Political Regime and Suspected COVID-19 Death Data Manipulation[*]

Susumu Annaka
Waseda University

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Abstract

The COVID-19 pandemic—the worst one since the Spanish flu—has dramatically changed the world, with a great number of people still suffering and dying from the disease. Some scholars argue that the pandemic has severely damaged democratic countries, mainly because these cannot intervene in their citizens' lives, as opposed to their authoritarian counterparts. Another study challenges this view and suggests that authoritarian countries manipulate data on COVID-19-related deaths. This paper aims to determine which view is more persuasive using cross-national data. This article uses statistical evidence to reveal that authoritarian countries are likely to manipulate the data. The result implies that, with this successful manipulation, authoritarian states can strengthen citizens' support for their governments through the COVID-19 pandemic.

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Introduction

The number of COVID-19 deaths is reported to exceed one million all over the world.

Some argue that people, especially in democratic countries, face a tradeoff between

freedom and health (Harari 2020; Koyama 2020). Recently published papers also reveal

that democratic countries suffer from COVID-19 deaths more than authoritarian states

(Cepaluni et al. 2020; Cheibub et al. 2020). Graph 1 supports these arguments to some

extent. It shows the number of COVID-19 deaths on the vertical axis as reported by

Johns Hopkins University and the level of Polity2 on the horizontal axis from the Polity

V Project. [1] The number of deaths is the total sum since the first confirmed cases were

reported (as of July 31, 2020). The correlation coefficient between the two variables is

0.2680, and it is statistically significant at the 1% level. This moderate positive relation-

ship suggests that the arguments should be correct. However, is this relationship truth-

ful? This article attempts to answer this question.

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[1] The Center for Systems Science and Engineering (CSSE) at Johns Hopkins Un
iversity (2020) COVID 19 Data Repository, https://github.com/CSSEGISandData/
COVID19, accessed on August 8, 2020, Marshall, M. G., Jaggers, K., and Gurr,
 T. R. (2020) Polity V Project, Political Regime Characteristics and Transitions,
1800-2018. Center for Systemic Peace, http://www.systemicpeace.org/inscrdata.ht
ml, accessed on August 8, 2020.
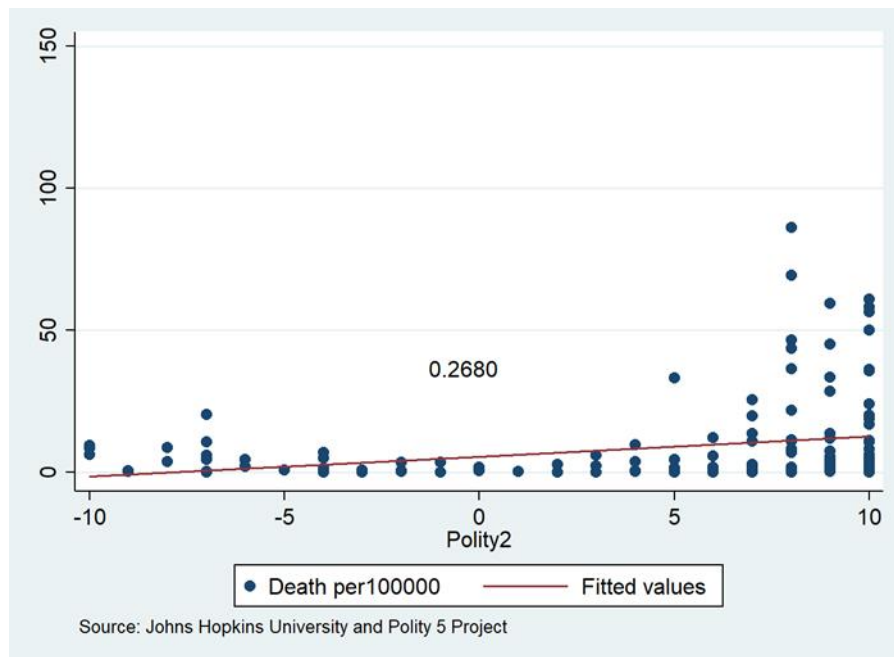
Graph 1: Relationship between Polity2 and the Number of COVID-19 Deaths

Why can these arguments be questioned? For example, it is reported that Alexander Lukashenko, the Belarusian President, underestimated the risk for COVID-19 spreading across the country. The president did not take any appropriate measures to prevent the pandemic in the country. As this case implies, authoritarian governments do not necessarily take a decisive measure immediately. However, the country has one of the lowest death rates in Europe (Karáth 2020). This is incredible. If the COVID-19 confirmed cases in authoritarian countries are not reduced, the argument that the government's intervention can reduce COVID-19 deaths by reducing confirmed cases is not persuasive.

