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# DEMOCRATIC INSTITUTIONS AND PRACTICES, AND COVID-19 OUTCOMES

Global State of Democracy Thematic Paper 2021



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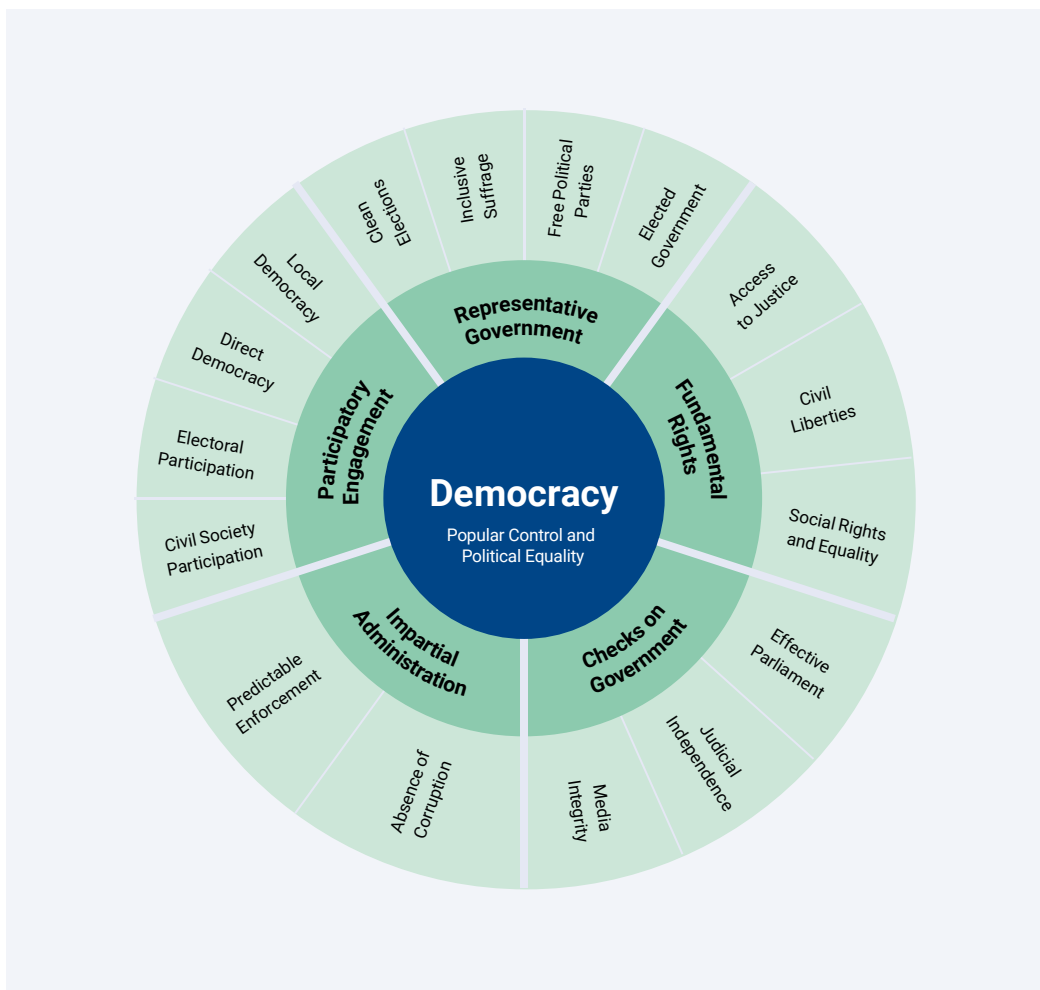
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# About the technical paper

International IDEA's *The Global State of Democracy (GSoD) 2021* reviews the state of democracy around the world over the course of 2020 and 2021, with democratic trends since 2015 used as contextual reference. It is based on analysis of events that have impacted democratic governance globally since the start of the pandemic, based on various data sources, including International IDEA's [Global Monitor of Covid-19's Impact on Democracy and Human Rights](#), and International IDEA's [Global State of Democracy \(GSoD\) Indices](#). The Global Monitor provides monthly data on pandemic measures and their impact on democracy for 165 countries in the world. The GSoD Indices provide quantitative data on democratic quality for the same countries, based on 28 aspects of democracy up until the end of 2020. Both data sources are developed around a conceptual framework, which defines democracy as based on five core attributes: Representative Government, Fundamental Rights, Checks on Government, Impartial Administration, and Participatory Engagement.

## The GSoD conceptual framework



This technical paper is part of a series on The Global State of Democracy, which complement and cross-reference each other. The report has a **global** focus, and it is accompanied by four regional reports that provide more in-depth analysis of trends and developments in **Africa and the Middle East**; the **Americas** (North, South and Central America, and the Caribbean); **Asia and the Pacific**; and **Europe**. It is accompanied by two additional thematic papers that allow more in-depth analysis and recommendations on how to manage **electoral processes** and **emergency law responses**, based on lessons learned from the pandemic.

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## CONCEPTS IN THE GLOBAL STATE OF DEMOCRACY 2021

- The reports refer to three main regime types: *democracies*, *hybrid* and *authoritarian regimes*. Hybrid and authoritarian regimes are both classified as non-democratic.
- *Democracies*, at a minimum, hold competitive elections in which the opposition stands a realistic chance of accessing power. This is not the case in *hybrid* and *authoritarian* regimes. However, *hybrid* regimes tend to have a somewhat more open—but still insufficient—space for civil society and the media than *authoritarian* regimes.
- *Democracies* can be *weak*, *mid-range performing* or *high-performing*, and this status changes from year to year, based on a country's annual democracy scores.
- *Democracies* in any of these categories can be backsliding, eroding and/or fragile, capturing changes in democratic performance over time.
  - Backsliding democracies are those that have experienced gradual but significant weakening of Checks on Government and Civil Liberties, such as Freedom of Expression and Freedom of Association and Assembly, over time. This is often through intentional policies and reforms aimed at weakening the rule of law and civic space. Backsliding can affect democracies at any level of performance.
  - Eroding democracies have experienced statistically significant declines in any of the democracy aspects over the past 5 or 10 years. The democracies with the highest levels of erosion tend also to be classified as backsliding.
  - Fragile democracies are those that have experienced an undemocratic interruption at any point since their first transition to democracy.
  - *Deepening authoritarianism* is a decline in any of the democracy aspects of non-democratic regimes.

For a full explanation of the concepts and how they are defined, see Table 6 on p. 8 of the [summary methodology](#).

## Executive summary

Despite the narratives of authoritarian states, the concerns of journalists and public intellectuals in democracies, and the results of some early studies, this paper shows that democracies fare no worse than authoritarian regimes in combating the Covid-19 pandemic. Democracy is not associated with higher Covid-19 death rates, as many have feared. Democracy is also not associated with lower vaccination rates. Moreover, among democratic countries, high levels of particular democratic components seem to help prevent deaths and boost vaccination rates. Among democracies, greater levels of fundamental rights and impartial administration coincide with lower Covid-19 death rates, and a more competitive process for becoming the leader of a country is associated with a higher vaccination rate. These conclusions are based on statistical analyses of democracy components, as measured by International IDEA's Global State of Democracy (GSoD) Indices, and the reported Covid-19 death rates and Covid-19 vaccination rates in all countries of the world with a population of at least one million people. The results of this paper can be used to challenge the narrative that authoritarian regimes are better at combating Covid-19. Moreover, the findings in this paper can be used to encourage leaders and activists in countries with hybrid and backsliding regimes to strengthen democracy, particularly fundamental rights, impartial administration, and competition for executive office, because these efforts can provide public health benefits.



# Introduction

Many media reports from authoritarian countries claim that their political systems are more effective in responding to the Covid-19 pandemic. China especially has promoted this narrative through its state-owned media outlets and state-influenced social media, often using quotations from experts in democratic countries to lend legitimacy to its claims.<sup>1</sup> For example, the China Global Television Network published an editorial quoting a US public intellectual as saying, ‘China’s system of party-led, strong government can deal more effectively, more efficiently and more rapidly with the stringent demands of a lockdown, quarantine and containment, and mobilization of national resources and healthcare professionals.’<sup>2</sup> Outside of authoritarian state media, journalists and public intellectuals in democratic countries have offered hopeful assessments of democracies’ abilities to mitigate the pandemic. However, they have also pointed out that fundamental rights, free press and checks on government could make democratic governments’ responses slow and ineffective. By contrast, the absence or weakness of these democratic components could allow authoritarian regimes to respond quickly, control information to the public, and forcibly impose mitigation measures and thus more effectively respond to the pandemic.<sup>3</sup> However, these conclusions by journalists and public intellectuals are typically based not on research, but on their own observations of one or a few countries, drawn from first-hand experiences or media reports.

Turning to research on the topic, academic studies of Covid-19 death rates have found a positive association between democracy and deaths, meaning that deaths are higher the more democratic the country.<sup>4</sup> However, one important weakness of these studies is that they use death data from early in the pandemic when the virus had not yet spread to all countries. Their findings therefore likely reflect to a large extent the geographic evolution of the pandemic and provide less insight into the impact of democratic components on Covid-19 outcomes.<sup>5</sup>

In this paper, we offer a more rigorous analysis by examining the experiences of all countries in the world with a population of at least one million, using death data from later in the pandemic, and also examining vaccination rates. Because different components of democracy can potentially have divergent effects on pandemic outcomes, we focus on the impact of individual components—for example, checks on government.

We found that democracies gain advantages in Covid-19 outcomes when particular components of democracy are strong. Among democracies, greater levels of fundamental rights and impartial administration coincide with lower Covid-19 death rates, and a more competitive process for becoming the leader of a country is associated with a higher vaccination rate. Within democracies, these components make a difference in Covid-19 outcomes. Moreover, a democratic regime is not a disadvantage as some journalists and public intellectuals suggested and as some early studies implied. Rather than regime type, high levels of interpersonal trust and small land area appear to help countries prevent Covid-19 deaths. It is, however, important to note that much of the variation in Covid-19 deaths across countries can be explained by how transparent countries are with data. Death data is, after all, made up of reported deaths, not actual deaths, and some countries report Covid-19 deaths more accurately than others. With regard to vaccination rates, rather than regime type, one key factor that has a significant positive impact on vaccination rates is country wealth, as well as public health capacity, government control of territory and public belief in the safety of vaccines.

This paper proceeds by examining what scholarship tells us about democracy and epidemics and specifically the Covid-19 pandemic. Then it describes our approach to studying the topic. Next, the paper examines global patterns in Covid-19 deaths, Covid-19 vaccination rates and regime types, so that we can better understand the outcomes we seek to explain and democracy's potential influence. We then present the results of our analysis. The conclusion considers the implications of our findings.

## Chapter 1

# Existing work

Among studies measuring the impact of different levels of democracy on Covid-19 outcomes, the most commonly studied outcomes are government mitigation policies.<sup>6</sup> However, as it is difficult to know which mitigation policies are the most effective since the pandemic is not yet over, this is not the preferred outcome to investigate. Fewer studies have examined the impact of democracy on Covid-19 deaths,<sup>7</sup> and none, to our knowledge, have yet examined vaccination rates. Many that have investigated deaths found a positive association between democracy and Covid-19 deaths. These findings likely reflect the geographic evolution of the pandemic and varied reporting of deaths, rather than an actual negative impact of democracy on Covid-19 deaths.<sup>8</sup> Only one study has examined the impact of specific democratic institutions and practices on Covid-19 deaths, albeit only in Europe.<sup>9</sup> Two other studies have investigated the impact of one or two specific democratic components.<sup>10</sup> The lack of attention to aspects of democracy is due, in part, to limited global data on democratic components. International IDEA's Global State of Democracy (GSoD) Indices help to overcome this problem.

