THE POLITICS OF THE PANDEMIC

An Undergraduate Research Scholars Thesis

by

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RESEARCH COMPLIANCE CERTIFICATION

Research activities involving the use of human subjects, vertebrate animals, and/or biohazards must be reviewed and approved by the appropriate Texas A&M University regulatory research committee (i.e., IRB, IACUC, IBC) before the activity can commence. This requirement applies to activities conducted at Texas A&M and to activities conducted at non-Texas A&M facilities or institutions. In both cases, students are responsible for working with the relevant Texas A&M research compliance program to ensure and document that all Texas A&M compliance obligations are met before the study begins.

I, Ida Balakrishna, certify that all research compliance requirements related to this Undergraduate Research Scholars thesis have been addressed with my Research Faculty Advisor prior to the collection of any data used in this final thesis submission.

This project did not require approval from the Texas A&M University Research Compliance & Biosafety office.

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ABSTRACT

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The COVID-19 pandemic has swept across the world, and as of April 2021, over 136 million individuals have been infected, and close to 3 million have died due to the virus. While vaccines have been developed and distributed in record time, the virus has revealed weaknesses present in democratic and global institutions that have been traditionally viewed as the gold standard for public health policy. In the past year, there have been striking trends in how countries are able to successfully combat the virus. These trends have spurred researchers to study how factors such as regime type, wealth, policies implemented, and more affect the relative success in combatting the pandemic. Policies such as lockdowns, shelter-in-place orders, mask mandates, contact tracing, social-distancing mandates, etc. have been implemented in various countries with various results. Authoritarian countries seem to be doing a better job in managing the spread of the virus compared to democracies due to their ability to implement more stringent, restrictive policies, and developed countries such as the United States or those in Europe have had comparatively higher cases than developing countries. The goal of this research project is to determine which factors are most effective in reducing the number of COVID-19

cases by analyzing the effect of regime type of countries on the types of policies enacted and the

number of COVID-19 cases by creating and applying regression models.

DEDICATION

To my parents and little brother for their unwavering love, support, and encouragement.

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1.   INTRODUCTION

The COVID-19 pandemic has had far-reaching consequences for the world. As of April 2021, over 136 million individuals have been infected with the virus, and close to three million people have died. The responses of countries to the novel coronavirus have varied across the world. In the first few months of the pandemic, nations such as the United States, Brazil, Russia, and Iran have struggled to contain the virus, and their case/death counts have skyrocketed as a result; however, countries such as China, South Korea, and New Zealand have been able to successfully implement policies that have curbed – and in some cases, stopped – the growth of the virus. Successful countries have implemented a wide array of policies including strict lockdowns, contact tracing, quarantines, travel bans, mask mandates, etc. whereas countries that are suffering from the rapid growth of the virus have been struggling to create, implement, and/or enforce such policies. While policies to mitigate or suppress the virus are widely known, these have not seen wide or consistent implementation in many states. What explains this? Does regime type affect the policies enacted to combat the COVID-19 pandemic? Do these different policy choices explain the variation in the number of COVID-19 cases across countries?

From the outset, many factors have affected the relative success of countries in combatting the virus. One likely determinant of variation in COVID-19 responses is regime type, as authoritarian regimes are better able to implement and enforce strict policies than democratic regimes, which are constrained by the need to maintain the liberties and freedoms of their citizens. For example, Singapore instituted a vast surveillance system that depended on ordinary citizens to report violators of policies (including lockdowns, mask mandates, etc.), and violators were forced to pay heavy fines and faced punishment including criminal prosecution and police

investigations (Stack, 2020). China was able to quell the initial surge of the virus in Wuhan through a strict lockdown and quarantine (which limited the movement of 50 million people) and harsh fines for violators (Kavanaugh & Singh, 2020). On the other hand, the United States has, as of April 2021, the highest number of coronavirus cases and deaths in the world despite being the leader in scientific and technological advancements. Its response has been characterized by poor planning and oversight from the country's top institutions – despite having a "pandemic playbook" developed by previous administrations and US intelligence officials being warned of a dangerous contagion spreading through Wuhan in November of 2019 (Sanger et al., 2020, Margolin & Meek, 2020). Sweden attempted to combat the virus through more lenient policies such as voluntary social distancing guidelines and limits on public gatherings and refrained from closing businesses, restaurants, and schools (Nils Karlson et al., 2020). Though Sweden's policies were initially successful in keeping its per capita death rate lower than other European countries, its death rate was, as of December 2020, one of the highest in Europe (Nils Karlson et al., 2020, Bjorklund, 2020). This is in spite of Sweden's relatively wealthy, democratic institutions, and robust public health infrastructure. Other democratic countries such as India and Brazil have also been struggling with a rising number of coronavirus cases and deaths.

Despite this, evidence suggests that democracy alone cannot explain the variation in COVID-19 response effectiveness. Democratic countries such as South Korea, New Zealand, and Taiwan have been models of success in managing the pandemic. For example, South Korea's response to its initial COVID-19 cases was immediate and included speedy authorization for labs to use unapproved tests (bypassing long bureaucratic channels), the set-up of ninety-six public and private laboratories to test for the virus, and the efficient grouping of the mildly ill and severely ill in residential centers and hospitals respectively (Bicker, 2020, Kim,

2020a). Travelers from Wuhan were screened, and the movements of the infected were monitored by collecting GPS data and spoken testimony which was then published online and distributed through text messages, media, and other apps (Kim, 2020a). South Korea's government-run health insurance system drastically reduced the cost of treatment for the coronavirus from $10,000 to $35 (Kim, 2020b). The Russian government's refusal to release exact, accurate data regarding the number of COVID-19 cases/deaths has led to low compliance with restrictions (Gozman, 2020). After experiencing sharp rises in the number of COVID-19 cases, several democratic countries were forced to implement more restrictive policies in an effort to stem the growth of the virus: Italy enforced its lockdown through large fines and drones controlled by the police; Spain deployed thousands of soldiers to quarantined cities to patrol the streets and enforce lockdowns; and the Belgian government set up police checkpoints on the streets to monitor citizens' compliance with the lockdown (Kavanaugh & Singh, 2020). These cases illustrate that regime type may not be the *only* aspect that affects the success in containing the virus; factors such as the type of policy implemented could also affect the number of COVID-19 cases.

