lockdown, from scale of one to five, with zero acting as a pre-pandemic control. Any state with absolutely no measures will have a stage zero lockdown. States with minor measures that do not close any businesses, make mask wearing optional but provide guidance on sanitization and social distancing will be considered having a stage one lockdown. States that have requirements for masks or distancing indoors, with the exception of vaccinated people and for dining, as well as more extensive guidance will be considered as part of a stage two lockdown. States that close or mandate capacity restrictions of less than 50% for high-risk and nonessential businesses, such as casinos, bars, and gyms, require masks in other businesses or mandate restrictions on indoor dining will be considered having a stage three lockdown. States that ban or cap indoor dining at less than 50% or begin travel restrictions such as curfew, in addition to stage three measures, will be considered as having a stage four lockdown. States that issue stay at home orders, enforce strict travel restrictions, and/or close non-essential businesses will be considered having a stage five lockdown.

This information, including total number of days spent in each tier lockdown for each state will be cross referenced with their governor's

political party. Furthermore, by aggregating data by tier, and using statistical analysis, conclusions can be drawn regarding the political connection to each one. For example, this can be used to determine the specific levels which Republican governors favored the most.

Economic data will be acquired from US governmental releases from the Department of Commerce, including the Bureau of Economic Analysis. This includes statewide GDP and unemployment levels. In addition, data from some stock indexes may be used to elaborate on national conditions and response to certain restrictions, such as the major drop that happened as New York introduced its first lockdowns.

Using an R program, states COVID-19 responses and the corresponding economic impact will be analyzed. The length of time a state spends in a certain stage will be used in conjunction with its unemployment claims, the most rapidly released and specific economic indicator available. By grouping states by their lockdown measures, and then analyzing the economic impacts, we seek to draw conclusions regarding the impacts of those measures on a national and state level.

The first hypothesis predicts that states with Republican hegemony will have less restrictive measures, while states with Democratic control will spend more time in stricter lockdowns. The second hypothesis is that divided legislatures will be a moderating factor, leading restrictions in states with split power to be closer to the national average than those with trifectas. The third hypothesis is that states with more severe lockdowns will have higher increases in unemployment. The fourth hypothesis predicts that states with longer periods of severe shutdown will have greater economic tolls than their less severe counterparts within the same period.

Expected outcomes include positive answers to these hypotheses, as well as being able to examine the results to draw new and more specific, quantitative conclusions. Additionally, it is expected that there may be differences in the effects of these measures at different stages and surges of the pandemic, as the nature of both the economy and state of the country has changed dramatically. Furthermore, some aspects of these stages were more heavily concentrated in certain regions of the country, so this will also be examined.

4. RESULTS

Analyzing more than a year and a half of data across all fifty states, several trends become apparent, proving hypothesis accurate and providing numerical evidence for aspects resounding throughout society.

4.1. Political Parties and Lockdown Severity

The first set of analysis highlights differences in COVID responses based around political party affiliation across the US.

Table 1: Average days spent in each lockdown tier highlight key partisan differences

<i>Average Number of Days in Lockdown Category 1/1/2020-7/16/2021</i>	<i>Category 1</i>	<i>Category 2</i>	<i>Category 3</i>	<i>Category 4</i>	<i>Category 5</i>
Democratic Governor	63.24	96.48	200.72	68.44	64.88
Republican Governor	177.92	180.16	69.12	33.88	30.6
Nationwide	120.58	138.32	134.92	51.16	47.74

Table 1 illustrates massive differences between Republican and Democratic governor's handling of the pandemic. For category 1 and 2 lockdowns, Democrats are below the national average, while they are above it for categories 3,4, and 5, with Republicans being the exact inverse. Beyond that, the numerical disparities between time spent in each lockdown are significant. On average, Democrats maintained their states in stage 3, 4, or 5 lockdowns for more than twice as long as Republicans. This numerical evidence points out stage 2 and 3 as the inflection point between Democratic and Republican governors, where Republicans heavily favor these less restrictive tiers, and Democrats restrict their states far longer.

Wisconsin is one major exception to this rule. With 51 days in stage 5, Wisconsin is just under the national average, but well below the Democratic average. Furthermore, with just 0 and 5 days in stages 3 and 4 respectively, Wisconsin falls well below both Democratic and Republican restriction levels, despite having a Democratic governor. In fact, even with a Democratic governor, Wisconsin spent more time in stage 1 and 2 lockdowns than the national and Republican averages. Why? On 5/13/21, in a suit brought by Republican state lawmakers, the Wisconsin Supreme Court declared Governor Tony Evers' executive order enforcing COVID restrictions unconstitutional and lifted most restrictions.