The broader literature on epidemics provides little insight. The impact of regime type on epidemic outcomes is little studied compared with its effect on other public health outcomes.<sup>11</sup> Most of the work on epidemics has produced mixed findings about HIV/AIDS, due, in part, to different outcome measures.<sup>12</sup>

We turn to scholarship on democracy to explore in greater depth the possible impact of democracy and its components on Covid-19 outcomes.<sup>13</sup> Overall, this literature implies that democracies, relative to other regime types, should have positive impacts on Covid-19 death and vaccination rates, but specific democratic institutions and practices could have mixed effects. Democracy is 'a political system, one of the characteristics of which is the quality of being completely or almost completely responsive to all its citizens'.<sup>14</sup> Responsiveness includes promoting the health of the population by, for example, mitigating epidemics and thus preventing deaths. Public health institutions and services are a public good, and democracies tend to provide more public goods than non-democracies.<sup>15</sup> Politicians in democracies need to appeal to a large group—voters—to win and maintain office, so it is therefore advantageous for them to provide public goods. By contrast, politicians in non-democracies need the support of a much smaller group—the military, oligarchs or ethnic elites, for example—so it is advantageous for them to provide private goods.<sup>16</sup>

In examining the literature on democratic components, we focus on those ideas and works that might help explain our findings, which, in summary, are: (a) among democracies, a more competitive process for becoming the leader of a country is associated with higher vaccination rates; and (b) greater levels of impartial administration and fundamental rights coincide with lower Covid-19 death rates.

The more competitive the process for becoming the leader of a country, the more pressure politicians are likely to feel to appeal to many voters and thus provide public goods, as the discussion above suggests. This may account for our finding that more competitive leadership processes are associated with higher vaccination rates.

An impartial administration encourages the implementation of mitigation measures by government authorities throughout the population. Officials focus on combating the pandemic rather than lining their own pockets or those of their friends and families. If government officials perform their duties impartially, this helps to ensure that mitigation policies assist all people and therefore would be more effective in combating epidemics. By contrast, in countries without this guarantee, certain disadvantaged groups may be excluded from government efforts.

The literature suggests a mixed impact for fundamental rights. For example, freedom of association and assembly and freedom of movement can facilitate or hinder efforts to mitigate the pandemic. Freedom of association and assembly allows civic groups to mobilize to mitigate the pandemic. These groups also help people to convey essential information about the pandemic to government officials, allowing them to better combat it. Freedom of movement is essential to the mobilization and activism of civic groups. These freedoms also help civic groups serve as a check on government.<sup>17</sup> This accountability mechanism can force the government into action or into more effective action to combat epidemics.<sup>18</sup> By contrast, where these freedoms are absent or weak, civic groups cannot effectively assist with mitigation, convey information to the government, and help check government actions.

Freedom of association and assembly can, however, be used to mobilize people against mitigation measures, something that is considerably more difficult when this freedom is absent or weak. Freedom of association and assembly and freedom of movement can hinder a government's ability to implement specific mitigation strategies, including restrictions on gathering, reduction or suspension of public facilities and transportation, limits on people's travel, and shelter-in-place orders. Where citizens have these fundamental rights, citizens can also invoke individual liberty generally to challenge government efforts to conduct infection surveillance, mandate personal infection control measures, and require vaccination. This environment might also make people less fearful of the government and thus less likely to comply. By contrast, where fundamental freedoms are absent or weak, governments have fewer limits on implementing and enforcing mitigation measures.

With early findings about democracy and Covid-19 and the theoretical literature about democracy and its components and public health in mind, we now turn to laying out our approach.

## Chapter 2

# Our approach

We examined the possible impact of a wide variety of democratic components on countries' Covid-19 death and vaccination rates. This section examines the data we use for these two outcomes, for democracy and its components, and for other potential influences on these Covid-19 outcomes. It also discusses the statistical techniques we use.

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## 2.1 DEATH AND VACCINATION DATA

Preventing deaths and vaccinating populations have been central objectives of government Covid-19 mitigation efforts. Covid-19 deaths and vaccination rates are therefore logical pandemic outcomes to examine to better understand democracy's impact. In particular, deaths are a useful measure for early stages of the pandemic and vaccinations for later on in the pandemic.

For the period prior to the administration of vaccines, deaths are the preferable outcome measure. Infection with Covid-19 leads to a range of possible outcomes, from no symptoms (asymptomatic) through mild symptoms and severe symptoms, to respiratory distress and death. Of these outcomes, death is most likely to be detected and recorded by existing infrastructure owing to governmental management of vital statistics. Furthermore, early national responses to Covid-19 were focused on disease mitigation in order to decrease the burden on health infrastructure and decrease deaths.<sup>19</sup> Minimizing deaths was the original motivation for Covid-19 mitigation responses, predating the development of Covid-19-specific diagnostic tests. Covid-19 diagnostic capacity has been, and remains, insufficient for unbiased population sampling in most countries, whereas deaths attributable to Covid-19 can be quantified using clinical indicators. The data for confirmed and probable Covid-19 deaths is easily available and can be standardized to population count. In sum, the benefits of using death data for a pandemic include the availability of official records, governments' motivations to collect this data, and the convenience of inter-country comparisons of these global metrics of disease.

Nonetheless, there are limitations to death data. These include different reporting methods, reporting quality, outcome definitions, delays in reporting, and biased or false data. Covid-19 deaths have typically been based on clinical and epidemiological evidence. This may shift to diagnostic assays, as testing becomes increasingly available and as stored samples are processed. A Covid-19 death is any death that is reported by a government as being attributed to Covid-19. This includes aggregated data of death certificates listing Covid-19 disease or SARS-CoV-2 (the virus that causes the disease) as a cause of death or a significant condition contributing to death.

To ameliorate the possible effect of biased or false data, we included in our analyses a measure of data transparency. We tried two different proxies: *Transparency* and *Data sharing*. As a general measure of data transparency, we included an index measure of country reporting of economic data to the World Bank's World Development Indicators (WDI)—*Transparency*.<sup>20</sup> For health data in particular, we used an indicator from the 2019 Global Health Security Index that measures whether a country has a public plan for sharing

data and specimens with other countries or international organizations—*Data sharing*. Details about these and all the variables described below appear in Annex A.

Alternative measures of Covid-19 outcomes, such as case counts or the reproduction number, also face problems. These include non-population-based sampling, inadequate availability of diagnostics tests, manufacturing failures in early diagnostic testing, varied testing protocols, varied diagnostic methods, significant testing error rates, and high numbers of asymptomatic individuals who may not seek testing. Relying on excess deaths in countries—the difference between the observed numbers of deaths in specific time periods and expected numbers of deaths in the same time periods—is also problematic. Current data is limited to 79 countries. Moreover, normal death reporting is poor in many less affluent countries, whereas the global health community has encouraged better reporting for Covid-19 deaths.

To measure Covid-19 deaths, we developed an indicator, *Deaths*, that covers from 1 June 2020 to 31 December 2020 and is log transformed. We pulled the data from the Johns Hopkins University Covid-19 Data Repository. We started with data in June 2020 because it took the virus months to reach all or nearly all countries in the world. It makes more sense to examine the number of deaths per country once the virus is present in all or nearly all countries. We know from our prior research that results with death data from earlier in the pandemic mainly reflected how the virus spread geographically rather than factors within countries that prevented or contributed to deaths.<sup>21</sup> Many countries have relatively low numbers of deaths and a few countries have high numbers. Log transforming the data spreads out the clump so that smaller differences among these countries are more discernible. We included population size as a control because we would expect more deaths the larger the country's population. We did not include population size as part of the dependent variable because with the log transformation of the dependent variable the results would be more complicated to present.

The advent of effective Covid-19 vaccines represents a new phase in the pandemic and thus demands an additional measure by which to assess the impact of democracy components. Because of the high efficacy of the Covid-19 vaccines, variation in death rates will increasingly be driven by variation in vaccination rates. Understanding variation in vaccination rates becomes the key task from a public health perspective. We measured *Vaccinations* as a log transformation of total vaccine doses administered in a country per hundred people. Conceptually, vaccine doses administered reflects not only shots given, but also countries' access to the vaccine. Many countries have low vaccination numbers and few countries have high numbers; as with *Deaths*, log transforming the data makes smaller differences among these countries more discernible. The data is from Our World in Data, which compiles information from national government offices, primarily national health ministries. As an alternative measure, we used the log transformation of the percentage of a country's population that has received at least one vaccine dose. It is not the preferred measure because the data includes 16 fewer countries. The data is log transformed for the reason given above for *Total vaccinations*. The data is also from Our World in Data. Although reported Covid-19 vaccination rates have generally not been subject to the same concerns about biased or false data as reported Covid-19 deaths, we also tested our *Transparency* and *Data sharing* indicators in the vaccination rate analyses.

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## 2.2 DEMOCRACY DATA

The democracy components we examined are those identified by the GSoD Indices. It is important to note that these democracy components measure the level of these characteristics from their absence to their full realization, so collectively they capture regime types ranging from authoritarian to hybrid to democratic. In our analysis, we began with the five highest-level measures, known as the attributes: Representative Government, Fundamental Rights, Checks on Government, Impartial Administration, and Participatory Engagement—specifically, under the last one, Civil Society Participation, Electoral Participation and Local Democracy. We drilled down to examine the lower-level measures that compose these attributes, particularly when our results indicated that the main attribute was influential. All the GSoD Indices measures are scaled from 0 to 1, with 1 being the highest. They cover 165 countries—excluding countries with fewer than one million people. The total number of countries drops when analyses include other indicators with less country coverage. The GSoD Indices data is from 2020, so as to make use of International IDEA's latest index. However, we also checked results using the 2019 data because, to establish a causal relationship, the hypothesized causes should be measured before the effect. In this case, the effect is Covid-19 deaths, the bulk of which were in 2020, and vaccinations, which began in late 2020. Annex A provides definitions of the GSoD Indices measures that we discuss in this paper. More were used in the analysis.

In addition to democracy components, we also examined the impact of democracy's performance and the length of time a country has been democratic. Conceivably, democracies with overall higher performance and countries with more democratic experience may achieve better Covid-19 outcomes. The indicator *Democratic performance* uses the GSoD Indices data to categorize democracies into high, middle and low performers. For analyses with this indicator, we included only those countries that are democracies. To measure *Democratic experience*, we count the number of years that a country's regime type was democratic in the GSoD Indices, which cover the period 1975 to 2020.

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## 2.3 OTHER FACTORS DATA

Components of democracy are not the only possible influences on pandemic outcomes. Therefore, we also examined: (a) governments' capacities to respond to the pandemic; (b) the susceptibility of the population to the virus; (c) government mitigation measures; (d) populations' receptivity to mitigation measures; and (e) the spread of the virus. Some of these other factors within and across categories are highly correlated with each other, so we examined their impact one at a time. Similarly, we tested whether these factors are highly correlated with democracy and we were attentive to that in our interpretation of results. For each measure described below, the indicator name appears in parentheses at the end and further details are in Annex A. To some extent, different factors are likely to affect Covid-19 deaths and Covid-19 vaccination rates, so we consider each in turn below.