In another case, Cepaluni et al. (2020) show a statistical analysis in which political regime is positively correlated with COVID-19 deaths. Their analysis includes confirmed cases as a control variable, which is also positively correlated with COVID-19 deaths, as expected. As it is puzzling that the political regime variable is statistically significant even after controlling for the confirmed cases, this leads to the question above. It is often argued that, if authoritarian governments can reduce death cases by stringent intervention, the total confirmed cases must be reduced first; however, the statistical analysis shows a significant effect of political regime on deaths, even after controlling for the confirmed cases. This result implies that a factor other than the confirmed cases significantly affects COVID-19 deaths in authoritarian countries.

It is difficult to imagine that the medical system in authoritarian states can work better than that in democratic countries. Scholars have highlighted that people in democratic countries are likely to have better health than their authoritarian counterparts (Wang et al. 2020; Gerring et al. 2020). Another possibility is that authoritarian countries manipulate death data. Kapoor et al. (2020) analyze the data's moving average and reveal that the data are unnaturally produced. This paper aims to determine which view is more persuasive using cross-national data.

1.   Determinants of Confirmed Cases and Non-Pharmaceutical Interventions

First, this study considers the determinants of confirmed cases and non-pharmaceutical interventions (NPIs)—such as lockdowns—by utilizing data from the Johns Hopkins University and the University of Oxford (Hale et al. 2020) before analyzing the effect of political regime on COVID-19 deaths. If authoritarian governments can reduce COVID-19 deaths by reducing the number of confirmed cases, it must be through stringent interventions in people's lives. Here, simple statistical analyses are conducted to test this relationship.

This study utilizes cross-national data on over 100 countries. The dependent variables are COVID-19 confirmed cases and NPIs operationalized by the Stringent Index (Hale et al. 2020). These variables record the daily change of the confirmed cases and a government's response to the pandemic. However, almost all other covariates necessary to be included in the analysis are yearly data, such as GDP per capita. This study constructs cross-sectional data for all statistical analyses below. The confirmed cases and Stringent Index are averaged by each country until July 31, 2020.

Political regime variables are obtained from the Polity Project and Variety of Democracy (V-Dem) Project. [2]   Control variables such as GDP per capita, trade ratio to

[2] Coppedge, M., Gerring, J., Knutsen, C.H., Lindberg, S. I., Teorell, J., Altman, D., Bernhard, M., Fish, M. S., Glynn, A., Hicken, A., Luhrmann, A., Marquardt, K.L., McMann, K., Paxton, P., Pemstein, D., Seim, B., Sigman, R., Skaaning, S., Staton, J.,

GDP, total population, population density, and population ratio age 65 and above are taken from the World Bank.[3] The latitude, the days since the first confirmed case was reported, and the number of total confirmed cases are also obtained from Johns Hopkins University. The latest available yearly data are used. The models take the logs of the variables (except for latitude and days since the first confirmed case) to consider skewed distributions. The descriptive statistics are presented in Appendix 1. The analysis of the confirmed cases uses Negative Binomial regression to consider the dependent variable's skewed distribution. Ordinary Least Square regression is applied for the analysis of the Stringent Index. Table 1 shows the results of the regression results for the determinants of the confirmed cases.

Model 1 is the result of the relationship between Polity2 from the Polity Project and confirmed cases. The result shows that Polity2 is not statistically significant. GDP, trade, and population are significant. Model 2 analyzes the relationship between the Polyarchy Index from the V-Dem Project and confirmed cases. This model shows almost

Wilson, S., Cornell, A., Alizada, N., Gastaldi, L., Gjerløw, H., Hindle, G., Ilchenko, N., Maxwell, L., Mechkova, V., Medzihorsky, J., Sundström, J. A., Tzelgov, E., Wang, Y., Wig, T., and Ziblatt, D.. 2020. "V-Dem [Country–Year/Country–Date] Dataset v10". Varieties of Democracy (V-Dem) Project. https://doi.org/10.23696/vdemds20.

the same results as model 1. These results suggest that the political regime variables do

not affect the COVID-19 confirmed cases.