As table 2 shows, similar scenarios played out more tacitly across the country, where governors in states with divided or opposing legislatures pursued more moderate strategies than their counterparts, in each party. Trifectas are states where one party controls both houses of the legislature and the governorship, an indicator of political stability and less internal division over restrictions. Sixteen states are Democratic trifectas, examples include New York and California. Nine states are split with Democratic governors, including the aforementioned Wisconsin as well as Kentucky.

Four states are split with Republican governors, including Maryland and Massachusetts, while twenty-one are Republican trifectas, including Oklahoma and Wyoming.

Table 2: Average days spent in each lockdown tier, when accounting for split state control, yields more detailed results

Average Number of Days in Lockdown Category 1/1/2020-7/16/2021	Category 1	Category 2	Category 3	Category 4	Category 5
Democratic Trifecta	39.63	87.81	217.5	76.75	72.06
Democratic governor, divided government	105.22	111.89	170.89	53.67	52.11
Republican governor, divided government	82	191.25	112.25	60.5	47.75
Republican Trifecta	196.19	178.05	60.90	28.81	27.33
Nationwide	120.58	138.32	134.92	51.16	47.74

These results are less uniform than data using only governor’s parties, showing the true diversity within states’ responses, but the basic results hold true. For stages 3 and 5, there is a clear cut trend that as democratic power decreases, so does the number of days spent in each category of lockdown. In category 4, that trend is interrupted by Republican governors facing divided legislatures. In categories 1 and 2, who on average, spent more time in a stage 4 lockdowns than the national average and Democratic governors with divided government. The next graphs show a more in-depth look at differences between governments.

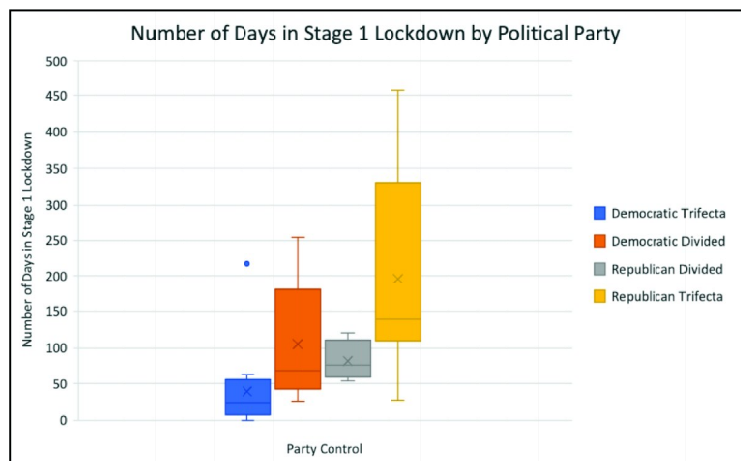


Figure 1: Box and Whisker plots illustrate the disparities between parties for stage 1 lockdowns

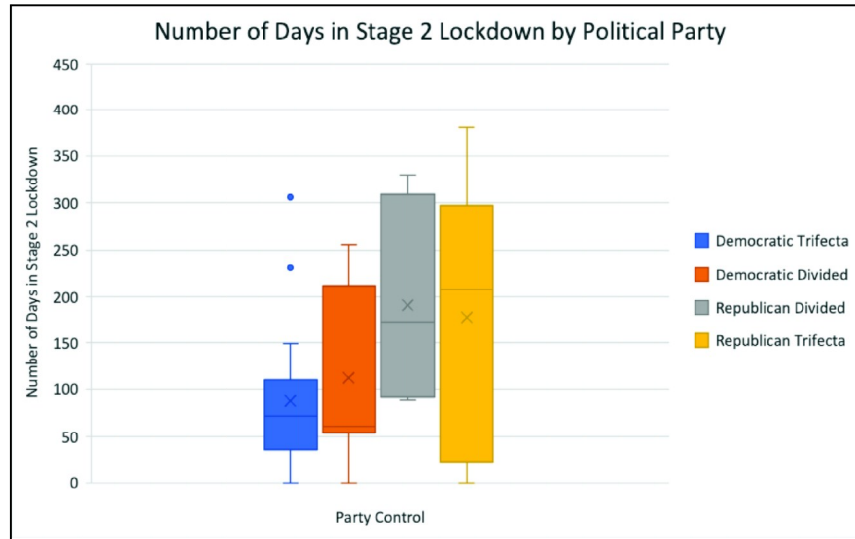


Figure 2: Box and Whisker plots illustrate the disparities between parties for stage 2 lockdowns