### **Governments' capacities to respond to the pandemic**

We examined 19 characteristics that may affect governments' abilities to respond to the pandemic. There is some evidence that a country's experience with other recent coronavirus epidemics—SARS and MERS—is helpful.<sup>22</sup> We measured this by assigning a 1 to countries that have experienced at least 50 cases of either SARS or MERS and a 0 to other countries (*SARS/MERS experience*). State capacity has been shown to be important

to other epidemics.<sup>23</sup> We used a variety of state capacity measures but tried only one at a time. First, we measured health system capacity to capture the most relevant aspect of state capacity. We calculated an index score using country scores for four categories from the 2019 Global Health Security Index (GHSI): prevention; detection and reporting; rapid response; and health system sufficiency (*Health system capacity*). (The calculation is described in Annex A.) An alternative measure of health system capacity is *Public health expenditure*, which is reported by the World Health Organization (WHO) as a percentage of GDP. Country wealth is a more general measure of state capacity, so we included the logarithm of country GDP per capita for 2019 from the World Bank's WDI data set (*Country wealth*). GDP per capita is also commonly used to measure a level of modernity, including socio-economic features of modernity and modern values. We kept this in mind when our results indicated that *Country wealth* was influential. To effectively implement mitigation policies, a government needs to have control over its territory. For this, we used the Varieties of Democracy (V-Dem)<sup>24</sup> indicator called state authority over territory, which provides the percentage of the territory over which the state has effective control (*Territorial control*). Even in countries where the government controls all the territory, it might be more difficult to implement pandemic mitigation policies over a larger territory. For that reason, we measured land area in square kilometres, using data from V-Dem (*Country size*). Because high levels of government decentralization could impede the implementation of public health responses and lead to increased deaths, we tested three different measures of decentralization, one at a time: an index measure of regional government authority (*Regional authority*);<sup>25</sup> an index measure of local government authority (*Local authority*);<sup>26</sup> and an index measure of federalism (*Federalism*).<sup>27</sup> A high percentage of women in government may also influence policy outcomes, so we included as a control the percentage of women in national government ministerial positions (*Women leaders*).<sup>28</sup>

We also considered three measures of state involvement in the economy, as this may affect government capacity. Greater ownership of economic resources, such as natural resources, could reduce a government's responsiveness to public needs—what is known as the natural resource curse.<sup>29</sup> To test this, we used a measure of oil rents as a share of GDP from WDI (*Natural resource dependency*). Conceivably, greater government involvement in the economy could facilitate the marshalling of resources to combat the pandemic. We tested government enterprises and investment as a percentage of total investment, using data from the Fraser Institute's Economic Freedom in the World data set (*Government investment*),<sup>30</sup> as well as a V-Dem measure of direct state control or ownership of the economy (*State ownership*).

A final set of capacity-related controls considered levels of political division, which could slow or limit national responses to a pandemic and lead to more deaths.<sup>31</sup> We used data that measures whether a country has a proportional electoral system, which could lead to coalition-building and less division (*PR*).<sup>32</sup> We used a measure of whether a country is governed by an electoral populist leader, whose 'us vs. them' campaign rhetoric could exacerbate divisions (*Populism*).<sup>33</sup> Similarly, data from V-Dem measures the extent to which society in a country is divided into antagonistic political camps (*Political camps*). In addition, we used an index of ethnic fractionalization, which measures the probability that two randomly selected people in a country belong to different groups (*Ethnic fractionalization*).<sup>34</sup> As a measure of economic division, we also tested country-level estimates of the Gini index, a common measure of income inequality, from WDI (*Gini*).

### Susceptibility of the population to the virus

We tested 10 factors that have been identified as potentially making a population more susceptible to the virus. Initial evidence indicates that Covid-19 is more likely to



spread where the population is dense.<sup>35</sup> We used WDI's measure of population people per square kilometre of land (*Population density*) and, as an alternative, WDI's measure of the percentage of the total country population that is urban (*Urbanization*). We also considered the percentage of a country's land area that has a tropical climate (*Tropical*), as some studies have suggested that certain climates enable the spread of the virus, making populations in those climates more susceptible. Evidence shows that the Covid-19 death rate is higher among older people,<sup>36</sup> so it is important to control for the age of a country's population. We used the percentage of total population above 65 years of age within countries from WDI (*Population age*). We also tested several general measures of public health: average life expectancy at birth (*Life expectancy*);<sup>37</sup> prevalence of obesity among adults (*Obesity*);<sup>38</sup> chronic disease burden, measured in years of lost healthy life per 100,000 population (*Chronic disease burden*);<sup>39</sup> and respiratory disease prevalence (*Respiratory disease prevalence*).<sup>40</sup> Because air pollution has also been correlated with Covid-19 infections and mortality,<sup>41</sup> we also include a measure of average annual exposure to PM 2.5 air pollution from WDI (*Air pollution*). Lastly, we include a measure from WDI of total internally displaced people in a country due to conflict or violence, since public health mitigation measures may have more difficulty helping displaced people (*Displaced people*).

### Government mitigation measures

Government efforts to reduce the spread of the virus and treat the ill could also prevent deaths. Governments that responded more quickly may have been more effective in preventing deaths. To test this, we developed the indicator *Response speed*, which measures how many days had elapsed from the first confirmed case of Covid-19 in a country before the government implemented containment, closure or health system measures.<sup>42</sup> To identify the date of the first confirmed case, we used Covid-19 statistics from Johns Hopkins University (*Response speed*). Potentially, more stringent government mitigation measures may have prevented deaths. To assess the stringency of government measures, we used the Oxford Containment and Health Index, for which higher values indicate more stringent policies. For each country, we used its index value at four weeks after its first confirmed case (*Four-week stringency*) and on the day a country had at least 1,000 cumulative confirmed Covid-19 cases (*1,000 case stringency*). At either of these points, it is thought that most mitigation measures should be in place, and in many countries they were in place. It would not make sense to use each country's index value from the same calendar day because on any given calendar day countries were at different stages of the pandemic. We opted to investigate the stringency of all policies rather than evaluate most effective policies. It remains poorly documented as to which policies are most effective because the pandemic is not over. Countries that are success stories today might not be in the future. Also, certain policies might be a good fit for some countries but not others—for example, an island country versus a landlocked country or a country that is a prime tourist destination versus one that is not.

### Populations' receptivity to mitigation measures

Government efforts at mitigating the pandemic require populations to be willing to adapt their behaviours. We examined three characteristics of populations that might affect willingness to comply with pandemic restrictions. We included Hofstede and Minkov's measure of societal leaning towards individualist or collectivist values, with higher values indicating greater individualism (*Individualism*), because more individualist populations might be less compliant.<sup>43</sup> Trust in government, as well as interpersonal trust overall, could also affect government officials' willingness to implement stringent measures and the public's willingness to comply with them. We measured trust in government using survey data (*Trust in government*),<sup>44</sup> and we also measured interpersonal trust with survey data (*Interpersonal trust*).<sup>45</sup>

## Spread of the virus

By examining death data only starting from June 2020, we think we have addressed the fact that the virus began to spread in different countries at different times. To doublecheck the effectiveness of this approach, we also tested nine measures related to the spread of the virus. To take into account the spread of the virus over time, we used the variable *Days from China's first case to country's*, which indicates how many days have passed between China's first reported confirmed case and a particular country's, based on data primarily from Johns Hopkins University. Related to temporal spread, the geographic spread of the virus can also potentially affect the speed with which officials adopt policies, the stringency of those policies, and death rates. We took geography into account by measuring the distance of each country's capital from Beijing (*Distance from Beijing*) and by considering seven measures of globalization. Globalization is potentially important because the virus might spread sooner and more broadly in countries with more connections to other countries. The globalization measures are: merchandise imports and exports as a percentage of GDP (*Merchandise trade*); service imports and exports as a percentage of GDP (*Services trade*); inbound international tourists (*Tourist arrivals*); outbound international tourists (*Tourist departures*); foreign students as a percentage of a country's enrolment (*Inbound students*); those studying in foreign countries as a percentage of the home country's enrolment (*Outbound students*); and foreign-born people as a percentage of the population (*International migrants*). This data comes from WDI and the World Bank Data Bank. By contrast, countries that exist on one or more islands (*Island*) may see a slower spread of the virus because they are separated from nearby land masses.

Finally, we considered regions of the world. Potentially, countries within one particular region could learn from each other during a pandemic. Regions also have specific cultural and historical characteristics that might affect pandemic outcomes, so we also considered regions in our statistical analyses. We did so by using region dummies in our model, following the GSod Indices regional designations—Africa, Asia and the Pacific, Europe, Latin America and the Caribbean, Middle East and Iran, and North America.

While all the above factors potentially help explain variation in Covid-19 deaths, not all are relevant to vaccination rates. In our analysis of vaccination rates, from the above list, we included the indicators of governments' capacities to respond to the pandemic, populations' receptivity to mitigation measures, and regions of the world. We also tested for additional influences. Regarding populations' receptivity, doubts about vaccine safety (*Vaccine doubt*), negative social media about vaccinations (*Negative vaccine posts*), and low levels of education (*Adult literacy* and *Adult education*) have all been shown to result in lower vaccination rates in populations. Because mothers typically access healthcare for their children, low levels of female education (*Female literacy* and *Female education*) have been shown to affect at least rates of childhood vaccination. We measured *Vaccine doubt* using the share of survey respondents who negatively responded to the statement 'Vaccines are safe' in the Wellcome Global Monitor survey.<sup>46</sup> *Negative vaccine posts* are measured by calculating the number of negatively toned tweets about vaccines per million population in a country, using data collected from Twitter.<sup>47</sup> *Adult literacy* and *Female literacy*, respectively, measure country literacy rates for all adults and female adults, using the most recent data from WDI (2018). Similarly, *Adult education* and *Female education* measure average years of schooling for all adults and female adults using 2019 data from the United Nations Development Programme Human Development Reports. Finally, people may be less likely to choose to be vaccinated when they perceive the virus as only a small risk. As a proxy for this, we use our indicator of reported cumulative total deaths in a country, *Deaths*.

Because our interest is in causal explanations for the Covid-19 outcomes, we used data from 2019 for our potential explanatory factors—a year behind the year data for Covid-19 deaths and Covid-19 vaccinations begin. The exception to this is the democracy aspects for which we use 2020 GSoD Indices data, as requested by International IDEA staff, as well as 2019 GSoD Indices data to confirm findings.

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## 2.4 STATISTICAL TECHNIQUES

We use all of these data points to conduct cross-sectional analysis, meaning we compare countries at one point in time.<sup>48</sup> We use linear regression analysis and explore the possibility of both linear and curvilinear relationships between democratic components and Covid-19 outcomes. Regime type has been found to have an inverted U- or J-shaped relationship with multiple outcomes, including corruption, state capacity and the infant mortality rate, where the most democratic and most autocratic regimes have similar positive outcomes to hybrid regimes.<sup>49</sup> So, it is prudent to look for curvilinear relationships too.

We now turn to examining general patterns in Covid-19 deaths, Covid-19 vaccinations and democracy.

## Chapter 3

## Patterns

It is important to examine general patterns in Covid-19 deaths and vaccinations to confirm that they took place in many countries, and therefore occurred under a variety of regime types. The numbers of reported Covid-19 deaths from 1 June 2020 to the end of 2020 vary widely across countries. Table 1, which lists the 10 countries with the highest and lowest total number of reported Covid-19 deaths from June 2020 to the end of the year, illustrates these substantial differences. While some countries have reportedly experienced almost no deaths from the pandemic, others have suffered tens of thousands of deaths. Furthermore, there is significant variation just among the 10 countries with the most deaths. The four countries with the highest reported death tolls—the United States, Brazil, India and Mexico—each experienced at least twice as many Covid-19 deaths reportedly during this period as Russia, the fifth highest country. Similarly stark differences in deaths are visible when accounting for differences in population size. As Table 2 shows, 8 of the 10 countries with the most deaths per million population during this period saw approximately 1 in every 1,000 people die from Covid-19. These countries are concentrated in Eastern Europe. While these countries have reportedly experienced many more deaths than others, Figure 1 demonstrates that the countries most affected by the pandemic are spread around the world. Overall, African countries have had relatively few reported deaths from the pandemic, while many countries in the Americas, Asia and Europe have had comparatively many reported deaths.

TABLE 1

**Covid-19 deaths: 10 countries with highest and lowest number of deaths**

Highest		Lowest	
USA	244,404	Burundi	1
Brazil	165,635	Mongolia	1
India	143,330	Fiji	2
Mexico	115,877	Eritrea	3
Russia	51,578	New Zealand	3
Iran	47,246	Thailand	6
Argentina	42,706	Singapore	6
Colombia	42,274	Papua New Guinea	9
Italy	40,744	Iceland	19
UK	36,095	Sierra Leone	30

Notes: Data is for 1 June to 31 December 2020. Countries reporting 0 deaths during this period are excluded.

Source: Johns Hopkins University, Center for Systems Science and Engineering (CSSE), Covid-19 Data Repository (2020), <<https://github.com/CSSEGISandData/Covid-19>>, accessed 4 June 2021.