Table 1: Determinants of Confirmed Cases

VARIABLES	(1) NB Confirmed Cases	(2) NB Confirmed Cases
Polity2	8,106	
	(7,518)	
Polyarchy		142,960
		(193,125)
GDP (log)	89,921**	80,086**
	(37,918)	(37,302)
Trade (log)	-186,479*	-190,563**
	(97,954)	(92,414)
Population (log)	105,539***	89,744***
	(36,017)	(32,371)
Population Density (log)	-25,537	-18,064
	(27,156)	(25,290)
Age 65 and above (ratio)	-56,097	-31,522
	(80,122)	(76,109)
Latitude	187.8	-395.1
	(1,757)	(1,642)
Days since the first confirmed case	523.8	868.7
	(2,622)	(2,541)
Constant	-1.493e+06*	-1.281e+06*
	(823,161)	(754,047)
Observations	141	147
R-squared	0.248	0.237

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2 shows the results of the regression results for the determinants of the

NPIs. Model 3 is the result of the relationship between Polity2 from the Polity Project

and Stringent Index. The result shows that Polity2 is not statistically significant. The

other variables, except confirmed cases, are also not significant. Model 4 analyzes the

relationship between the Polyarchy Index from the V-Dem Project and Stringent In-

dex. This model shows almost the same results as model 3. These results suggest that

confirmed cases in each country affect the government's responses to COVID-19, regardless of other factors such as political regime. This implies that authoritarian governments do not necessarily intervene in civil society more than democratic states. [4]

Table 2: Determinants of Stringent Index

VARIABLES	(3) OLS Average SI	(4) OLS Average SI
Polity2	-0.0666	
	(0.1730)	
Polyarchy		-4.8990
		(4.4310)
GDP (log)	-0.6740	-0.5560
	(1.0330)	(1.0060)
Trade (log)	-0.9670	-0.9940
	(2.2610)	(2.1370)
Population (log)	-1.3790	-1.4400
	(0.9920)	(0.9160)
Population Density (log)	0.1920	0.4470
	(0.6240)	(0.5810)
Age 65 and above (ratio)	-2.0100	-1.0940
	(1.8750)	(1.7710)
Latitude	-0.0413	-0.0578
	(0.0407)	(0.0380)
Days since the first confirmed case	0.0755	0.0699
	(0.0607)	(0.0590)
Confirmed cases (log)	2.232***	2.209***
	(0.5430)	(0.5280)
Constant	51.78***	52.81***
	(19.78)	(18.18)
Observations	141	147
R-squared	0.1980	0.2050

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

2. Determinants of COVID-19 Deaths and Data Manipulation

If authoritarian governments do not make stricter interventions in their citizens' daily lives to combat COVID-19 compared to democratic governments, why do authoritarian

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[4] This analysis does not consider how swiftly the government responds, which may make a difference (Cepaluni et al. 2020; Cheibub et al. 2020).

countries have fewer COVID-19 deaths? In this section, this riddle is examined—once

again through statistical analysis.

The dependent variable is the number of COVID-19 deaths. The control varia-

bles are almost the same as the previous analysis above, except for an additional varia-

ble—the number of physicians per 1000 population from WDI data. This analysis uses

negative binomial regression. Models 5 and 6 in Table 3 analyze the relationship be-

tween the political regime and COVID-19 deaths. Model 5 shows that Polity2 is posi-

tively correlated with COVID-19 deaths, and the coefficient is statistically significant

even after controlling for the number of confirmed cases. This result suggests that the

more democratic a country is, the more deaths it suffers. Model 6 shows the result from

Polyarchy and almost the same as Model 5. These results are consistent with those of

Cepaluni et al. (2020).

If authoritarian countries cannot reduce COVID-19 deaths by reducing the num-

ber of confirmed cases, why are fewer deaths registered in those countries? Is the medi-

cal system in authoritarian states better than that in democratic countries? A study sug-

gests that Belarus, one of the authoritarian countries, has a large hospital capacity, lead-

ing to a lower death rates (Karáth 2020). That may be possible. However, the results of

this study show the robust significance of the political regime variables on average even

after controlling for the number of physicians. Moreover, People in democratic countries tend to have better health than those in authoritarian counterparts (Wang et al. 2019; Gerring et al. 2020), and it is peculiar that COVID-19 is an exception.

Table 3: Determinants of COVID-19 Deaths

VARIABLES	(5) NB Death Cases	(6) NB Death Cases
Polity2	0.0482***	
	(0.0146)	
Polyarchy		0.905**
		(0.3860)
Physicians (log)	-0.293***	-0.283***
	(0.0827)	(0.0885)
GDP (log)	0.1270	0.0490
	(0.0904)	(0.0958)
Trade (log)	-0.0490	0.0511
	(0.1930)	(0.1920)
Population (log)	0.204***	0.205***
	(0.0771)	(0.0761)
Population Density (log)	-0.137***	-0.102*
	(0.0525)	(0.0525)
Age 65 and above (ratio)	0.518***	0.635***
	(0.1660)	(0.1640)
Latitude	0.0115***	0.0083**
	(0.0035)	(0.0035)
Days since the first confirmed case	-0.0092	-0.0104*
	(0.0052)	(0.0053)
Confirmed cases (log)	1.041***	1.043***
	(0.0453)	(0.0462)
Constant	-7.802***	-7.969***
	(1.5290)	(1.5270)
Observations	137	142

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Kapoor et al. (2020) suggest another possibility that authoritarian governments manipulate COVID-19 death data. Their study recognizes the irregularity of the data and concludes that the manipulation process makes the data unnatural. Here we examine this possibility using the HRV Transparency Index (Hollyer et al. 2014) as an additional control. The HRV Transparency Project creates this index based on the WDI

data. The project regards the missing values in the WDI data as the government's un-

willingness to disclose its country's internal affairs. This index can be a proxy for data

transparency.