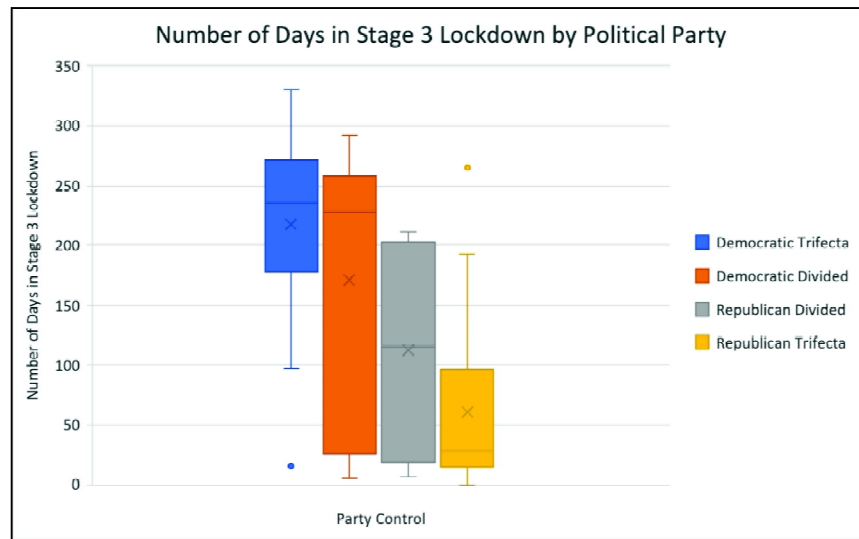


Figure 3. Box and Whisker plots illustrate the disparities between parties for stage 3 lockdowns

These graphs highlight divided legislatures as a moderating factor in governors COVID policies for both parties, with the clearest trends emerging in stages 3 and 5. The distribution also tends to vary widely across different sets of analysis, with Democratic Trifectas having the most outliers.

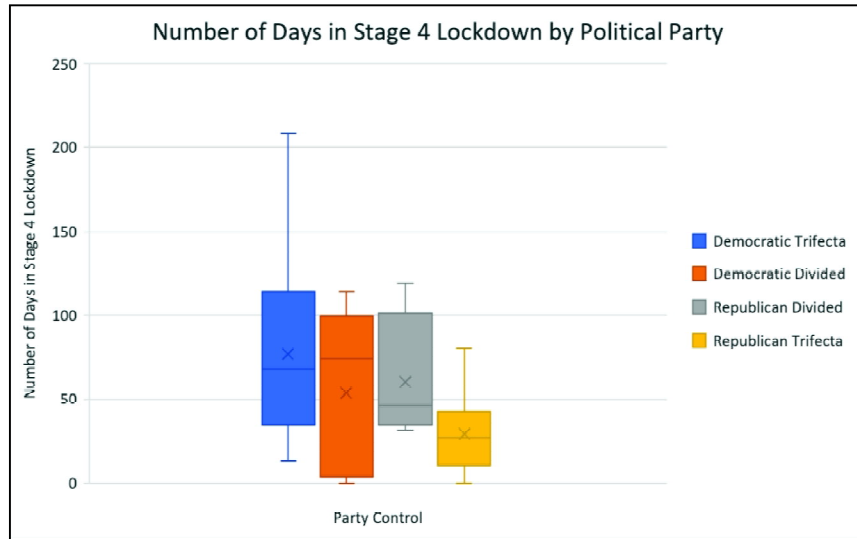


Figure 4: Box and Whisker plots illustrate the disparities between parties for stage 4 lockdowns