TABLE 2

**Covid-19 deaths per million population**

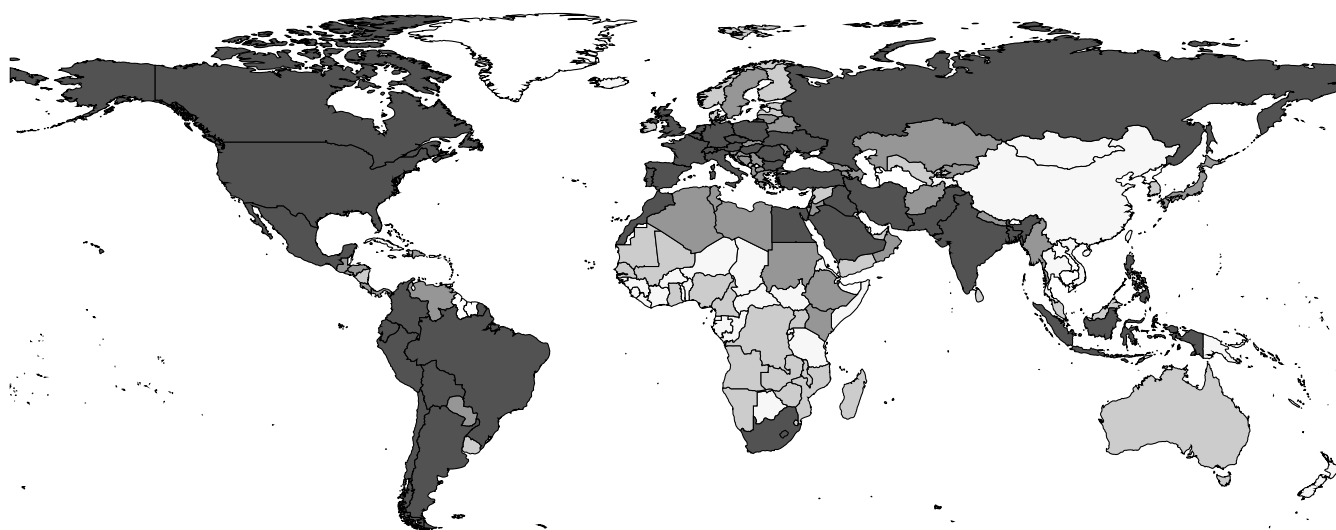
Highest		Lowest	
Slovenia	1,240	Thailand	0.1
Bosnia and Herzegovina	1,180.6	Burundi	0.1
North Macedonia	1,137.5	Mongolia	0.3
Montenegro	1,081.8	Viet Nam	0.4
Bulgaria	1,066	New Zealand	0.7
Czechia	1,055.3	Papua New Guinea	1.0
Peru	1,020.4	Singapore	1.1
Moldova	1,012.2	Burkina Faso	1.6
Argentina	950.3	Niger	1.7
Croatia	938.4	Fiji	2.2

Notes: Data is for 1 June to 31 December 2020. Countries reporting 0 deaths during this period are excluded. Values are rounded.

Sources: Johns Hopkins University, Center for Systems Science and Engineering (CSSE), Covid-19 Data Repository (2020), <<https://github.com/CSSEGISandData/Covid-19>>, accessed 4 June 2021. World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>, accessed 4 June 2021.

FIGURE 1

**Map of Covid-19 deaths, 1 June–31 December 2020**



Note: Darker shades indicate higher total of Covid-19 deaths.

Sources: Johns Hopkins University, Center for Systems Science and Engineering (CSSE), Covid-19 Data Repository (2020), <<https://github.com/CSSEGISandData/Covid-19>>, accessed 4 June 2021. Map data from: Natural Earth, 'Admin 0 – Countries' (2020), <<https://www.naturalearthdata.com/downloads/50m-cultural-vectors/50m-admin-0-countries-2/>>, accessed 4 June 2021.

The administration of Covid-19 vaccines follows similar patterns. As Table 3 shows, some countries have already administered at least one shot per person, while other countries have yet to reach the marker of having given a vaccine dose to one person in a hundred. As Figure 2 shows, the countries with the fewest vaccine doses are concentrated in Africa. Asia, Europe and North America account for the majority of the countries with the most vaccines administered relative to population.

TABLE 3

**Total vaccine doses administered per hundred people**

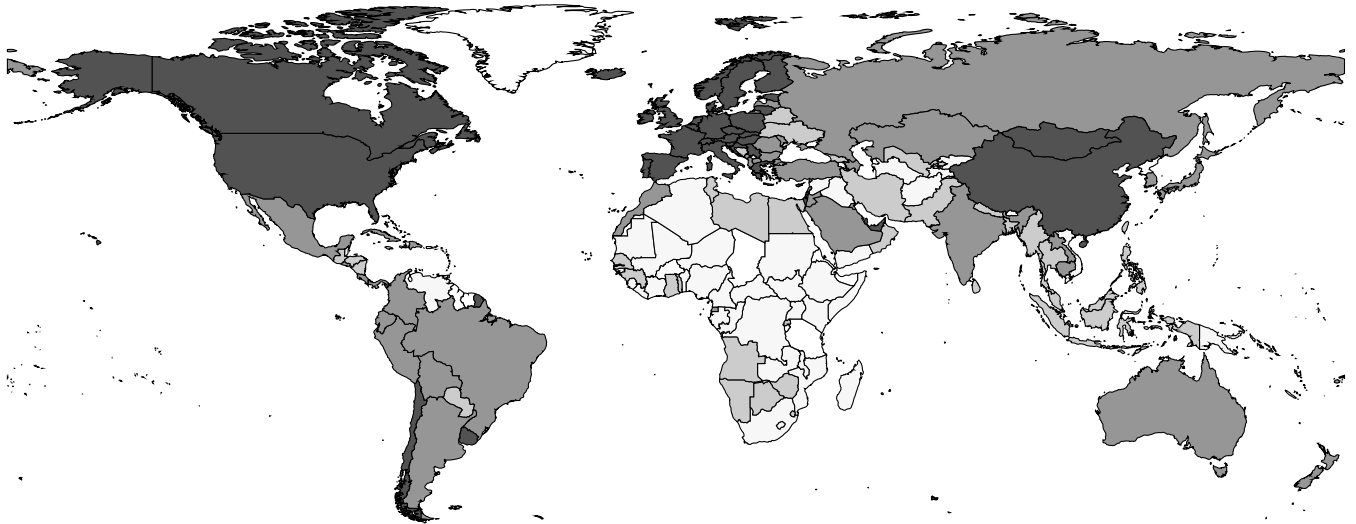
Highest		Lowest	
United Arab Emirates	133	Democratic Republic of the Congo	0.03
Israel	122.37	South Sudan	0.09
Bahrain	105.14	Benin	0.11
Mongolia	100.83	Madagascar	0.13
Chile	99.8	Papua New Guinea	0.13
UK	97.49	Syria	0.14
Hungary	92.75	Algeria	0.17
Qatar	91.02	Cameroon	0.28
USA	89.02	Guinea-Bissau	0.30
Uruguay	85.03	Yemen	0.35

Note: Data is as of 3 June 2021.

Source: Mathieu, E. et al., 'A global database of Covid-19 vaccinations', *Nature Human Behaviour*, 5 (2021), pp. 947–53, <<https://doi.org/10.1038/s41562-021-01122-8>>.

FIGURE 2

### Map of vaccinations



Note: Darker shades indicate more vaccines administered per hundred people.

Sources: Johns Hopkins University, Center for Systems Science and Engineering (CSSE), Covid-19 Data Repository (2020), <<https://github.com/CSSEGISandData/Covid-19>>, accessed 4 June 2021. Map data from: Natural Earth, 'Admin 0 – Countries' (2020), <<https://www.naturalearthdata.com/downloads/50m-cultural-vectors/50m-admin-0-countries-2/>>, accessed 4 June 2021.

As the Covid-19 pandemic has spread across the world, it has affected countries with varied political regimes. Table 4 demonstrates this variation using the regime classifications for the 165 countries coded in the GSoD Indices 2020. A majority of countries are classified as democracies. 41% of countries have non-democratic political regimes, as is evident from combining the authoritarian and hybrid categories. Figure 3, which maps country regime types, shows that democratic countries exist throughout the world and are especially concentrated in the Americas and Europe. Both across and within these regime categories, countries differ in their levels of democracy and democratic components. As such, it is worthwhile to examine whether a country's level of democracy—as measured by its individual components, democratic performance and democratic experience—has a significant effect on pandemic outcomes.

TABLE 4

**Countries by regime type**

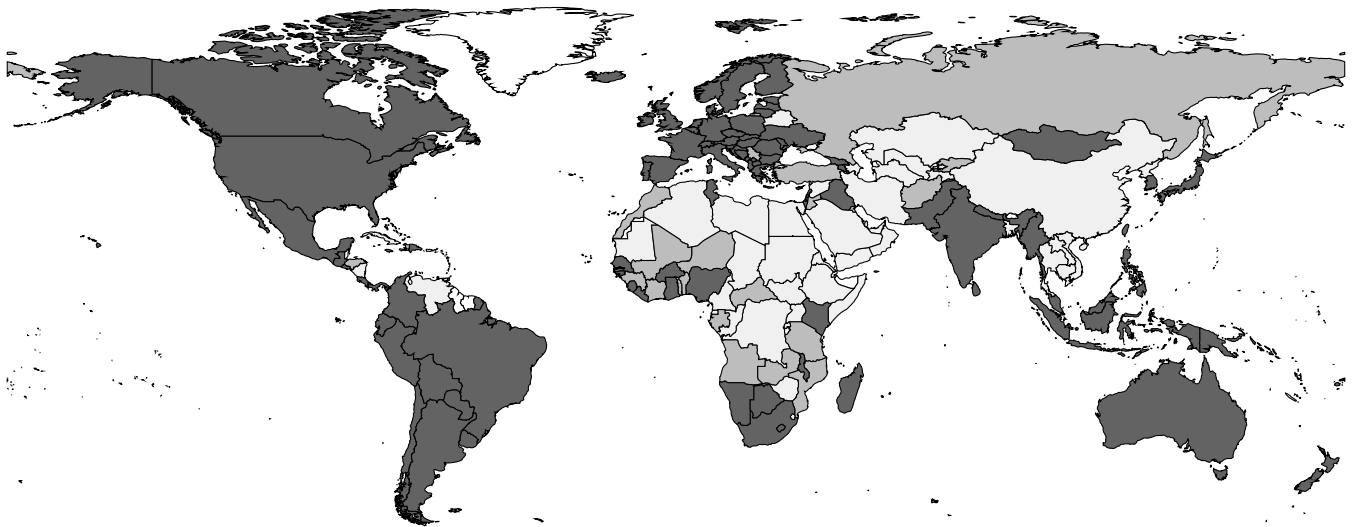
Regime type	Percentage of countries
Authoritarian regime	27%
Hybrid regime	14%
Democracy	59%

Note: Values are rounded. Calculations from GSoD Indices data for a total of 165 countries.

Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>, accessed 4 June 2021.

FIGURE 3

**Countries by regime type, 2020**



Note: The lightest shade signifies an authoritarian regime, the medium shade a hybrid regime, and the darkest shade a democracy. Unshaded areas are missing data.

Sources: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>, accessed 4 June 2021. Map data from: Natural Earth, 'Admin 0 – Countries' (2020), <<https://www.naturalearthdata.com/downloads/50m-cultural-vectors/50m-admin-0-countries-2/>>, accessed 4 June 2021.