Table 4: Determinants of COVID-19 Deaths with Transparency Index

VARIABLES	(7) NB Death Cases	(8) NB Death Cases
Polity2	0.0295	
	(0.0181)	
Polyarchy		0.6050
		(0.4350)
Transparency Index	0.0669	0.0800
	(0.0687)	(0.0664)
Physicians (log)	-0.257***	-0.251**
	(0.0988)	(0.1030)
GDP (log)	0.1130	0.0665
	(0.1130)	(0.1170)
Trade (log)	-0.0274	0.0075
	(0.2290)	(0.2280)
Population (log)	0.188*	0.171*
	(0.0978)	(0.0949)
Population Density (log)	-0.168***	-0.166***
	(0.0593)	(0.0591)
Age 65 and above (ratio)	0.512**	0.519**
	(0.2040)	(0.2080)
Latitude	0.0134***	0.0121***
	(0.0039)	(0.0037)
Days since the first confirmed case	-0.0136**	-0.0132**
	(0.0060)	(0.0059)
Confirmed cases (log)	1.023***	1.030***
	(0.0526)	(0.0524)
Constant	-6.470***	-6.251***
	(2.0770)	(2.0630)
Observations	111	112

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4 shows the results of the analyses, including the Transparency Index as

an additional control. Models 7 and 8 are the same as models 5 and 6, except for the

Transparency Index. These models indicate that the political regime variables are no

longer statistically significant with additional control; however, the Transparency Index

is also not statistically significant. Cepaluni et al. (2020) also include this variable to

control for the possibility of data manipulation. Nevertheless, in their study, the inclusion does not affect the robustness of the political regime variables. These results are different from those of their article at this point.

Models 7 and 8 show no statistical significance of both the political regime variables and the Transparency Index. These results imply that missing values affect the analyses. Twenty-six observations (countries) in Model 7 are dropped from Model 5 due to the Transparency Index's missing values, and thirty observations (countries) in Model 8 are dropped from Model 6. This difference in observations can affect the results. Hollyer et al. (2014) "exclude any country that did not exist for the entirety of the 1980–2010 period" and "modern countries that are formed by the union of preexisting states during the 1980–2010 period—that is, Germany and Yemen" (419). The countries that were independent from the Soviet Union are excluded because of the first condition as they tend to be corrupt, which may systematically bias the results. Cepaluni et al. (2020) do not seem to recognize this potential problem. Then, the next analysis drops the observations in which the data on the Transparency Index are missing from models 5 and 6 to consider this possibility. Table 5 shows the results.

Table 5: Determinants of COVID-19 Deaths without Transparency Index

VARIABLES	(9) NB Death Cases	(10) NB Death Cases
Polity2	0.0343*	
	(0.0176)	
Polyarchy		0.6940
		(0.4320)
Physicians (log)	-0.260***	-0.255**
	(0.0982)	(0.1020)
GDP (log)	0.1290	0.0779
	(0.1120)	(0.1180)
Trade (log)	0.0505	0.1160
	(0.2150)	(0.2120)
Population (log)	0.220**	0.209**
	(0.0925)	(0.0900)
Population Density (log)	-0.161***	-0.158***
	(0.0599)	(0.0599)
Age 65 and above (ratio)	0.596***	0.635***
	(0.1850)	(0.1840)
Latitude	0.0139***	0.0125***
	(0.0039)	(0.0037)
Days since the first confirmed case	-0.0149**	-0.0149**
	(0.0059)	(0.0058)
Confirmed cases (log)	1.033***	1.043***
	(0.0518)	(0.0517)
Constant	-7.516***	-7.524***
	(1.7910)	(1.7940)
Observations	111	112

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models 9 and 10 are the same as models 5 and 6, except for the number of observations. These results indicate that the political regime variables are not statistically significant at the conventional standard, although the Transparency Index is not controlled for. These models strongly suggest that the missing countries on the Transparency Index affect the results.[5] The next section examines the characteristics of these countries.

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[5] It is without a rational reason to exclude the countries in which the Transparency Index data are missing from the observations. On the other hand, the countries are systematically missing to some extent, according to Hollyer et al. (2014). In that sense, it is not totally unreasonable.