While it is widely believed that regime type affects success in which countries handle the pandemic, I argue that it is more likely the policies pursued by these regimes that explain the observed variation in outcomes. As we can see, some democratic countries pursued more suppressive policies, while some authoritarian regimes have not. At the very least, this suggests that research needs to be clear on how regime type matters in how countries respond to the pandemic. Here, I argue that authoritarian regimes are more likely to implement suppression policies which, in turn, are more likely to produce better COVID-19 outcomes. Overall, this paper aims to identify the relationship between regime type, types of policies enacted, and the

number of COVID-19 cases in countries. Does regime type affect the policies enacted to combat the COVID-19 pandemic? How do the policies enacted in countries affect the number of COVID-19 cases? Does regime type have an effect on the number of COVID-19 cases in countries?

To assess these questions, I perform two empirical analyses: one on the determinants of the type of policies implemented (including regime type) and one on the causes of COVID-19 cases (including policy type). My initial results indicate little support for the prevailing belief that regime type is a significant determinant of policy implementation or the number of COVID-19 cases. However, as I discuss in my results and my conclusion, these results warrant further analyses to better assess these claims.

2.   THEORY

2.1   Types of Policies

There is a growing body of research that is studying the effectiveness of public health policies in reducing the COVID-19 case growth rate. Despite the development of vaccines in record time, non-pharmaceutical interventions (NPIs) remain important in reducing the case/death rate of the virus, especially when it is still unclear whether the vaccines prevent transmission (Scherbina, n.d.). NPIs include policies such as mask mandates, social distancing guidelines, lockdowns, stay-at-home orders, travel restrictions, etc. By studying the policies that are effective in reducing transmission of the virus and the COVID-19 growth rate, policymakers will be better able to enact and enforce policies that could save lives.

Ferguson et al. (2020) and Scherbina (n.d.) identify two types of policies that could be implemented to curb the growth of COVID-19 cases and deaths: suppression and mitigation. Scherbina (n.d.) defines suppression policies as a complete lockdown and includes restrictions on travel, school/business closures, bans on social gatherings, and shelter-in-place mandates. Mitigation policies are less restricting; examples include discouragement of air travel, encouragement of telecommuting, requirements for companies to implement physical distancing measures for employees, isolation of the vulnerable (e.g., the elderly), bans on large gatherings, and contact tracing (Scherbina, n.d.). In her cost-benefit analysis of suppression and mitigation policies, Scherbina (n.d.) determines that policymakers should institute suppression policies before mitigation policies until the costs of implementing the suppression policies exceed the benefits. If the lockdown is lifted too early, the progress made in reducing the number of cases during the lockdown may be erased (Scherbina, n.d.). Additionally, the predicted costs of not

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implementing any policy interventions ($9.08 trillion and 1.3 million deaths) far outweighed the predicted costs of a 78-week suppression policy (between $8.72-20.18 billion) (Scherbina, n.d.).

Ferguson et al. (2020) predict that mitigation policies will reduce the peak healthcare demand by about 67 percent and decrease the death count as a result of COVID-19 by half. After studying five types of non-pharmaceutical interventions (including case isolation at home, voluntary quarantines, social distancing for at-risk individuals, social distancing for the entire population, and the closure of schools and universities), Ferguson et al. (2020) also found that the most effective combination of policies were case isolations, home quarantines, and the isolation of the elderly. Bo et al. (2020) found that NPIs involving social distancing led to a decrease in the reproductive number (Rt) of COVID-19 and that implementing a combination of NPIs leads to an even greater decrease in the COVID-19 Rt. Auger et al. (2020) also found that school closures were associated with a 62 percent reduction in COVID-19 cases and a 58 percent reduction in deaths per week.

There are also a number of studies that suggest mask mandates could help reduce the growth rate of COVID-19, prevent illness in healthy individuals, and prevent asymptomatic transmission. In their study modeling mask policies in Washington State and New York, Eikenberry et al. (2020) found that even the widespread wearing of *ineffective* face masks could significantly reduce community transmission. In places where community transmission is high, if 80 percent of the population adopted masks that are effective only half the time, this could prevent between 17-45 percent of projected deaths; however, in places where community transmission is low, 80 percent adoption of weaker masks (that are only effective one-fifth of the time) could reduce deaths by 24-65 percent (Eikenberry et al., 2020). In all, Eikenberry et al. (2020) suggest that mask mandates could contribute greatly to reducing community transmission

and could perhaps yield better results when combined with other policies such as social distancing guidelines.

Hsiang et al. (2020) found that early infection rate grew, on average, 43 percent per day without any policy implementation. Furthermore, Flaxman et al. (2020) analyzed infections in 11 European countries until May 4th and found that there was an 81 percent reduction in cases after lockdowns were implemented. Across these countries, about 3.1 million deaths were avoided (Flaxman et al., 2020). Courtemanche, Garuccio, Le, Pinkston, and Yelowitz (2020) found that social distancing guidelines, shelter-in-place mandates, and lockdowns significantly reduced the number of COVID-19 cases. Shelter-in-place orders and the closing of businesses such as restaurants, bars, and entertainment centers significantly reduced the COVID-19 growth rate while bans on large gatherings and school closures did not (Courtemanche et al., 2020).