## Chapter 4

# Results

Our analysis suggests that democracies gain advantages in Covid-19 outcomes when particular components of democracy are strong. Considering only democracies, as defined by the GSoD Indices, higher levels of certain democracy components are associated with fewer reported Covid-19 deaths and higher vaccination rates. Namely, among democracies, greater levels of fundamental rights and impartial administration coincide with lower Covid-19 death rates, while the more competitive the process for becoming the leader of a country the higher the vaccination rate. High levels of democratic components do not, however, offer an advantage when democracies are compared with all regime types. This may be because inaccurate death data from non-democratic countries does not allow for a clean test of their effect. This is supported by the fact that much of the variation in Covid-19 deaths across countries can be explained by how transparent countries are with data. Death data is, after all, reported deaths, not actual deaths, and some countries report Covid-19 deaths more accurately than others. High levels of interpersonal trust and a small land area do appear to help countries prevent Covid-19 deaths. Higher levels of democratic components also do not boost vaccination rates, according to analyses of all regime types. Instead, country wealth has a significant positive impact on vaccination rates, as do public health capacity, government control of territory, and public belief in the safety of vaccines. The importance of country wealth resonates with media reports and there is not yet evidence of inaccurate vaccination data, so this result seems meaningful.

We began with tests examining all regime types—including all the 165 countries available in the GSoD Indices data set. Once controls are included, the democracy components do not exhibit relationships with *Deaths*. They do not have linear positive or negative relationships, meaning that an increase in democracy coincides with neither higher nor lower numbers of reported deaths, nor do they have curvilinear relationships, where, for example, the lowest and highest levels of democracy components are associated with lower deaths while mid-range levels are associated with higher deaths. We illustrate this in Table 5 (Model 1), using *Checks on Government* as an example. *Checks on Government* exhibits a curvilinear relationship with *Deaths* when only *Population* and regions (not pictured) are included. The positive value for *Checks on Government* and negative value for the squared term indicates that deaths increase until *Checks on Government* reaches a particular threshold, at which point deaths decrease. Yet, when *Transparency* is added to the regression (Model 2), the relationship disappears, as indicated by both the terms losing statistical significance. Because *Deaths* is a reported, rather than an actual, number, this makes sense. It is not that countries with weaker democracy components are necessarily better at preventing deaths, they simply tend to under-report them. Once we account for this behaviour, the curvilinear relationship disappears. As an aside, it is important to note that the number of countries drops by 35 when *Transparency* is added to the regression, but this does not explain the disappearance of the curvilinear relationship. Countries in a particular range on the democracy component measure do not drop out of the sample. This can be seen most easily by comparing the percentages of different regime types in the large sample of countries versus the sample without the 35 countries. The distribution of regime types is not significantly different between the two (Table 6).

TABLE 5

## Explaining Covid-19 deaths across all regime types

	(1)	(2)	(3)	(4)
Variables	Deaths	Deaths	Deaths	Deaths
Checks on Government	10.734**	6.866	0.400	
	[4.240]	[5.329]	[1.184]	
Checks on Government (squared)	-9.090**	-5.835		
	[3.867]	[4.689]		
Population	0.008***	0.007***	0.008***	0.005***
	[0.001]	[0.001]	[0.001]	[0.001]
Transparency		0.589***	0.620***	0.986***
		[0.136]	[0.134]	[0.178]
Interpersonal trust				-0.044***
				[0.014]
Country size				0.000***
				[0.000]
Observations	152	117	117	82
R-squared	0.448	0.561	0.554	0.702

Notes: Africa was the reference category for the region dummies (not pictured). Standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Variable definitions and sources are detailed in Annex A.

TABLE 6

**Regime type distribution with or without *Transparency***

Regime type	Percentages of countries (number)	
	With <i>Transparency</i>	Without <i>Transparency</i>
Authoritarian regime	22 (26)	25 (38)
Hybrid regime	17 (20)	15 (22)
Democracy	61 (71)	61 (92)
TOTAL	100 (117)	100 (152)

Note: Percentages are rounded.

Sources: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>, accessed 4 June 2021; Hollyer, J. R., Rosendorff, B. P. and Vreeland, J. R., 'Measuring transparency', *Political Analysis*, 22/4 (2014), pp. 413–34, <<https://doi.org/10.1093/pan/mpu001>>.

Once transparency in data reporting is controlled for, we do not see even a linear relationship between levels of democracy components and deaths. We could expect, for example, that higher levels of democracy components would help prevent deaths. But this is not the case, as illustrated with *Checks on Government* in Model 3 (Table 5) not being statistically significant. Instead, *Interpersonal trust* and *Country size*, along with *Transparency*, best explain reported death levels (Model 4). They account for 70 per cent of the variation in deaths among countries, as indicated by the R-squared statistic.

*Interpersonal trust* has a positive relationship with *Deaths*, indicating that a higher level of trust of others in a country is associated with lower reported deaths. Trust of others suggests respect and concern for others, which might facilitate adherence to public health recommendations. After the first months of the virus—a time period we excluded from our data under analysis—public health authorities recommended mitigation measures to reduce the spread of the virus. Rationales for adhering to these recommendations were frequently based on respect and concern for others. For example, certain portions of the population were much less vulnerable to severe disease and death, but they were called on to adapt their behaviour to protect the most vulnerable. Initially, masks were recommended mainly to protect others, not oneself.<sup>50</sup> It may be that countries where people trust each other more also follow public health recommendations more closely and thus help prevent deaths.

*Country size* is also influential. Namely, the greater the land area of a country the higher the number of deaths, as indicated by the positive coefficient, even taking into account the population size. This suggests that pandemics are simply harder to combat when national leaders have more territory to govern. We confirmed that the influence of *Country size* did not result from an outsized effect of a few large countries with high deaths. The countries with the largest land area, in declining order, are Russia, Canada, the USA, China, Brazil, Australia, India, Argentina, Kazakhstan, the Democratic Republic of the Congo, Algeria, Mexico, Saudi Arabia, Indonesia, Sudan and Libya. Removing them one at a time cumulatively from the data set does not eliminate the influence of *Country size*. The other potential influences we examined are either never influential or are not consistently

influential across models. These include the three decentralization indicators and the percentage of women in national government ministerial positions.

Using alternative measures, we again found no effect for democracy and its components with all countries available from the GSoD Indices data set. We drilled down a level, testing GSoD Indices subattributes, but still found that they are not influential once *Transparency*, *Interpersonal trust* and *Country size* are added to the analysis.<sup>51</sup> Replacing the 2020 GSoD Indices data with 2019 data or the V-Dem Liberal Democracy measure also shows no effect. The total years a country has been democratic, its *Democratic experience*, is also not influential. In sum, the levels of democracy and its components do not seem to have an effect on levels of reported Covid-19 deaths in countries of the world.

Democracy and its components also do not affect vaccination rates when countries with a variety of regime types are examined. Once *Country wealth* is included, any relationship between democratic components and *Vaccinations*, a measure of total vaccine doses administered per hundred of a country's population, disappears. As media reports have suggested, wealthy countries have used their more abundant funds to outbid poorer countries in securing vaccine doses. Having secured more vaccine doses, wealthy countries have administered more. Using *Representative Government* as an example, we see that it has a positive relationship with *Vaccinations*, meaning that stronger representative government is associated with a greater number of total vaccine doses administered per hundred of a country's population (Table 7, Model 5). Yet, once countries' GDPs are taken into account, there is no longer a relationship (Model 6). Country wealth explains a lot of variation in vaccination rates—nearly 70 per cent, as the R-squared statistic in Model 7 indicates. Democracy components also do not have an impact when vaccinations are measured using a different statistic—the percentage of a country's population that has received as least one vaccine dose—and *Country wealth* is taken into account (not pictured).

In addition to *Country wealth*, three other factors—*Public health capacity*, *Territorial control* and *Vaccine doubt*—are also influential, although not when all three are combined. As the significant positive coefficient in Model 8 shows, countries with stronger public health systems administered more doses per hundred of their populations. Public health capacity is likely to make it easier to 'get shots in arms' once vaccines are purchased. Higher numbers of medical personnel and facilities, better communications with healthcare workers during public health emergencies, and better healthcare access for the public—all indicators contributing to the *Public health capacity* measure—facilitate vaccination drives. Absence of full territorial control by the government—in cases of civil war or a failed state, for example—hinders vaccination drives by disrupting daily life and by damaging public health capacity. This is evident from the positive relationship between *Territorial control* and *Vaccinations* in Model 9. In the same model, the statistically significant negative coefficient for *Vaccine doubt* suggests that high levels of public doubt about the safety of vaccines also hamper vaccination drives. Models 8 and 9 are each presented because, when *Territorial control* or *Vaccine doubt* are added to Model 8, *Public health capacity* loses statistical significance, suggesting that there may be some overlap between it and *Territorial control* and *Vaccine doubt*. *Public health capacity* and *Territorial control* are weakly correlated at 0.42, although *Public health capacity* and *Vaccine doubt* are not. In short, *Country wealth* explains a lot of variation in vaccination rates, and *Public health capacity*, *Territorial control* and *Vaccine doubt* also seem to be important.

TABLE 7

## Explaining vaccination rates across all regime types

	(5)	(6)	(7)	(8)	(9)
Variables	Vaccinations	Vaccinations	Vaccinations	Vaccinations	Vaccinations
Representative Government	1.943***	0.182			
	[0.551]	[0.508]			
Country wealth		0.737***	0.747***	0.685***	0.639***
		[0.085]	[0.081]	[0.090]	[0.084]
Public health capacity				0.013*	
				[0.008]	
Territorial control					0.021**
					[0.009]
Vaccine doubt					-0.037**
					[0.015]
Observations	157	150	150	149	131
R-squared	0.517	0.688	0.688	0.695	0.721

Notes: Africa was the reference category for the region dummies (not pictured). Standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Variable definitions and sources are detailed in Annex A.

The results for democratic components and *Country wealth*, *Public health capacity*, *Territorial control* and *Vaccine doubt* hold in tests with alternative measures and models. As expected, lower-level measures from the GSoD Indices are not influential once these other factors are taken into account. GSoD Indices data from 2019, rather than 2020, also does not reveal that democracy components are influential. Similarly, an alternative measure, V-Dem's Liberal Democracy Index, is not associated with vaccination rates, and nor is the number of years a country has been democratic, its *Democratic experience*.

In addition to offering confirmation that the levels of democracy and its components do not seem to have an effect on vaccination rates in countries of the world, additional testing underscores the importance of *Country wealth*, *Public health capacity*, *Territorial control* and *Vaccine doubt*. *Country wealth's* impact seems to be due to actual funds, not other factors, such as education, that correlate with GDP. Dividing the countries into low, middle, upper middle and high income categories and re-running the analysis shows that education levels are not consistently influential on vaccination rates. Education only provides a boost

to vaccination rates in low-income countries. This is true for four education indicators—*Adult education*, *Female education*, *Adult literacy* and *Female literacy*. It seems that the benefit of country wealth does not derive from higher education levels but rather greater funds for public health campaigns. The impact of *Country wealth*, *Public health capacity*, *Territorial control* and *Vaccine doubt* on vaccination rates is not driven by the vaccine-producing countries.<sup>52</sup> The effects of these factors remain, even without these countries in the analysis. The other potential influences we examined are either never influential or not consistently influential across models.

While democracy and its components do not seem to offer an advantage when examining countries with a variety of regimes types, greater strength in certain components does seem to result in more positive Covid-19 outcomes for democracies, as defined by the GSoD Indices. For each of the regressions in this analysis, we examined only democracies, meaning countries that scored 0.35 or higher out of 1 for Representative Government in the GSoD Indices data and 4 or higher on the Lexical Index of Electoral Democracy,<sup>53</sup> which ranges from 0 to 6. *Fundamental Rights* and *Impartial Administration* are negatively associated with *Deaths* even with the inclusion of controls, as indicated in Models 10 and 11 (Table 8), respectively. This means that, among democracies, strong rights and more impartial administration coincide with lower numbers of deaths. These results hold when the 2019 values for these democratic components are used too. Among the different fundamental rights democracies provided, *Freedom of Association and Assembly*, *Freedom of Religion*, *Freedom of Movement*, *Personal Integrity and Security* and *Social Group Equality* account for the impact of *Fundamental Rights* on *Deaths*. This is consistent with one prediction from theories of democracy, described above, that fundamental rights can be used to help mitigate pandemics, although there is also the counter prediction. We reached this result by replacing *Fundamental Rights* with each of these individual rights in Model 10. Each demonstrated a statistically significant negative relationship with *Deaths* (not pictured). By contrast, *Freedom of Expression*, *Basic Welfare* and *Gender Equality* were not influential, using the 2020 or the 2019 GSoD data. Both aspects of *Impartial Administration* contribute to its impact on *Deaths*. *Absence of Corruption* and *Predictable Enforcement*, its subattributes, are each negatively associated with *Deaths* (not pictured), so the lower the level of corruption and the greater predictability of law enforcement the lower the deaths in democracies. This is consistent with the prediction from theories of democracy, discussed above.