3.   Extraordinarily Low Case Fatality Rate in Authoritarian Countries

The case fatality rate (CFR) is the proportion of deaths from a particular disease compared to the total number of confirmed cases. This indicator is often used to assess the severity of the disease and is affected by the test numbers. In this sense, it means that if the rate is low, it is usually thought to be not due to the intervention by a government to reduce the confirmed cases but by other factors such as the level of medical infrastructure, human resources, nutrition condition, and so on after the infection. Table 6 shows the difference in CFR among the no-missing and missing countries on the Transparency Index divided by the level of Polity2. [6]

Table 6: Difference in CFR

| CFR	Obs	Mean	Std. Dev.	Min	Max
All countries	164	2.9893	2.96853	0	16.2156
Data Missing Countries	31	1.81081	1.38687	0	5.46985
Data Missing Countries (Polity2<6)	12	1.01202	0.73247	0	2.4319
Data Missing Countries (Polity2<0)	8	0.62675	0.45111	0	1.39734

This table reveals an astonishing tendency. The lower the value of Polity2, the lower the CFR in the missing countries, which is improbable. Graphs 2 through 5 show the incredible patterns graphically. In Graph 2, the fitted line is moderately positive in the countries with no missing data on the Transparency Index, and the correlation

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[6] Yemen is excluded from the data as an outlier because the country deviates far from the other variables. Its CFR is 28.21553.

coefficient is 0.2811. On the other hand, in Graph 3, the relationship between Polity2

and CFR is clearly positive in the data missing countries on the Transparency Index, and

the correlation coefficient is 0.5793. The same patterns can be seen in graphs 4 and 5.
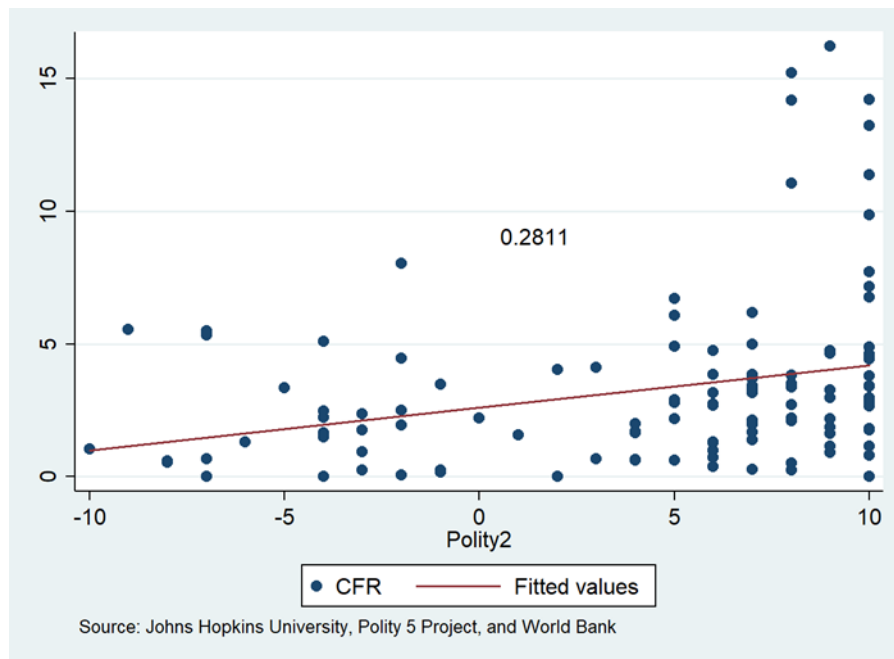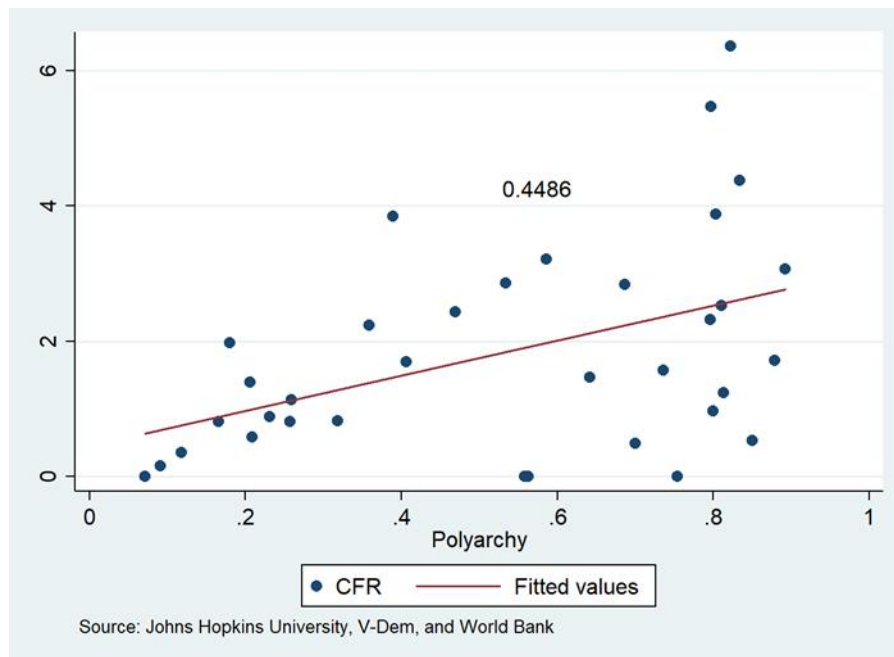