However, it is important to emphasize that the effectiveness of these policies depends on how early they are implemented and enforced and the extent to which individuals follow them (Ferguson et al., 2020; Scherbina, n.d.; Eikenberry et al., 2020). For example, Chernozhukov et al. (2020) found that national mask mandates for employees implemented during the early stages of the pandemic could have reduced the weekly growth rate of cases/deaths by ten percent in April and could have led to 19-47 percent fewer deaths in May. Furthermore, the effectiveness of certain types of policies may vary on how developed a country is (Barnett-Howell & Mobarak, 2020; Alon T. et al., 2020). Social distancing policies may be more effective in developed countries where a larger share of the population can work from home, have access to the internet, and practice social distancing/comply with lockdowns (Barnett-Howell & Mobarak, 2020). On the other hand, policies such as social distancing or stay-at-home orders are less likely to be enforced or effective in reducing the growth rate of COVID-19 in developing countries where

health care systems are limited and there is a higher population of younger individuals that are more likely to spread the virus to elderly relatives (Barnett-Howell & Mobarak, 2020). Such policies also reduce the movements of people and limit their ability to earn income for their families; therefore, compliance with these types of policies could be lower as more value is placed on livelihood rather than contracting COVID-19 (Barnett-Howell & Mobarak, 2020). Instead, policies such as mask mandates, increased hygiene measures, age-specific policies (such as focusing public funds on protecting the elderly), and school closures could be more effective (Barnett-Howell & Mobarak, 2020; Alon T. et al., 2020).

2.2   COVID-19 and Regime Type

The "Churchill Hypothesis" theorizes that democracy is the best regime type in terms of development and sustainability (Wurster, 2011). Furthermore, many studies show that democracies generally do better than authoritarian regimes in public health (e.g., infant mortality, life expectancy, etc.) (Piazza & Stronko, 2020). In democratic regimes, the desires of different constituencies are usually reflected in the policies enacted, and mistakes are addressed and corrected through elections and public debate (Alon I. et al, 2020). Information is open and freely flowing, and its quality is higher because of the presence of free, transparent media allowing leaders to make well-informed policy decisions (Alon I. et al., 2020, Kavanaugh & Singh, 2020, Piazza & Stronko, 2020, Greer et al., 2020). Additionally, political leaders are heavily accountable to the public and are incentivized (e.g., through reelection) to create and implement policies that benefit the populace (Alon I. et al., 2020, Kavanaugh & Singh, 2020).

However, this pandemic has forced leaders of democratic countries to reevaluate the trade-offs between preserving civil liberties and maintaining public health (Piazza & Stronko, 2020). Greer et al. (2020) note that democratic regimes have trouble taking more forceful and

swift action during a crisis (for example: successfully implementing strict lockdowns/quarantines, contact tracing, etc.). Indeed, autocratic regimes implemented more stringent policies more quickly, and democratic regimes were slower to react in the early days of the pandemic and were reluctant to use contact tracing to track the movement of the infected (Benedikt Frey et al., 2020, Sebhatu et al., 2020, Piazza & Stronko, 2020). Cepaluni et al. (2020) also found that democratic regimes pursued considerably less stringent policy measures than authoritarian regimes, and countries with higher democracy scores implemented policies that were less effective in reducing the number of deaths due to COVID-19. Furthermore, it was discovered that democratic countries had experienced more deaths in the early days of the pandemic (however, this could be because non-democratic regimes tend to underreport their numbers) (Cepaluni et al., 2020).

On the other hand, authoritarian countries have had some distinct advantages that allowed them to combat the pandemic with some level of success. The most obvious of those advantages is authoritarian regimes can implement policies (such as lockdowns, for example) that disrupt the social lives and the businesses of citizens as their citizens are more likely to comply with suppressive policies given the severity of punishments from violating government mandates (Cepaluni et al., 2020, Greer et al., 2020). Furthermore, Piazza and Stronko (2020) note that authoritarian regimes have fewer checks and balances or veto players involved in the policy-making process. This could allow leaders of authoritarian regimes to completely bypass bureaucratic channels with ease and not negotiate over jurisdictional powers with other institutions (Schwartz, 2012). In other words, leaders will be able to implement necessary policies to combat the spread of the virus without significant delay, especially since fast, early, and efficient action is imperative in the early stages of the pandemic.

Yet this "Authoritarian Advantage" may only be present in the short term as there are also many disadvantages (Cepaluni et al., 2020). Policy processes are not transparent in authoritarian regimes and typically only reflect the views of the ruling elite class (Alon I. et al., 2020). There are no open channels where policy can be questioned, mistakes pointed out, or leaders held accountable for their actions, and public information is sparse and cannot be trusted causing many to rely more on private messages and rumors (Alon I. et al., 2020). As a result, insufficient or false information makes it difficult to determine which policies are effective in reducing the spread of COVID-19, thereby preventing substantive changes in policy or implementation. Lack of accountability also hinders the development and implementation of policies to successfully fight the virus as leaders do not have incentives to change their behavior. In sum, the lack of regard for individual liberty and freedoms that makes it easier to implement restrictive policies also risks these policies being less effective, with the net effect of this on COVID-19 cases unclear.