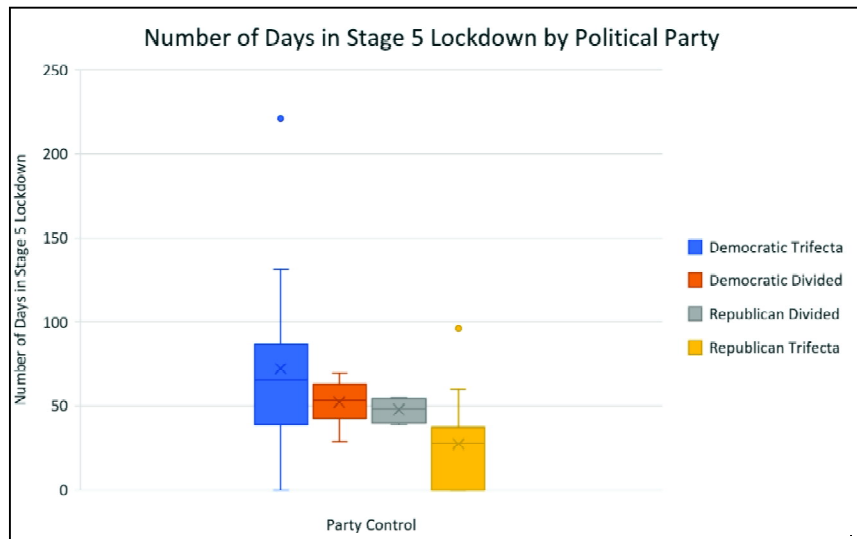


Figure 5: Box and Whisker plots illustrate the disparities between parties for stage 5 lockdowns

Overall, this reinforces the already established association of Democratic governors and legislatures with stricter controls, and Republicans with more lax measures. These results emphasize the differences in response not just between governors of different states and parties, but the importance of a moderating climate on affecting governor's actions.

To quantify the differences amongst types of party control, the standard deviation of lockdown length is taken, displayed in the table below.

Table 3: Standard deviations among political parties and stages emphasize the validity and utility of previous findings

	<i>Stage 1</i>	<i>Stage 2</i>	<i>Stage 3</i>	<i>Stage 4</i>	<i>Stage 5</i>	<i>Overall Average</i>
Democratic Trifecta	52.29	82.85	82.07	52.55	50.00	63.95
Democratic governor, divided government	79.52	92.27	116.48	48.87	12.98	70.02
Republican governor, divided government	28.15	116.95	97.32	39.67	7.54	57.93
Republican Trifecta	136.24	134.13	71.60	22.44	23.69	77.62
Nationwide	119.37	116.35	108.65	44.42	37.43	85.24

This data allows the observer to draw several conclusions about the COVID-19 response in the United States. The standard deviation rises as the lockdown tier decreases, showing that during reopening phases, the actions taken were far more scattered between states than the initial lockdowns. For Democratic Trifecta's, the standard deviation in stages 4 and 5 were higher than the nationwide standard deviation, indicating that predicting the lockdown length in a democratic controlled state would be more accurate using national data rather than that limited to other democratic controlled states. Similarly, Republican Trifectas had standard deviations higher than the national average in stages 1 and 2. This data suggests that Republican Trifectas were most consistent with each other when imposing more restrictions, while Democratic Trifectas were most consistent when reopening in phases 1, 2, and 3. The lowest average standard deviations did not follow a party ideology, and instead highlight their own results, with Republican governors with divided governments being the most similar to each other in responses. These results demonstrate the possibility for further analysis to compare governors' responses by category to similar crises.

4.2. Economic Analysis

This study yields definitive results linking restrictive COVID-19 containment measures with elevated levels of economic stress. However, the rapidity with which lockdown measures were implemented and lifted necessitates careful analysis, since most macroeconomic indicators span longer intervals of time. Unemployment, which was a high concern in the early days of the pandemic, and still remains at an elevated level, is a

relatively local assessment, released on a weekly basis. Using R to make 250 regressions, each state's unemployment claims per week was compared to each category of stage. To translate a categorical assessment to a weekly value, the mode of each state's lockdown was taken to analyze against the number of people receiving unemployment insurance in each state.