Graph 2: Relationship between Polity2 and CFR
for Transparency Index non-missing countries
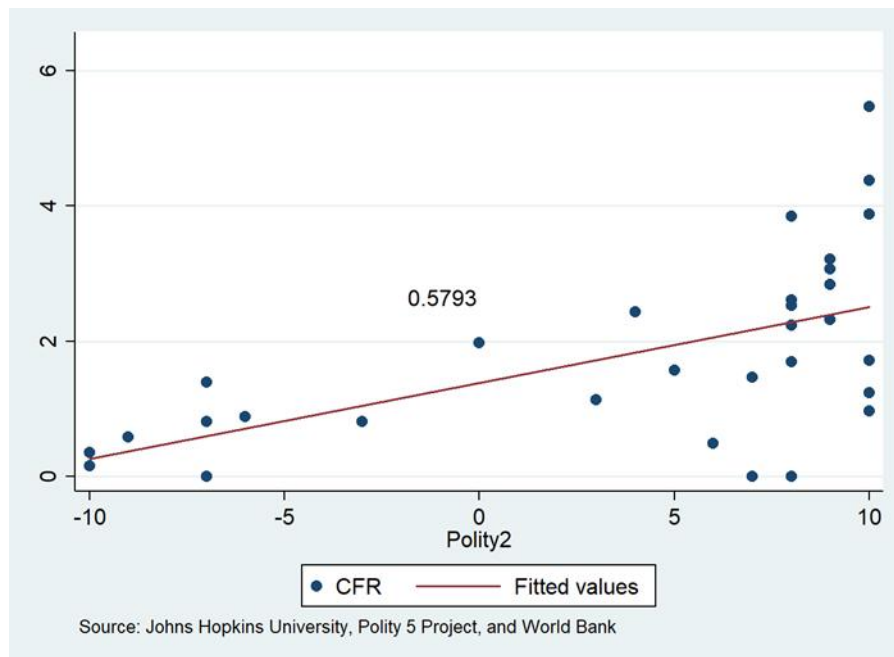
Graph 3: Relationship between Polity2 and CFR
for Transparency Index missing countries
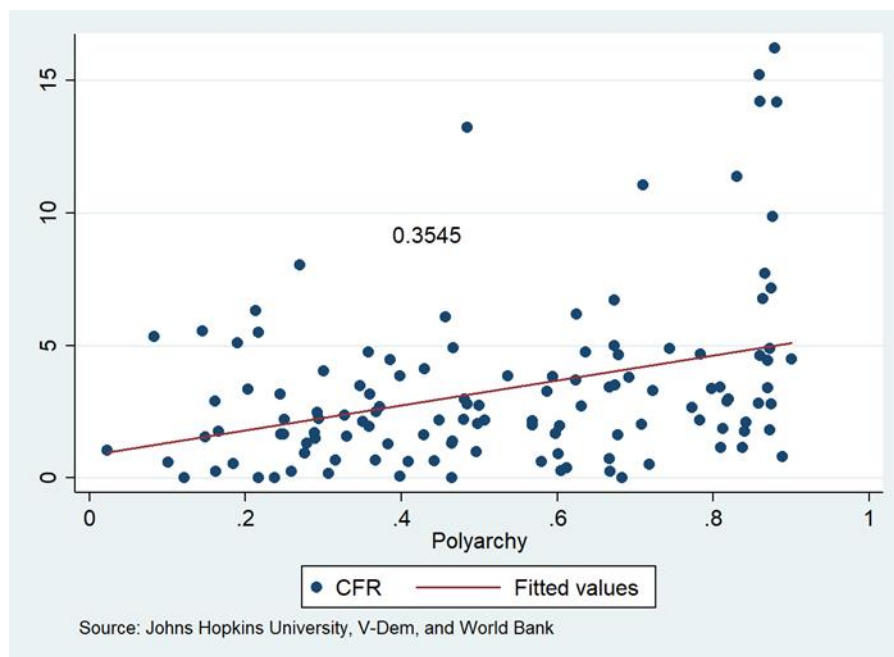
Graph 4: Relationship between Polyarchy and CFR
for Transparency Index non-missing countries