It seems, however, that the authoritarian advantage may not be necessary to successfully contain the virus. For example, South Korea and Taiwan, democratic regimes with robust, democratic institutions, were able to make fast decisions, bypass long bureaucratic channels, and set up testing programs. In addition (despite fears that authoritarian regimes are better suited to implement these kinds of policy), they implemented a vast contact tracing program utilizing big data to track and quarantine those who may have been exposed to the virus. These countries, despite not having the so-called "authoritarian advantage", were able to successfully implement policies that reduced the spread of the virus. This example once again highlights the possibility that regime type is not the only factor that affects the number of COVID-19 cases.

In addition to regime type, a number of other factors may influence cross-national variation in response to COVID-19. Factors such as political culture (individualistic vs. collectivist), type of leader (nationalistic/populist vs. globalist), wealth, access to technology, unitary vs. federalist type of government, etc. may impact the response of a country. For example, it is widely acknowledged that the valuable lessons learned from the MERS (Middle East Respiratory Syndrome) epidemic in 2015 paved the way for many East Asian countries such as South Korea, China, and Taiwan to develop a more robust public health system better suited to deal with a pandemic (Kim, 2020a; Benedikt Frey, Chen, & Presidente, 2020). On the other hand, the United States has mainly faced external threats that could be dealt with abroad (Ebola, Zika, etc.) rather than within its borders, and its society is highly individualistic and polarized to the point where simple social distancing guidelines have become politicized (Friedman, 2020). Additionally, Schwartz notes that novel crises are more difficult to respond to as there are little to no past experiences to draw from and make informed decisions (2012). The political culture of a country may also have an impact on COVID-19 cases; countries with more collectivist cultures experienced a sharp reduction in mobility within their population (Benedikt Frey, Chen, & Presidente, 2020). Furthermore, formal political institutions (federal and unitary systems) may also have an impact on how public health policies designed to combat the pandemic are implemented and enforced as federalist governments are known for their coordination problems (Greer et al., 2020). For example, there are significant differences in COVID-19 responses among the states of India. The states of Maharastra, Tamil Nadu, and Delhi (as of July 2020) experienced the highest number of cases in India while Kerala accounted for less than one percent of India's cases (this could also be because of Kerala's previous experience in handling the Nipah outbreak which led to better investments in public health care) (Bharali et al., 2020).

However, it is important to recognize that regimes are comprised of institutions that affect wealth, technological/scientific advancement, and, most importantly, the types of policies that are implemented and how they are enforced. Furthermore, the handling of outbreaks is not studied as extensively in comparative politics as other issues such as infant mortality rate, life expectancy, etc. (Kavanaugh & Singh, 2020).

In light of this, I argue that democratic regimes should be better able to implement mitigation policies as they are typically required to comply with the individual liberties and freedoms of citizens; however, they will be less likely to implement suppression policies for the same reason. This motivates my first two testable hypotheses:

- **H1a:** Democratic regimes are more likely to implement mitigation policies than authoritarian regimes.
- **H1b:** Democratic regimes are less likely to implement suppression policies than authoritarian regimes.

The types of policies countries are able to pursue should also influence the relationship between regime type and the number of COVID-19 cases. This motivates my last two testable hypotheses:

- **H2a:** As more mitigation policies are implemented, there will be a smaller number of COVID-19 cases.
- **H2b:** As more suppression policies are implemented, there will be a smaller number of COVID-19 cases.

3. METHODS

This study performed bivariate and multiple regression analyses. Bivariate analyses were completed to determine the effect of regime type on the stringency of mitigation and suppression policies. In this case, the independent variable was set as regime type and the dependent variables were set as mean mitigation and mean suppression policy indexes.

A multiple regression analysis was completed to determine the effect of mitigation policies, suppression policies, and regime type on the number of COVID-19 cases while also factoring in GDP and population. The independent variables in this multivariate analysis are the types of policies (mitigation and suppression), regime type, GDP, and population while the dependent variable is the number of COVID-19 cases.

This project utilizes the Oxford COVID-19 Government Response Tracker (OxCGRT) from the Blavatnik School of Government, the Freedom House List of Electoral Democracies 2020, and the GDP (2019) and Population (2019) datasets from the World Bank as its primary data sources. The Freedom House's List of Electoral Democracies contains a list of 195 countries that are classified as either "Electoral Democracies" or not. A country is classified as an electoral democracy if it has a Civil Liberties' score of thirty or greater, an Electoral Process score of seven or greater, and a Political Rights score of twenty or greater (Freedom House, 2020). Regime type was coded in binary form: democratic regimes as "1" and authoritarian regimes as "0." Mitigation and suppression policies were each defined as the average of the scores in their selected categories.

The OxCGRT is an ongoing project that collects data and tracks government responses to the COVID-19 pandemic. It contains twenty indicators (policies) recorded on an ordinal scale

representing the level of stringency of the policies. These indicators are organized into four groups: Containment and Closure Policies, Economic Policies, Health System Policies, and Miscellaneous Policies (Hale et al., 2020). Data collected for specific regions within countries (such as states or provinces) were not included in this study.

In this study, the variables include regime type (democratic or authoritarian), policy type (mitigation or suppression), and the number of COVID-19 cases. Mitigation policies included all Health System Policy indicators except Emergency Investment in Healthcare, Investment in Vaccines, and Vaccination Policy. (While vaccination investment/policies are undoubtedly essential in combatting pandemics, this analysis is mainly focused on the NPIs enacted before any kind of vaccine or medical treatment was found, as this project aims to determine the types of policies that are effective in limiting the spread of a pathogen before medical interventions are created/implemented). Suppression policies included all of the Containment and Closure indicators. The mitigation and suppression policy indicators were averaged (separately) to generate a single mitigation policy index and a single suppression policy index for each country. For the number of COVID-19 cases and types of policies enacted, this study used the data collected for May 1st, 2020, when most countries were on the cusp of relaxing/changing their policies from the start of the pandemic and when those policies have had time to take effect. Additionally, a log transformation was done on the number of confirmed COVID-19 cases, GDP, and population to account for skewness and make the data more normal.