Among democracies, stronger representative government is associated with higher vaccination rates. This is evident in Model 12 (Table 8), where *Representative Government* has a statistically significant positive coefficient, even with inclusion of controls. This result also holds using the 2019 data, and also for both the 2019 and 2020 data with the alternative vaccination measure—the percentage of a country's population that has received at least one vaccine dose. Of *Representative Government's* four subattributes, *Elected Government*, rather than *Inclusive Suffrage*, *Clean Elections* or *Free Political Parties*, accounts for its effect. When each subattribute replaces *Representative Government* in Model 12, only *Elected Government* has a statistically significant coefficient. Among the indicators that comprise *Elected Government*, the *Competitiveness of executive recruitment* drives the results. This shows that the more competitive the process for becoming the leader of a country the higher the vaccination rate, as theories of democracy predict.

TABLE 8

**Explaining Covid-19 deaths and vaccination rates among democracies**

	(10)	(11)	(12)
Variables	<i>Deaths</i>	<i>Deaths</i>	<i>Vaccinations</i>
Fundamental Rights	-5.228** [2.158]		
Impartial Administration		-3.990** [1.956]	
Population	0.003** [0.001]	0.003*** [0.001]	
Transparency	1.096*** [0.192]	1.090*** [0.196]	
Interpersonal trust	-0.016 [0.016]	-0.008 [0.018]	
Country size	0.000*** [0.000]	0.000*** [0.000]	
Representative Government			2.661** [1.144]
Country wealth			0.471*** [0.125]
Public health capacity			0.003 [0.008]
Observations	51	51	95
R-squared	0.772	0.763	0.718

Notes: Africa was the reference category for the region dummies (not pictured). Standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Variable definitions and sources are detailed in Annex A.

In sum, greater levels of fundamental rights and impartial administration seem to help prevent Covid-19 deaths, and greater competition for executive office seems to boost vaccination rates among democracies. In the context of the GSoD Indices definition of democracy, this suggests that countries that have undergone democratic transition but have achieved only moderate levels of fundamental rights, impartial administration and competition for executive office will experience worse Covid-19 outcomes than those countries that have achieved high levels of these democratic components. Another way to interpret the findings is that hybrid regimes, particularly those with weaknesses in the areas of fundamental rights, impartial administration and competition for executive office, experience worse Covid-19 outcomes than democracies. This interpretation comes from the fact that the GSoD Indices define democracies very generously. This is evident by contrasting data for global regime distribution from the GSoD Indices with that from V-Dem. For the purposes of this comparison, V-Dem data for only those 165 countries covered by the GSoD Indices are included. Table 9 shows that the GSoD Indices label 59 per cent of the world's countries democratic and V-Dem labels only 19 per cent democratic. V-Dem characterizes a significantly larger proportion of countries as hybrid regimes than the GSoD Indices do (Table 10). It is important for countries that have undergone democratic transition to have strong fundamental rights, fully impartial administration and significant competition for executive offices, in order to combat Covid-19 and perhaps future epidemics.

TABLE 9

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**Percentages of non-democracies and democracies globally: GSoD Indices vs. V-Dem data**

Regime type	Percentage of countries (GSoD Indices)	Percentage of countries (V-Dem)
Non-democracy	41	81
Democracy	59	19

Notes: Values are rounded. V-Dem data is based on its Regimes of the World measure. See Annex A for details. Data for the same 165 countries drawn from V-Dem and GSoD Indices.

Sources: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gso-d-indices/dataset-resources>>, accessed 4 June 2021. Coppedge, M. et al., V-Dem [Country–Year/Country–Date] Dataset v11.1, Varieties of Democracy (V-Dem) Project, 2021, <<https://doi.org/10.2139/ssrn.3831905>>.

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TABLE 10

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**Percentages of different regime types globally: GSoD Indices vs. V-Dem data**

Regime type	Percentage of countries (GSoD Indices)	Percentage of countries (V-Dem)
Authoritarian regime	27	14
Hybrid regime	14	67
Democracy	59	19

Notes: Values are rounded. V-Dem data is based on its Regimes of the World measure. See Annex A for details. Data for the same 165 countries drawn from V-Dem and GSoD Indices.

Sources: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gso-d-indices/dataset-resources>>, accessed 4 June 2021. Coppedge, M. et al., V-Dem [Country–Year/Country–Date] Dataset v11.1, Varieties of Democracy (V-Dem) Project, 2021, <<https://doi.org/10.2139/ssrn.3831905>>.

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For democracies alone, we also tested the extent to which overall performance affects Covid-19 outcomes and found that it does not. *Democratic performance* is designated by sorting democracies based on their scores for the five key attributes in the GSoD Indices. High performance means all five attributes had high scores (>0.7). Mid-range means that not all attributes were high, but also that none were low (<0.4). Finally, low performance includes any country with at least one attribute with a low score. *Democratic performance* is not statistically significant when included in the models that explain variation across countries in Covid-19 deaths or vaccination rates, Models 13 and 14, respectively (Table 11).

TABLE 11

**Lack of impact of *Democratic performance***

	(13)	(14)
Variables	Deaths	Vaccinations
Democratic performance	-0.540	0.263
	[0.452]	[0.203]
Population	0.004***	
	[0.001]	
Transparency	1.104***	
	[0.202]	
Interpersonal trust	-0.020	
	[0.017]	
Country size	0.000***	
	[0.000]	
Country wealth		0.545***
		[0.124]
Public health capacity		0.004
		[0.008]
Observations	51	95
R-squared	0.748	0.706

Notes: Africa was the reference category for the region dummies (not pictured). Standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Variable definitions and sources are detailed in Annex A.

## Chapter 5

# Conclusion

This analysis offers good news for democracy, challenging authoritarian countries' narratives about the superiority of their systems, allaying concerns in democratic countries, and putting earlier academic studies in perspective. Through its state-owned media outlets and state-influenced social media, China has been particularly active in disseminating this narrative.<sup>54</sup> Also, while journalists and public intellectuals in democratic countries have provided hopeful predictions of democracies' abilities to mitigate the pandemic, they have also pointed out potential challenges. Fundamental rights, free press and checks on government could make democratic governments' responses to Covid-19 slow and ineffective; whereas the absence or weakness of these democratic components could allow authoritarian regimes to respond quickly, control information to the public, and forcibly impose mitigation measures and thus more effectively respond to the pandemic.<sup>55</sup> The results from early academic studies of democracy and Covid-19 were bleak. Many found that Covid-19 deaths were higher the more democratic the country.<sup>56</sup> A weakness of these studies is that they use death data from early in the pandemic when the virus had not had an opportunity to spread in all countries. Their findings likely reflect to a large extent the geographic evolution of the pandemic and provide less insight into the impact of democratic components on Covid-19 outcomes.<sup>57</sup>

In contrast to authoritarian states' narratives, concerns in democratic countries and earlier studies, this analysis shows that democracies fare no worse than authoritarian regimes in combating the Covid-19 pandemic. Democracy is not associated with higher Covid-19 death rates as many have feared. Those fears overlooked the fact that less democratic countries tend to be less transparent with data. As our analysis shows, it is not that countries with weaker democracy components are necessarily better at preventing deaths, they simply tend to under-report them. Our analysis also demonstrates that democracy is not associated with lower vaccination rates.

Equally important, among democratic countries, as defined by the GSoD Indices (or among hybrid and democratic regimes as defined by other measures), high levels of particular democratic components seem to help prevent Covid-19 deaths and boost Covid-19 vaccination rates. Among democracies, greater levels of fundamental rights and impartial administration coincide with lower Covid-19 death rates, while a more competitive process for becoming the leader of a country is associated with a higher vaccination rate.

We should be cautious about analogizing this good news about democracies battling Covid-19 to other epidemics, past and future. Most past epidemics, such as cholera, are considered diseases of poverty and inadequate infrastructure,<sup>58</sup> while others, such as dengue, have less predictable global transmission due to their spread by specific mosquito vectors, multiple viral types, dependence on climate, and complex immune responses that can increase disease with subsequent infections.<sup>59</sup> For these reasons, past epidemics do not necessarily resemble Covid-19. Covid-19 differs even from other coronaviruses, such as SARS and MERS, because of the high transmissibility and global distribution. Other research by the authors, in fact, suggests that democracies have been significantly better at mitigating epidemic deaths historically than non-democratic regimes.<sup>60</sup>

Despite the potentially unique nature of Covid-19, the findings about democracy are important for advocacy. The results of this paper can be used to challenge the narrative that authoritarian regimes are better at combating Covid-19. Moreover, the findings in this paper can be used to encourage leaders and activists in hybrid and backsliding regimes to strengthen democracy, particularly fundamental rights, impartial administration and competition for executive office, because these efforts can provide public health benefits.

## Annex A

# Definitions of variables

Variable names from the paper's data set appear at the end of each entry.

### **Dependent variables**

**Deaths.** This variable measures a country's total reported Covid-19 deaths from 1 June 2020 to 31 December 2020. We log transformed these total death values to make smaller differences among countries, many of which had relatively low numbers of deaths, more discernible. Interval scale, with a larger value indicating more deaths. Source: Johns Hopkins University, Center for Systems Science and Engineering (CSSE), Covid-19 Data Repository (2020), <<https://github.com/CSSEGISandData/Covid-19>>. logTotalDeaths\_noMarAprMay

**Vaccinations.** This measures total vaccine doses administered in a country per hundred people. Like Deaths, it is log transformed to make smaller differences among countries, many of which have administered relatively few vaccines, more discernible. Interval scale, with a larger value indicating more doses administered relative to population. Source: Mathieu, E. et al., 'A global database of Covid-19 vaccinations', *Nature Human Behaviour*, 5 (2021), pp. 947–53, <<https://doi.org/10.1038/s41562-021-01122-8>>. logTotal\_Vaccinations

### **Independent variables**

**1,000 case stringency.** This score tracks the number and geographic scope of several containment, closure and health system policies that national and subnational governments have implemented to limit the damage of Covid-19. Interval scale, range 0 (lowest) to 100 (highest). This variable contains each country's Containment and Health Policy Index score on the day a country experienced its 1,000 confirmed case. Source: Hale, T. et al., Covid-19 Government Response Tracker, Blavatnik School of Government, University of Oxford, 2021, <<https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker>>. Thousand\_CH\_Index

**Absence of Corruption.** Absence of Corruption denotes the extent to which the executive and the public administrations do not abuse their office for personal gain. Five indicators have been aggregated into this measure using item response theory (IRT). Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD41

**Adult education.** Adult education measures the average years of schooling received by all people aged 25 and older within a country. Data is from 2019. Interval scale, with a larger number indicating higher average education. Source: United Nations Development Programme, Human Development Reports, Human Development Data Center, 2021, <<http://hdr.undp.org/en/data>>. Education\_Adult

**Adult literacy.** This measures the total adult literacy rate in a country, which is the percentage of the population aged 15 and older who can both read and write with understanding a short simple statement about their everyday life. Data is from 2018. Interval scale, range 0 (lowest) to 100 (highest). Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Literacy\_Adult

**Air pollution.** This measures population-weighted average annual exposure to PM 2.5 air pollution, particles measuring less than 2.5 microns in aerodynamic diameter which are capable of penetrating deep into the respiratory tract and causing severe health damage. Data is from 2017. Interval scale, with a higher value indicating greater average exposure. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Air\_Pollution