Table 4: P-values for Lockdown Stages versus Unemployment Insurance by state, statistically significant responses are bolded

<i>State</i>	<i>Stage 1</i>	<i>Stage 2</i>	<i>Stage 3</i>	<i>Stage 4</i>	<i>Stage 5</i>
Alabama	0.92	0.02	0	0	0
Alaska	0	0	N/A	0	0
Arizona	0.1	0	0	N/A	N/A
Arkansas	0.46	0	0	0	N/A
California	0.69	0	0.01	0	0
Colorado	0.53	0.55	0	0	0
Connecticut	0.97	0.18	0	0	N/A
Delaware	N/A	0.34	0	0.01	0
Florida	0.14	N/A	0	0	0
Georgia	0	N/A	0	0	0
Hawaii	0.55	0	0.01	0	0
Idaho	0.42	N/A	0.14	0	0
Illinois	0.41	N/A	0	0	0
Indiana	0.11	0	0	0	0
Iowa	0.99	0	0	0.01	0
Kansas	0.02	0	0	N/A	0
Kentucky	0.79	0	0	0	0
Louisiana	0.39	0.38	0	0.62	0
Maine	0.9	0.54	0	0	0
Maryland	0.64	0	0	0	0
Massachusetts	0.98	0.55	0	0	0
Michigan	0.98	N/A	0	0.03	0
Minnesota	0.9	0.48	0	0	0
Mississippi	0.26	0	0	0.19	0
Missouri	0	N/A	0	0	0
Montana	0.8	0	0	0	0
Nebraska	0.41	0	0	0	0
Nevada	0.62	0	0	0.04	0
New Hampshire	0	0	0	0	0
New Jersey	0.65	0.83	0.02	0	0
New Mexico	0.63	0.11	0	0	0
New York	0.82	0.44	0	0	0
North Carolina	0.7	0.61	0	0.16	0

contd. table 4

<i>State</i>	<i>Stage 1</i>	<i>Stage 2</i>	<i>Stage 3</i>	<i>Stage 4</i>	<i>Stage 5</i>
North Dakota	0.31	0.01	0	0	N/A
Ohio	0.91	0	0	0	0
Oklahoma	0.19	0	0	0	0
Oregon	0.76	N/A	0	0.01	0
Pennsylvania	0.84	0	0	0	0
Rhode Island	N/A	0.23	0	0	0
South Carolina	0.16	0.04	0	0	0
South Dakota	0.03	0	N/A	N/A	N/A
Tennessee	0	0	0	0.16	0
Texas	0.25	0	0	0	0
Utah	0.16	0.01	0	0	N/A
Vermont	0.65	0.04	0	0	0
Virginia	0.72	0	0.01	0	0
Washington	0.96	0.9	0	0.02	0
West Virginia	0.77	0.04	0	0	0
Wisconsin	0	0	0.31	N/A	0
Wyoming	.91	0	0	0	N/A

As shown by the results in table 4, tier 3, 4, and 5 restrictions all have statistically correlation with higher unemployment insurance claims, with few exceptions. Beyond providing a numerical proof for the assumptions made early in the pandemic, this analysis highlights the aggravated impact of the upper categories, as tier 1 and 2 restrictions were less likely to be statistically significant and in general, p-values for every state decrease for the more restrictive categories. As table 4 shows, in the majority of cases, stages 3, 4, and 5 are statistically significant with elevated levels of unemployment. On the other hand, tiers 1 and 2, which do not maintain stringent controls over businesses in the form of capacity restrictions or opening, are both not correlated.

5. CONCLUSION

With its in-depth compilation and evaluation of state's COVID restrictions, this study finds conclusive evidence and results regarding America's current political and economic climate. It concludes that while the oft-repeated differences between Republican and Democratic overall policies, with Democrats favoring lockdowns and Republicans favoring a less restrictive approach, holds true, outliers in each party exist. Furthermore, including the control of legislatures in state governments allows for more careful analysis, and demonstrates the moderating effect it can have on both governors' parties. Democratic trifectas favored the most restrictive

responses, followed by Democratic governors with divided governments, followed by Republican governors with divided governments, and lastly, Republican trifectas had the least restrictive responses to COVID-19. Additionally, these results are further utilized by calculating the standard deviation in each party, enabling readers to further evaluate the accuracy of predictions as well as compare more differences between different distributions of political power's responses.

Furthermore, it is found in every state that restrictive lockdowns led to greater levels of unemployment during those periods, regardless of duration. While the economic impacts of COVID-19 touch every aspect of the US, this study is able to conclusively draw an association between the political actions taken in the first year of the pandemic and their impact on everyday people. Furthermore, our dataset can be utilized to continue further analysis, yielding information on both COVID-19's ongoing effects, as well as assisting with preparation for future pandemics.

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