The data for the country Lesotho was removed from the data set as it is an outlier (it has reported zero cases). Since it is a landlocked country, and its border country (South Africa) has a substantial number of cases (5951), there is reason to believe that the reported number is not accurate. (It is important to note that this analysis is still including the remaining countries that

have reported zero cases (Vanuatu and Solomon Islands) as they are island nations, and it is unlikely that the number of cases would be too severe).

4.   RESULTS

Before turning to the effect of regime type, descriptive statistics alone indicate that countries' responses to the pandemic have varied considerably. Raw averages suggest that more countries pursued more mitigation policies (2.264) than suppression (1.594). Within these, there is also substantial variation as some states have adopted almost no policies (e.g., Belarus: 0.5, 0.75, for mitigation and suppression policies, respectively) while others have implemented both types of policies substantially (e.g., Colombia: 2.625, 2.5 for mitigation and suppression policies, respectively).

Additionally, the maximum mitigation policy index is 2.875 (Libya, Kazakhstan, Dominican Republic, Honduras), and the maximum suppression policy index is 2.75 (United Arab Emirates). The minimum mitigation policy index is 0.375 (Belarus, Burundi), and the minimum suppression policy index is 0.5 (Solomon Islands). The least number of confirmed cases is zero (includes countries such as Vanuatu and the Solomon Islands) with the most being 1,115,729 (United States). It is important to note once more that this project is using the data collected for May 1st, 2020.

4.1   Results of Bivariate Analyses

A bivariate analysis was conducted to determine whether regime type affects the stringency of mitigation policies. Equation 3.1 models the possible relationship between regime type and mean mitigation policy index.

$$MitigationPolicies = \alpha_0 + \alpha_1 Democracy \qquad\qquad (3.1)$$

This model was found to be statistically insignificant ($F(1, 165) = 0.4645$, $p = 0.4965$). In other words, this model found no significant relationship between regime type and propensity to implement mitigation policies to combat the COVID-19 pandemic.

Table 3.1: Results for Bivariate Analysis for Mitigation Policies and Regime Type

Constant (α_0)	Coeff.: 2.21558 S.E.: 0.06163 p-value: $< 2e$-16
Democracy (α_1)	Coeff. 0.05483 S.E.: 0.08045 p-value: 0.363
Number of Total Observations	168

Table 3.1 shows the results for the bivariate analysis for mitigation policies and regime type. The constant (α_0) indicates the average mitigation policy index for authoritarian regimes (2.21558) with a standard error of 0.08045. The value of α_1 indicates the average difference in mitigation policy indexes between democratic and authoritarian regimes. In other words, given that the p-value for α_1 (0.363) is greater than the significance value, it is difficult to claim there is a significant relationship between regime type and mitigation policies implemented.

Another bivariate analysis was completed to determine the effect of regime type and stringency of suppression policies. Equation 3.2 models the possible relationship between regime type and mean suppression policy index.

$$SuppressionPolicy = \alpha_0 + \alpha_1 Democracy \qquad (3.2)$$

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This model was also found to be statistically insignificant ($F(1, 164) = 1.298$, $p = 0.2561$). There is not enough evidence to suggest a relationship between regime type and suppression policies enacted.

Table 3.2: Results for Bivariate Analysis for Suppression Policies and Regime Type

Constant (α_0)	Coeff**.:** 1.53623 S.E.: 0.06041 p-value: $< 2e\text{-}16$
Democracy (α_1)	Coeff.: 0.09006 S.E.: 0.07903 p-value: 0.6804
Number of Total Observations	168

Table 3.2 shows the results for the bivariate analysis for Suppression Policies and Regime Type. In this model, α_1 (0.09006) represents the average difference in suppression policy index between democratic and authoritarian countries. Since the p-value (0.6804) is greater than the significance value of 0.05, there is not enough evidence to suggest that regime type affects whether suppression policies are enacted.

4.2   Results of Multiple Regression Analysis

A multiple regression analysis was conducted to determine the effect of mitigation policies, suppression policies, and regime type on the number of COVID-19 cases in countries. Equation 3.3 models the possible relationship between regime type, policy type, and number of COVID-19 cases factoring in GDP and population as well.

$$COVID = \text{\ss}_0 + \text{\ss}_1 Mitigation + \text{\ss}_2 Suppression + \text{\ss}_3 RegimeType + \text{\ss}_4 GDP + \text{\ss}_5 Population \qquad (3.3)$$

This model found joint significance of mitigation policy, suppression policy, and regime type, in explaining the number of COVID-19 cases (F (5, 140) = 89.74, $p < 2.2e$-16). In other words, there appears to be a significant joint relationship between regime type, policy type, GDP, and population on the number of COVID-19 cases.