**Basic Welfare.** This variable measures the extent to which the population's basic needs are being met in a country, based on standard human development indicators measuring population health and education. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD23B

**Checks on Government.** Measures of Effective Parliament, Judicial Independence and Media Integrity were aggregated into an index using Bayesian factor analysis (BFA). Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_A3

**Chronic disease burden.** This variable measures disability-adjusted life years (DALYs) per 100,000 population from non-communicable diseases. This is a measure of disease burden that includes both years of life lost due to premature death and years lived with a disability. One DALY signifies one lost year of healthy life. Data is from 2017. Interval scale, with a larger value indicating greater disease burden. Source: GBD 2017 Causes of Death Collaborators, 'Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: A systematic analysis for the Global Burden of Disease Study 2017', *Lancet*, 392/10159 (2018), pp. 1736–88, <[https://doi.org/10.1016/S0140-6736\(18\)32203-7](https://doi.org/10.1016/S0140-6736(18)32203-7)>. DALYs\_NCD

**Civil Society Participation.** This measures the extent to which the population is engaged in civil society activities and is composed of six indicators aggregated into an index using BFA. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD51

**Clean Elections.** This variable measures the quality of elections for national, representative political office, meaning that elections are free from irregularities. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD11

**Competitiveness of executive recruitment.** This measures the typical method by which national chief executives are recruited. Ordinal scale with three possible values: 0 (selection), 0.5 (dual executives or transitions to elections) or 1 (election). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>, originally from Polity (Marshall, M. G. and Gurr, T. R., *The Polity5 Project: Political Regime Characteristics and Transitions, 1800–2018* (Vienna, Virginia: Center for Systemic Peace, 2020), <<http://www.systemicpeace.org/polityproject.html>>). v\_14\_02

**Country size.** Country size in square kilometres in 2018. Interval scale, with larger value indicating larger size. Source: Haber, S. and Menaldo, V., 'Do natural resources fuel authoritarianism? A reappraisal of the resource curse', *American Political Science Review*,

105/1 (2011), pp. 1–26, <<https://doi.org/10.1017/S0003055410000584>>; Weidmann, N. B., Kuse, D. and Gleditsch, K. S., 'The geography of the international system: The CShapes dataset', *International Interactions*, 36/1 (2010), pp. 86–106, <<https://doi.org/10.1080/03050620903554614>>. Retrieved from Coppedge, M. et al., V-Dem [Country–Year/Country–Date] Dataset v11.1, Varieties of Democracy (V-Dem) Project, 2021, <<https://doi.org/10.2139/ssrn.3831905>>. e\_area

**Country wealth.** This is measured using the logarithm of GDP per capita (constant 2010 USD) for 2019. Interval scale, with larger value indicating greater wealth. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. logGDP\_per\_cap

**Data sharing.** This binary indicator is used as a proxy measure for public health data reporting. Two possible values, 0 (no) or 1 (yes), in response to the question: 'Is there a publicly available plan or policy for sharing genetic data, clinical specimens, and/or isolated specimens (biological materials) along with the associated epidemiological data with international organizations and/or other countries that goes beyond influenza?' Data is from 2019. Source: GHS Index, Global Health Security Index Report and Model, 2019, <<https://www.ghsindex.org/report-model/>>. Data\_Sharing

**Days from China's first case to country's.** This records the number of days between a country's first confirmed case of Covid-19 and China's first reported case (8 December 2019). Ratio scale, with a larger number indicating a larger difference in time. Source: Johns Hopkins University, Center for Systems Science and Engineering (CSSE), Covid-19 Data Repository (2020), <<https://github.com/CSSEGISandData/Covid-19>>. Harcourt, J. et al., 'Severe acute respiratory syndrome coronavirus 2 from patient with coronavirus disease, United States', *Emerging Infectious Diseases*, 26/6 (2020), pp. 1266–73, <<https://doi.org/10.3201/eid2606.200516>>. World Health Organization (WHO), *Coronavirus Disease 2019 (Covid-19) Situation Report – 37* (Geneva: WHO, 2020), <[https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200226-sitrep-37-covid-19.pdf?sfvrsn=2146841e\\_2](https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200226-sitrep-37-covid-19.pdf?sfvrsn=2146841e_2)>. WHO, 'Novel Coronavirus – Japan (ex-China)', 16 January 2020, <<https://www.who.int/emergencies/disease-outbreak-news/item/2020-DON236>>. WHO, 'Novel Coronavirus – Republic of Korea (ex-China)', 21 January 2020, <<https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/pt/grc-740972>>. WHO, 'Novel Coronavirus – Thailand (ex-China)', 14 January 2020, <<https://www.who.int/emergencies/disease-outbreak-news/item/2020-DON234>>. China\_Difference

**Democratic experience.** This stock variable measures the total number of years a country in the GSoD Indices had a democratic political regime, during the period 1975–2020. Interval scale, with a larger value indicating more democratic experience. Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. Democratic\_Exp

**Democratic performance.** This categorical variable classifies GSoD Indices countries by democratic performance in 2019. Democracies are sorted into performance categories based on their scores for the five key attributes. Four values: 0 (non-democracy), 1 (weak/low-performance), 2 (mid-range performance) or 3 (high performance). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. Dem\_Performance

**Displaced people.** This variable measures the total number of internally displaced people in a country at the end of a given year. These are people who have been forced or obliged to leave their homes due to conflict or violence, are living in displacement and have not crossed an international border. Data is from 2019. Interval scale, with larger numbers indicating more displaced people. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Total\_Displaced

**Distance from Beijing.** This records the distance in kilometres between a country's capital and China's capital, Beijing. Interval scale, with larger value indicating greater distance. Source: Mayer, T. and Zignago, S., *Notes on CEPII's Distances Measures: The GeoDist Database*, CEPII Working Paper 2011-25, December 2011, <<http://www.cepii.fr/CEPII/en/publications/wp/abstract.asp?NoDoc=3877>>. distcap

**Elected Government.** This measures the extent to which national, representative government offices are filled through elections. Four indicators have been aggregated into this measure using IRT. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, *The Global State of Democracy Indices 1975–2020*, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD14

**Electoral Participation.** According to official results, this measures what percentage of the adult voting age population (VAP) cast a vote in a national election. Interval scale, range 0 (lowest) to 100 (highest). Source: International IDEA, *The Global State of Democracy Indices 1975–2020*, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>, originally from Coppedge, M. et al., V-Dem [Country–Year/Country–Date] Dataset v11.1, *Varieties of Democracy (V-Dem) Project*, 2021, <<https://doi.org/10.2139/ssrn.3831905>>. v\_52\_01

**Ethnic fractionalization.** This index measures, based on country population ethnicity data, the probability that two randomly selected individuals belong to different groups. Data is for 2000. Interval scale, with a higher value indicating greater fractionalization. Source: Alesina, A., et al., 'Fractionalization', *Journal of Economic Growth*, 8/2 (2003), pp. 155–94, <<https://doi.org/10.1023/A:1024471506938>>, retrieved from Teorell, J. et al., *The Quality of Government Standard Dataset*, version Jan21 (Gothenberg: Quality of Government Institute, 2021), <<https://doi.org/10.2139/ssrn.3786283>>. al\_ethnic2000.

**Federalism.** This index measures the level of federalism in a country based on five criteria: whether autonomous regions exist, whether municipal government is locally elected, whether state/provincial government is locally elected, whether state/provincial governments have taxing/spending/legislative authorities, and whether senators' constituencies are states/provinces. Data is from 2017. Interval scale, with a higher value indicating a greater degree of federalism. Source: Bosancianu, M. et al., 'Social and political correlates of Covid-19', draft paper, 1 July 2020, <<https://wzb-ipi.github.io/corona/paper.pdf>>, calculated using data from Cruz, C., Keefer, P. and Scartascini, C., *Database of Political Institutions 2017 (DPI2017)*, Inter-American Development Bank, 2018, *Numbers for Development*, <<https://mydata.iadb.org/Reform-Modernization-of-the-State/Database-of-Political-Institutions-2017/938i-s2bw>>.

**Female education.** This variable measures the average years of schooling received by all females aged 25 and older within a country. Data is from 2019. Interval scale, with a larger number indicating higher average education. Source: United Nations Development Programme, *Human Development Reports*, Human Development Data Center, 2021, <<http://hdr.undp.org/en/data>>. Education\_Female

**Female literacy.** This measures the female adult literacy rate in a country, which is the percentage of the female population aged 15 and older who can both read and write with understanding a short simple statement about their everyday life. Data is from 2018. Interval scale, range 0 (lowest) to 100 (highest). Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Literacy\_Female

**Four-week stringency.** This index score tracks the number and geographic scope of several containment, closure and health system policies that national and subnational governments have implemented to limit the damage of Covid-19. Interval scale, range 0 (lowest) to 100 (highest). This measure contains each country's Containment and Health Policy Index score four full weeks after its first confirmed case. Source: Hale, T. et al., Covid-19 Government Response Tracker, Blavatnik School of Government, University of Oxford, 2021, <<https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker>>. FourWeeks\_CH\_Index

**Free Political Parties.** This index measures the extent to which political parties, particularly opposition parties, can organize freely and compete in elections. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD13

**Freedom of Association and Assembly.** This variable is composed of six indicators that directly refer to freedom of association for political and civil groups. These six indicators were aggregated using IRT. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD22B

**Freedom of Expression.** This variable is composed of eight indicators, aggregated into this measure using IRT. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD22A

**Freedom of Movement.** Variable from six indicators aggregated using IRT. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD22B

**Freedom of Religion.** Variable from four indicators for religious freedom aggregated into this index using IRT. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD22C

**Fundamental Rights.** Measures for Access to Justice, Civil Liberties, and Social Rights and Equality were aggregated into the Fundamental Rights index using BFA. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_A2

**Gender Equality.** Seven indicators were aggregated into this index using IRT. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD23C



**Gini.** The Gini index measures the extent to which the distribution of income within a country deviates from a perfectly equal distribution. Data is from 2018. Interval scale, 0 (lowest) to 100 (highest), with a larger value indicating greater level of inequality. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Gini

**Government investment.** This measures government enterprises and investment as a share of total investment in a country. Data is from 2018. Interval scale, with a larger number indicating a greater share of government investment. Source: Fraser Institute, Economic Freedom of the World dataset, 2019, <<https://www.fraserinstitute.org/economic-freedom/dataset>>. Gov\_Investment

**Health system capacity.** Index score measuring public health system capacity within countries. First, using the Global Health Security Index weights for four categories of interest in its overall index score, which was based on six categories, we calculated new category weights for an index score using only these four categories. For each country, the sum of the four-category scores multiplied by their adjusted weights resulted in an index score of health system capacity measuring only the most relevant concepts. Data is from 2019. Interval scale, range 0 to 100, with a higher score representing more favourable health system conditions. Source: GHS Index, Global Health Security Index Report and Model, 2019, <<https://www.ghsindex.org/report-model/>>. PH\_Capacity

**Impartial Administration.** Measures for Absence of Corruption and Predictable Enforcement were aggregated using BFA. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_A4

**Inbound students.** This variable measures the number of students from outside a country as a percentage of the country's total tertiary education enrolment. Data is from 2018. Interval scale, with a larger value indicating a higher percentage of study-abroad students within the country. Source: World Bank, Education Statistics – All Indicators, 2020, <<https://databank.worldbank.org/source/education-statistics-%5e-all-indicators>>. Inbound\_Students

**Inclusive Suffrage.** This variable measures the extent to which adult citizens have equal and universal voting rights, and is calculated using the weighted average of two suffrage and voter registration indicators. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD12

**Individualism.** Measures societal preference toward individualist or collectivist values. The index has a range of approximately 100 points, ranging from strongly collectivist (towards 0) to strongly individualist (towards 100). Source: Hofstede, G. and Minkov, M., Dimensions data matrix, version 2015 12 08, 2015, <<https://geerthofstede.com/research-and-vsm/dimension-data-matrix/>>. idv

**International migrants.** This variable records the number of people within a country who were born in a different country, including refugees. Data is from 2015, coded as percentage of a country's total population. Interval scale, with a larger number indicating a larger migrant share of a country's total population. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Migrants

**Interpersonal trust.** This variable measures the percentage of respondents who responded 'most people can be trusted'; the other option offered was 'you can't be too careful'. Data is from 2014–2016. Interval scale. Source: Bosancianu, M. et al., 'Social and political correlates of Covid-19', draft paper, 1 July 2020, <<https://wzb-ipi.github.io/corona/paper.pdf>>, originally from the World Values Surveys and Afrobarometer.