Graph 5: Relationship between Polyarchy and CFR
for Transparency Index missing countries

These graphs clearly reveal that the lower the level of Polity2, the lower the

CFR, especially in the data-missing countries. Additional regression results also support

these patterns. Table 7 shows the relationship between political regimes and COVID-19

deaths and CFR in the data-missing countries. The dependent variables in models 11

through 14 are the number of deaths. The political regime variables are positively corre-

lated with the number of deaths at a statistically significant level. The dependent varia-

bles in models 15 and 18 are the CFR. These models also confirm a similar relationship,

except for model 18. These results are tough to interpret. However, the variable of phy-

sicians is not statistically significant in all these models, and the confirmed cases con-

tinue to be significant in all the models in which the variable is included.

Table 7: Determinants of COVID-19 Deaths and CFR in Data Missing Countries

VARIABLES	(11) NB Death Cases	(12) NB Death Cases	(13) NB Death Cases	(14) NB Death Cases	(15) NB CFR	(16) NB CFR	(17) NB CFR	(18) NB CFR
Polity2	0.0909*** (0.0148)	0.0735*** (0.0152)			0.0694** (0.0279)	0.0094** (0.0448)		
Polyarchy			1.885*** (0.6040)	1.956*** (0.6950)			1.371** (0.5570)	1.7950 (1.1710)
Physicians (log)		-0.0452 (0.2510)		0.1580 (0.2690)		0.1720 (0.4780)		0.1360 (0.4130)
GDP (log)		-0.198** (0.0954)		-0.380*** (0.1100)		-0.0262 (0.2510)		0.1780 (0.2290)
Trade (log)		-0.1360 (0.3330)		-0.1350 (0.3450)		-0.2150 (0.7190)		-0.5890 (0.5000)
Population (log)		-0.0187 (0.0986)		-0.0161 (0.1050)		0.0217 (0.1830)		-0.0555 (0.1490)
Population Density (log)		0.0052 (0.0794)		0.191** (0.0805)		-0.0339 (0.2190)		0.317* (0.1860)
Age 65 and above (ratio)		0.2310 (0.2320)		0.650*** (0.2390)		0.0101 (0.5240)		0.761* (0.4240)
Latitude	0.0131** (0.0055)	0.0213* (0.0114)	0.0086 (0.0085)	-0.0001 (0.0104)	0.0200** (0.0097)	0.0220 (0.0247)	0.0117* (0.0071)	0.0082 (0.0208)
Days since the first confirmed case	-0.0065 (0.0067)	0.0079 (0.0078)	-0.0097 (0.0075)	-0.0047 (0.0103)	0.0016 (0.0109)	-0.0041 (0.0189)	-0.0029 (0.0097)	-0.0164 (0.0168)
Confirmed cases (log)	1.087*** (0.0664)	1.049*** (0.0689)	1.076*** (0.0849)	1.121*** (0.0898)		0.1110 (0.1280)		0.1220 (0.1410)
Constant	-4.799*** (0.8190)	-4.652** (2.3350)	-4.640*** (1.0110)	-3.6890 (2.3200)	-0.7860 (1.4410)	-0.427 (4.5290)	-0.201 (1.2910)	2.3990 (3.0210)
Observations	31	26	35	30	31	26	35	30

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

These results suggest that a factor other than the government's interventions or medical systems possibly affects the COVID-19 deaths.

In conclusion, it is strongly suspected that some authoritarian countries, especially in the data missing countries on the Transparency Index, manipulate data on COVID-19-related deaths. Kapoor et al. (2020) are more persuasive than other studies such as Cepaluni et al. (2020), which argue that authoritarian countries have been able to manage the COVID-19 problem more effectively.

4.   Changing Trends

The analyses above are based on the data available on July 31, 2020. The situation seems to change now in October. Table 8 shows the results of the relationship between the political regime and COVID-19 deaths and CFR with the latest available data (October 10, 2020). [7] Models 19 through 22 reveals that both Polity2 and Polyarchy are no longer statistically significant. These results mean that the (superficial) advantage of authoritarian countries is now diminished.

The reason for this is unknown. Authoritarian leaders may no longer attempt to manipulate the data. Anyway, the argument that authoritarian countries have succeeded

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[7] The descriptive statistics are in Appendix 2.

in reducing COVID-19 deaths much better than democratic countries is no longer per-

suasive now. The tradeoff hypothesis between freedom and health is dubious.