Table 3.3: Results for Multivariate Analysis

	Estimate (β) Std. Error (S.E.)	p-value
Intercept (β_0)	β_0: -22.14568 S.E.: 1.44146	$< 2e$-16
Mean Mitigation (β_1)	β_1: 0.33690 S.E.: 0.24914	0.17848
Mean Suppression (β_2)	β_2: 0.41473 S.E.: 0.24477	0.09242
Democracy (β_3)	β_3: 0.02678 S.E.: 0.26232	0.91883
GDP (β_4)	β_4: 1.30980 S.E.: 0.08716	$< 2e$-16
Population (β_5)	β_5: -0.30074 S.E.: 0.10366	0.00432

Table 3.3 shows the results for the multiple regression analysis performed on regime type, policy type, and number of COVID-19 cases. Suppression policies are significant at the 90 percent confidence level (p-value of 0.09242 < 0.1). This indicates that suppression policies have a significant impact on the number of COVID-19 cases (logged) holding all other factors constant. Additionally, the p-value for GDP and population (logged) is significantly low at a 95

percent confidence level (p-values < 0.05), which suggests that these two factors also have a significant impact on the number of COVID-19 cases.

4.3   Discussion

To reiterate, this analysis found no significant relationship between regime type and types of policy enacted. This suggests that regime type does not affect the types of policies enacted; however, the model specification is admittedly sparse (something I discuss in greater detail ahead). When controlling for the types of policies enacted, GDP, and population, this model did find joint significance of these factors in explaining the number of COVID-19 cases. The multiple regression analysis also found that suppression policy index, GDP, and population each have an impact on the number of COVID-19 cases holding all other factors constant. However, the p-values for regime type (0.91883) and mitigation policy index (0.17848) are too high to claim there is a significant relationship between these factors and COVID-19 cases (holding all others constant). Therefore, we cannot reject the null hypothesis that regime type does not affect policy type or the number of COVID-19 cases. This challenges the notion that authoritarian regimes may be better suited to combat the pandemic due to their ability to more easily enact suppression policies.

However, there are certain limitations to this study that should be addressed in future research. While the sample size was relatively large, this study did not take into account changes in policy and COVID-19 cases as time passed. Specifically, it did not address the fact that there were multiple "waves" when COVID-19 cases would surge after a relaxing of strict policy measures in various countries. While this analysis only examined the effects of regime type and policy type in the initial wave of the pandemic when COVID-19 was beginning to spread around the world, it did not account for possible changes in policy implementation and the number of

COVID-19 cases in subsequent waves (e.g., a relaxation of restrictions after a significant reduction of cases and/or the subsequent rise in cases once restrictions were lifted). Additionally, it is important to note that some of the data (especially regarding the number of COVID-19 cases) may not be authentic as many countries (e.g., regimes without an open and free press or with poor or inadequate health infrastructure) are not able to accurately/truthfully report their data. This could have skewed the comparisons between democratic and authoritarian countries. Furthermore, there could be other factors that this study did not take into account such as previous experience with public health emergencies, technological/medical advancement, and/or political culture that could affect the policies enacted and the growth of COVID-19 cases. Countries with experience in battling epidemics within their borders in the recent past (such as the SARS, Ebola, AIDS, or MERS) could have been more successful in handling the pandemic than countries that have not. Wealthier countries typically have more robust public health institutions, better health care, more technological advancements that would enable them to more efficiently and effectively combat the spread of the virus. Political culture may also have an impact on the number of COVID-19 cases; countries with more collectivist cultures could have a higher rate of compliance for safety guidelines such as social distancing or mask mandates than those with more individualistic or politically polarized cultures. It is still important to note, nevertheless, that this study is a preliminary investigation of how politics affect the reaction to crises and more specifically, the relationship between regime type and COVID-19 cases.

5.   CONCLUSION

The COVID-19 pandemic has had an undeniable impact on the world. While it underscored our ability to act and innovate during times of crisis, this pandemic has also exposed the failures of our institutions, both domestically and internationally. Public health officials and policymakers of many countries were forced to deal with the consequences of poor health infrastructure, PPE (personal protective equipment) supply shortages due to an overly efficient yet fragile supply chain, slow bureaucracies, and haphazard planning during the initial weeks of the pandemic. The failures of some wealthier, technologically advanced, democracies and the successes of some authoritarian regimes led many to think that perhaps authoritarian countries were better suited to handling crises such as a pandemic as they are more easily able to implement and enforce compliance with policy with little regard to civil liberties and freedoms. Since then, there has been a growing amount of research being done to determine the factors that contribute to reducing the amount of daily COVID-19 cases. Many studies have analyzed the various pros and cons that authoritarian and democratic regimes may face during a pandemic or similar crisis as well as the types of policies that are most effective in dealing with the spread of the virus.

This project adds to the research being done on the politics of the pandemic and attempts to understand specifically how regime type affects the types of policies enacted and the number of COVID-19 cases. This analysis did not find a significant correlation between regime type, types of policies enacted (mitigation), and COVID-19 cases; however, there could be other, underlying factors that may affect such a relationship. As the COVID-19 pandemic progresses, more research will need to be conducted to further study the effects of policies, regime type, and

other non-pharmaceutical interventions/factors on the virus' spread, especially as time passes and more individuals receive vaccines. This pandemic has called attention to the need for policy to work in conjunction with science, especially as the world moves through an era where technology and science are an integral part of our lives and the need for public health safety grows.

REFERENCES

Alon, I., Farrell, M., & Li, S. (2020). Regime Type and COVID-19 Response. *FIIB Business Review*, *9*(3), 152–160. https://doi.org/10.1177/2319714520928884

Alon, T., Kim, M., Lagakos, D., & VanVuren, M. (2020). *How Should Policy Responses to the COVID-19 Pandemic Differ in the Developing World?* https://doi.org/10.3386/w27273

Auger, K. A., Shah, S. S., Richardson, T., Hartley, D., Hall, M., Warniment, A., Timmons, K., Bosse, D., Ferris, S. A., Brady, P. W., Schondelmeyer, A. C., & Thomson, J. E. (2020). Association Between Statewide School Closure and COVID-19 Incidence and Mortality in the US. *JAMA*, *324*(9), 859. https://doi.org/10.1001/jama.2020.14348

Barnett-Howell, Z., Watson, O. J., & Mobarak, A. M. (2021). The benefits and costs of social distancing in high- and low-income countries. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. https://doi.org/10.1093/trstmh/traa140

Benedikt Frey, C., Chen, C., & Presidente, G. (2020). *Democracy, Culture, and Contagion: Political Regimes and Countries Responsiveness to Covid-19 **. https://www.oxfordmartin.ox.ac.uk/downloads/academic/Democracy-Culture-and-Contagion_May13.pdf

Bharali, I., Kumar, P., & Selvaraj, S. (2020, July 2). *How well is India responding to COVID-19?* Brookings; Brookings. https://www.brookings.edu/blog/future-development/2020/07/02/how-well-is-india-responding-to-covid-19/#:~:text=In%20terms%20of%20health%20security,of%2056.6%20and%2073.2%2C%20respectively.

Bicker, L. (2020, March 12). *Coronavirus in South Korea: How "trace, test and treat" may be saving lives*. BBC News; BBC News. https://www.bbc.com/news/world-asia-51836898

Bjorklund, K. (2020, December 22). *The Inside Story of How Sweden Botched Its Coronavirus Response*. Foreign Policy; Foreign Policy. https://foreignpolicy.com/2020/12/22/sweden-coronavirus-covid-response/

Bo, Y., Guo, C., Lin, C., Zeng, Y., Li, H. B., Zhang, Y., Hossain, M. S., Chan, J. W. M., Yeung, D. W., Kwok, K. O., Wong, S. Y. S., Lau, A. K. H., & Lao, X. Q. (2020). Effectiveness of non-pharmaceutical interventions on COVID-19 transmission in 190 countries from 23 January to 13 April 2020. *International Journal of Infectious Diseases*, *102*(), 247–253. https://doi.org/10.1016/j.ijid.2020.10.066

Bunyavejchewin, P., & Sirichuanjun, K. (2021). How regime type and governance quality affect policy responses to COVID-19: A preliminary analysis. *Heliyon*, *7*(2), e06349. https://doi.org/1-5

Cepaluni, G., Dorsch, M., & Branyiczki, R. (2021). Political Regimes and Deaths in the Early Stages of the COVID-19 Pandemic. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3586767

Chernozhukov, V., Kasahara, H., & Schrimpf, P. (2020). Causal impact of masks, policies, behavior on early covid-19 pandemic in the U.S. *Journal of Econometrics*, *220*. https://doi.org/10.1016/j.jeconom.2020.09.003

Courtemanche, C., Garuccio, J., Le, A., Pinkston, J., & Yelowitz, A. (2020). Strong Social Distancing Measures In The United States Reduced The COVID-19 Growth Rate. *Health Affairs*, *39*(7), 1237–1246. https://doi.org/10.1377/hlthaff.2020.00608

Eikenberry, S. E., Mancuso, M., Iboi, E., Phan, T., Eikenberry, K., Kuang, Y., Kostelich, E., & Gumel, A. B. (2020). To mask or not to mask: Modeling the potential for face mask use by the general public to curtail the COVID-19 pandemic. *Infectious Disease Modelling*, *5*, 293–308. https://doi.org/10.1016/j.idm.2020.04.001

Ferguson, N., Laydon, D., Nedjati-Gilani, G., Imai, N., Ainslie, K., Baguelin, M., Bhatia, S., Boonyasiri, A., Cucunubá, Z., Cuomo-Dannenburg, G., Dighe, A., Dorigatti, I., Fu, H., Gaythorpe, K., Green, W., Hamlet, A., Hinsley, W., Okell, L., Van Elsland, S., … Ghani, A. (2020a). Impact of non-pharmaceutical interventions (NPIs) to reduce COVID- 19 mortality and healthcare demand. *Imperial College London*. https://doi.org/10.25561/77482

Flaxman, S., Mishra, S., Gandy, A., Unwin, H. J. T., Mellan, T. A., Coupland, H., Whittaker, C., Zhu, H., Berah, T., Eaton, J. W., Monod, M., Ghani, A. C., Donnelly, C. A., Riley, S., Vollmer, M. A. C., Ferguson, N. M., Okell, L. C., & Bhatt, S. (2020). Estimating the effects of non-pharmaceutical interventions on COVID-19 in Europe. *Nature*, *584*(7820), 257–261. https://doi.org/10.1038/s41586-020-2405-7

Freedom House. (2020). *Freedom in the World Research Methodology*. Freedom House.
    https://freedomhouse.org/reports/freedom-world/freedom-world-research-methodology

Freedom House. (2021). *List of Electoral Democracies, FIW 2020 - Freedom House*.
    Freedomhouse.org. https://freedomhouse.org/sites/default/files/2020-
    02/2020_List_of_Electoral_Democracies_FIW_2020.xlsx

Friedman, U. (2020, March 25). *Why the U.S. Was So Vulnerable When the Virus Came*. The
    Atlantic; The Atlantic. https://www.theatlantic.com/politics/archive/2020/03/coronavirus-
    united-states-vulnerable-pandemic/608686/

Greer, S. L., King, E. J., da Fonseca, E. M., & Peralta-Santos, A. (2020). *The comparative
    politics of COVID-19: The need to understand government responses*. Global Public
    Health. https://www.tandfonline.com/doi/full/10.1080/17441692.2020.1783340