Table 8: Determinants of COVID-19 Deaths and CFR (as of October 10, 2020)

VARIABLES	(19) NB Death Cases	(20) NB Death Cases	(21) NB CFR	(22) NB CFR
Polity2	0.0176		0.0197	
	(0.0133)		(0.0140)	
Polyarchy		0.5420		0.688*
		(0.3390)		(0.3750)
Physicians (log)	-0.278***	-0.261***	-0.240***	-0.217**
	(0.0806)	(0.0828)	(0.0825)	(0.0845)
GDP (log)	-0.0097	-0.0453	0.0756	0.0186
	(0.0772)	(0.0810)	(0.0833)	(0.0895)
Trade (log)	0.0171	0.0279	0.0557	0.0609
	(0.1590)	(0.1590)	(0.1750)	(0.1700)
Population (log)	0.172**	0.174***	0.231***	0.233***
	(0.0670)	(0.0653)	(0.0638)	(0.0594)
Population Density (log)	-0.139***	-0.114**	-0.113**	-0.0971**
	(0.0453)	(0.0443)	(0.0489)	(0.0473)
Age 65 and above (ratio)	0.594***	0.596***	0.453**	0.453**
	(0.1570)	(0.1500)	(0.1850)	(0.1840)
Latitude	0.0015	0.0002	0.0019	0.0014
	(0.0030)	(0.0029)	(0.0030)	(0.0029)
Days since the first confirmed case	-0.0043	-0.0048	-0.0052	-0.0055
	(0.0046)	(0.0046)	(0.0047)	(0.0046)
Confirmed cases (log)	1.065***	1.060***		
	(0.0443)	(0.0428)		
Constant	-7.335***	-7.251***	-3.663**	-3.506**
	-1.283	(1.2660)	(1.5340)	(1.4440)
Observations	137	142	137	142

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Conclusion

A great number of people have been suffering and dying of COVID-19. Some scholars

argue that the pandemic has severely damaged democratic countries, mainly because

democratic countries cannot intervene in citizens' lives in the same way as authoritarian

countries. On the other hand, another study challenges this view and suggests that au-

thoritarian countries manipulate data on COVID-19-related death. This paper examines

which view is more persuasive using cross-national data and reveals statistical evidence

that authoritarian countries are likely to manipulate the data. This result implies that the

tradeoff between freedom and health is superficial and misleading. It is probable that

authoritarian countries only overstate their performance; nevertheless, authoritarian

states can strengthen citizens' support for their governments through the COVID-19

pandemic by successfully manipulating the data.

This study has some limitations. For example, Cepaluni et al. (2020) and

Cheibub et al. (2020) utilize daily data, which can make a more nuanced analysis possi-

ble to capture daily fluctuations in the prevalence of COVID-19 as well as the govern-

ment's interventions. However, almost all other variables included in the analysis are

yearly data, and it is not easy to determine which are more appropriate for analyzing the

phenomena.

Another caution is that this study does not consider the effects of the number of

tests. It may be possible that authoritarian countries conduct much more tests than dem-

ocratic states, and that may affect the results. But only the 87 countries' test data are

available. [8] The number of observations is too small, much fewer than the

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[8] Our World in Data, https://ourworldindata.org/coronavirus-testing, accessed on Octo-
ber 18, 2020.

Transparency Index data. This study regards the inclusion of the data into the analyses

as meaningless in that aspect.

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Appendix 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Confirmed Cases	165	104156.600	429607.10	14	4495014
Confirmed Deaths	165	4068.2060	15395.0300	0	152070
Polity2	153	4.4052	5.9686	-10	10
Polyarchy	159	0.5262	0.2499	0.023	0.9
Transparency Index	123	0.9545	1.9991	-7	6
Doctors per 1000 (log)	157	-0.0037	1.4366	-4.2687	2.1308
GDP per capita (log)	158	8.6717	1.4925	5.3509	11.6146
Trade Ratio to GDP (log)	155	4.3442	0.5162	3.2729	5.9442
Population (log)	164	16.1582	1.7680	10.4278	21.0545
Population Density (log)	161	4.2378	1.4914	-1.9915	8.9813
Age 65 and above Ratio (log)	160	1.9089	0.7669	0.0816	3.3170
Latitude	164	19.6893	24.6799	-40.9006	64.9631
Days since First Confirmed Case	165	147.9939	19.8849	78	213
Confirmed Cases (log)	165	8.9942	2.5021	2.6391	15.3185

Appendix 2: Descriptive Statistics (as of October 10, 2020)

Variable	Obs	Mean	Std. Dev.	Min	Max
Confirmed Cases	165	222013.1	902507.6	16	7664676
Confirmed Deaths	165	6452.291	23478.44	0	213787
CFR	165	2.5689	2.7897	0	29