Gozman, L. (2020, June 4). *Russia's Coronavirus is Putin's Crisis*. Foreign Policy; Foreign
    Policy. https://foreignpolicy.com/2020/06/04/putin-is-warping-russias-pandemic-
    response/

Hale, Thomas, Noam Angrist, Emily Cameron Blake, Laura Hallas, Beatriz Kira, Saptarshi
    Majumdar, Anna Petherick, Toby Phillips, Helen Tatlow, Samuel Webster. "Variation in
    Government Responses to COVID-19" Version 8.0. Blavatnik School of Government
    Working Paper. 22 October 2020. Available: www.bsg.ox.ac.uk/covidtracker

Hale, Thomas, Noam Angrist, Emily Cameron Blake, Laura Hallas, Beatriz Kira, Saptarshi
    Majumdar, Anna Petherick, Toby Phillips, Helen Tatlow, Samuel Webster (2020).
    Oxford COVID-19 Government Response Tracker, Blavatnik School of Government.
    Available: www.bsg.ox.ac.uk/covidtracker

Hsiang, S., Allen, D., Annan-Phan, S., Bell, K., Bolliger, I., Chong, T., Druckenmiller, H.,
    Huang, L. Y., Hultgren, A., Krasovich, E., Lau, P., Lee, J., Rolf, E., Tseng, J., & Wu, T.
    (2020). The effect of large-scale anti-contagion policies on the COVID-19
    pandemic. *Nature*, *584*(7820), 262–267. https://doi.org/10.1038/s41586-020-2404-8

Kavanagh, M. M., & Singh, R. (2020). Democracy, Capacity, and Coercion in Pandemic
    Response: COVID-19 in Comparative Political Perspective. *Journal of Health Politics,
    Policy and Law*, *45*(6), 997–1012. https://doi.org/10.1215/03616878-8641530

Kim, H. J. (2020a, March 20). *South Korea learned its successful Covid-19 strategy from a previous coronavirus outbreak: MERS - Bulletin of the Atomic Scientists*. Bulletin of the Atomic Scientists. https://thebulletin.org/2020/03/south-korea-learned-its-successful-covid-19-strategy-from-a-previous-coronavirus-outbreak-mers/

Kim, H. J. (2020b, May 7). *When to reopen the economy during the coronavirus pandemic? South Korea's got a plan and the numbers to back it up - Bulletin of the Atomic Scientists*. Bulletin of the Atomic Scientists. https://thebulletin.org/2020/05/when-to-re-open-the-economy-during-the-coronavirus-pandemic-south-koreas-got-a-plan-and-the-numbers-to-back-it-up/

Margolin, J., & Meek, J. G. (2020, April 9). *Intelligence report warned of coronavirus crisis as early as November: Sources*. ABC News; ABC News. https://abcnews.go.com/Politics/intelligence-report-warned-coronavirus-crisis-early-november-sources/story?id=70031273

Nils Karlson, Charlotta Stern, & Klein, D. B. (2020, June). *Sweden's Coronavirus Strategy Will Soon Be the World's*. Foreign Affairs. https://www.foreignaffairs.com/articles/sweden/2020-05-12/swedens-coronavirus-strategy-will-soon-be-worlds

Sanger, D. E., Lipton, E., Sullivan, E., & Crowley, M. (2020). Before Virus Outbreak, a Cascade of Warnings Went Unheeded. *The New York Times*. https://www.nytimes.com/2020/03/19/us/politics/trump-coronavirus-outbreak.html

Sebhatu, A., Wennberg, K., Arora-Jonsson, S., & Lindberg, S. I. (2020). Explaining the homogeneous diffusion of COVID-19 nonpharmaceutical interventions across heterogeneous countries. *Proceedings of the National Academy of Sciences*, *117*(35), 21201–21208. https://doi.org/10.1073/pnas.2010625117

Scherbina, A. (n.d.). *Accept Terms and Conditions on JSTOR*. Www.Jstor.org. Retrieved November 20, 2020, from https://www.jstor.org/stable/pdf/resrep24598.pdf?acceptTC=true&coverpage=false

Schwartz, J. (2012). Compensating for the "Authoritarian Advantage" in Crisis Response: A Comparative Case Study of SARS Pandemic Responses in China and Taiwan. *Journal of Chinese Political Science*, *17*(3), 313–331. https://doi.org/10.1007/s11366-012-9204-4

Senters Piazza, K., & Stronko, K. (n.d.). Democrats, Authoritarians, and the Coronavirus: Who is Winning at Policy Efficacy? In *Global Policy*. Retrieved February 27, 2021, from https://www.globalpolicyjournal.com/sites/default/files/pdf/Piazza%20and%20Stronko%20%20Democrats%2C%20Authoritarians%2C%20and%20the%20Coronavirus%2C%20Who%20is%20Winning%20at%20Policy%20E%EF%AC%83cacy.pdf.

Stack, M. (2020). A Sudden Coronavirus Surge Brought Out Singapore's Dark Side. *The New York Times*. https://www.nytimes.com/2020/05/20/magazine/singapore-coronavirus.html

World Bank. (2019). *Population, total | Data*. Worldbank.org. https://data.worldbank.org/indicator/SP.POP.TOTL

World Bank. (2021). *GDP (current US$) | Data*. Worldbank.org. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

Wurster, S. (2011). Sustainability and Regime Type: Do Democracies Perform Better in Promoting Sustainable Development than Autocracies? Zeitschrift Für Staats- Und Europawissenschaften (ZSE) / Journal for Comparative Government and European Policy, 9(4), 538-559. Retrieved January 24, 2021, from http://www.jstor.org.srv-proxy1.library.tamu.edu/stable/24237342