**Island.** This binary variable records whether a country exists on one or more islands. Two possible values: 0 (no) or 1 (yes). Source: Nations Online, 'Island Countries', 2021, <<https://www.nationsonline.org/oneworld/island-countries.htm>>. Island

**Life expectancy.** Measures life expectancy at birth for both males and females in years, 2018. Interval scale. Source: Coppedge, M. et al., V-Dem [Country–Year/Country–Date] Dataset v11.1, Varieties of Democracy (V-Dem) Project, 2021, <<https://doi.org/10.2139/ssrn.3831905>>, originally from Gapminder, 'Data in Gapminder World', 2018, <<https://www.gapminder.org/data>>. e\_pelifeex

**Local authority.** This is an aggregate index measure of local government decentralization within a country. It includes measures of the relative importance of local government in a country (percentage of general government expenditures), the security of existence of local governments, fiscal autonomy, level of self-government, and administrative authority over local government operations. Data is from 2005. Interval scale, with a larger value indicating a greater level of decentralization. Source: Ivanyna, M. and Shah, A., 'How close is your government to its people? Worldwide indicators on localization and decentralization [dataset]', 2014, <<https://doi.org/10.5018/economics-ejournal.ja.2014-3>>. Decentralization

**Local Democracy.** The local government index indicates whether the local government is elected and whether it is empowered in relation to the central government, while another indicator assesses the freedom and fairness of subnational elections. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/g sod-indices/dataset-resources>>. C\_SD54

**Merchandise trade.** The sum of merchandise exports and imports divided by the value of a country's GDP. Data is from 2019. Interval scale, with a larger number indicating larger merchandise trade share of a country's GDP. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Merchandise\_Trade

**Natural resource dependency.** This variable measures oil rents in a country as a share of GDP. Data is from 2017. Interval scale, 0 (low) to 100 (high). Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>, retrieved from Bosancianu, M. et al., 'Social and political correlates of Covid-19', draft paper, 1 July 2020, <<https://wzb-ipi.github.io/corona/paper.pdf>>. oil

**Negative vaccine posts.** This measures the number of negatively toned tweets about vaccines from a particular country per million population. Data is from 2018–2019. Sources: calculated using population data from World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>; and geocoded Twitter data from Wilson, S. L. and Wiysonge, C., 'Social media and vaccine hesitancy', *BMJ Global Health*, 5/10 (2020), e004206, <<https://doi.org/10.1136/bmjgh-2020-004206>>. vt\_neg\_per\_mil

**Obesity.** This measures the prevalence of obesity among adults aged 18 and above (percentage of adult population) within countries, 2016. Obesity is defined as having a body mass index (BMI) of at least 30. Source: World Health Organization (WHO), Global Health Observatory, 2020, <<https://apps.who.int/gho/data/node/resources?lang=en>>, formatted by and retrieved from Ritchie, H. and Roser, M., 'Obesity', Our World in Data, 2017, <<https://ourworldindata.org/obesity>>. Obesity

**Outbound students.** This variable measures the number of students from that country studying abroad as a percentage of the country's total tertiary education enrolment. Data is from 2018. Interval scale, with a larger number indicating more of a country's students studying abroad relative to the students within the country. Source: World Bank, Education Statistics – All Indicators, 2020, <<https://databank.worldbank.org/source/education-statistics-%5e-all-indicators>>. Outbound\_Students

**Personal Integrity and Security.** For this variable, five indicators capture different types of violations, such as forced labour, torture, and political and extrajudicial disappearances and killings; two others capture political violence and physical integrity rights. The seven indicators were aggregated into the Personal Integrity and Security subcomponent using IRT. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD22E

**Political camps.** This measures the extent to which society in a country is divided into antagonistic political camps. Data is from 2019. Interval scale, with a larger value indicating a greater degree of hostility across group lines. Source: Coppedge, M. et al., V-Dem [Country–Year/Country–Date] Dataset v11.1, Varieties of Democracy (V-Dem) Project, 2021, <<https://doi.org/10.2139/ssrn.3831905>>. lag\_v2cacamps

**Population.** This variable measures countries' total population in units of one million people. Data is from 2019. Interval scale. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Pop\_Millions

**Population age.** This measures the percentage of a country's total population aged 65 and above in 2019. Interval scale, with larger value indicating higher share of population. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Pop\_Age

**Population density.** Population per square kilometre of land area within countries in 2019. Interval scale, with a larger value indicating higher population density. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Pop\_Density

**Populism.** This binary variable measures whether a country is 'populist', meaning specifically that a leader who ran a populist campaign is democratically elected. It does not count leaders who turned to populism after being elected, nor does it count autocrats turning to populism to hold on to power. Data shows countries with electoral populist governments as of 2019. Two possible values: no (0) or yes (1). Source: Kyle, J. and Meyer, B., *High Tide? Populism in Power, 1990-2020* (London: Tony Blair Institute for Global Change, 2020), <<https://institute.global/policy/high-tide-populism-power-1990-2020>>, retrieved from Bosancianu, M. et al., 'Social and political correlates of Covid-19', draft paper, 1 July 2020, <<https://wzb-ipi.github.io/corona/paper.pdf>>. electoral\_pop

**PR.** This binary variable measures whether a country has a proportional electoral system, meaning that candidates are elected based on the share of votes their parties receive. Two possible values: no (0) or yes (1). Data is from 2017. Source: Cruz, C., Keefer, P. and Scartascini, C., Database of Political Institutions 2017 (DPI2017), Inter-American Development Bank, 2018, Numbers for Development, <<https://mydata.iadb.org/Reform-Modernization-of-the-State/Database-of-Political-Institutions-2017/938i-s2bw>>, retrieved from Bosancianu, M. et al., 'Social and political correlates of Covid-19', draft paper, 1 July 2020, <<https://wzb-ipi.github.io/corona/paper.pdf>>. pr

**Predictable Enforcement.** This includes indicators for the executive's respect for constitutional provisions, the presence of transparent laws with predictable enforcement, rule abidingness in the public sector, meritocratic appointment criteria for state administration and armed forces, and the strength and expertise of the bureaucracy. The six indicators were aggregated using IRT. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD42

**Public health expenditure.** This measures domestic government expenditure on health as a percentage of a country's GDP in 2018. Interval scale, with larger value indicating higher share of GDP. Source: World Health Organization (WHO), Global Health Expenditure Database, 2021, <<https://apps.who.int/nha/database/Select/Indicators/en>>, retrieved from World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. PH\_Spending

**Region.** These are six dummy variables corresponding to the six geographic region codes used in the GSoD Indices data set: Africa, Asia and the Pacific, Europe, Latin America and the Caribbean, the Middle East, and North America. The reference category used in models was Africa, the region where the countries had the lowest average value of both dependent variables. Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. AF, AP, EU, LA, ME, NA

**Regional authority.** This index is a measure of the relative authority of regional governments within a country. The indicators used to calculate the index measure two different concepts of authority: self-rule (a regional government's authority over people who live in the region) and shared rule (a regional government's or its representatives' authority in national matters). Data is for 2018. Ordinal scale, range 0 to 30, with a larger value indicating a greater level of authority. Source: Shair-Rosenfield, S. et al., 'Language difference and regional authority', *Regional and Federal Studies*, 31/1 (2021), pp. 73–97, <<https://doi.org/10.1080/13597566.2020.1831476>>. RAI

**Representative Government.** This combines measures of Clean Elections, Free Political Parties, Elected Government and Inclusive Suffrage. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_A1

**Respiratory disease prevalence.** This records the prevalence of upper and lower respiratory diseases in a country as a percentage of total population. Data is for 2017. Interval scale, with a larger value indicating greater prevalence. Source: GBD 2017 Causes of Death Collaborators, 'Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: A systematic analysis for the Global Burden of Disease Study 2017', *Lancet*, 392/10159 (2018), pp. 1736–88, <[https://doi.org/10.1016/S0140-6736\(18\)32203-7](https://doi.org/10.1016/S0140-6736(18)32203-7)>, retrieved from Bosancianu, M. et al., 'Social and political correlates of Covid-19', draft paper, 1 July 2020, <<https://wzb-ipi.github.io/corona/paper.pdf>>.

**Response speed.** This measures the number of days that a country had confirmed cases of Covid-19 in a country (from Johns Hopkins University data) but had not implemented any containment and closure or health system policies (as listed in the Covid-19 Government Response Tracker data set). Interval scale, with 0 indicating a country had implemented policies (at least one policy score greater than 0) on or before the day of its first confirmed case, and larger number indicating a longer delay in response. Manually corrected China, which had its first case before coverage in these sources begins, using the case timeline from Wu and McGoogan (2020). Source: Johns Hopkins University, Center for Systems Science and Engineering (CSSE), Covid-19 Data Repository (2020), <<https://github.com/CSSEGISandData/Covid-19>>. Hale, T. et al., Covid-19 Government Response Tracker, Blavatnik School of Government, University of Oxford, 2021, <<https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker>>. Wu, Z. and McGoogan, J. M., 'Characteristics of and important lessons from the coronavirus disease 2019 (Covid-19) outbreak in China', *JAMA*, 323/13 (2020), pp. 1239–42, <<https://doi.org/10.1001/jama.2020.2648>>. Response\_Speed

**SARS/MERS experience.** A binary variable measuring whether a country has experienced at least 50 cases of either SARS or MERS, using the most recent reports from WHO. Yes=1; No=0. Source: World Health Organization (WHO), 'Summary of probable SARS cases with onset of illness from 1 November 2002 to 31 July 2003', 2004, <<https://www.who.int/publications/m/item/summary-of-probable-sars-cases-with-onset-of-illness-from-1-november-2002-to-31-july-2003>>. WHO, 'Middle East respiratory syndrome' (2020), <<http://www.emro.who.int/health-topics/mers-cov/mers-outbreaks.html>>. SARS\_MERS\_Exp

**Services trade.** This represents the sum of services exports and imports divided by the value of a country's GDP. Data is from 2019. Interval scale, with a larger number indicating larger services trade share of a country's GDP. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Services\_Trade

**Social Group Equality.** This index uses 10 indicators measuring social class and identity group inequalities in political power and civil liberties, representation of disadvantaged groups, group exclusion, and religious/ethnic tensions. These indicators are aggregated using IRT. Interval scale, range 0 (lowest) to 1 (highest). Source: International IDEA, The Global State of Democracy Indices 1975–2020, v. 5.1, 2021, <<https://www.idea.int/gsod-indices/dataset-resources>>. C\_SD23A

**State ownership.** This variable measures the extent to which the state owns and controls capital (including land) in the industrial, agricultural and service sectors. It is a measure of the government's direct control and/or ownership of the economy. Data is from 2019. Interval scale, converted from an ordinal scale of 0 (virtually all valuable capital owned/controlled by the state) to 4 (very little valuable capital owned/controlled by the state). Source: Coppedge, M. et al., V-Dem [Country–Year/Country–Date] Dataset v11.1, Varieties of Democracy (V-Dem) Project, 2021, <<https://doi.org/10.2139/ssrn.3831905>>. lag\_v2clstown

**Territorial control.** This measures the percentage of territory over which the state has effective control in 2019. Interval scale, with larger value indicating greater control. Source: Coppedge, M. et al., V-Dem [Country–Year/Country–Date] Dataset v11.1, Varieties of Democracy (V-Dem) Project, 2021, <<https://doi.org/10.2139/ssrn.3831905>>. lag\_v2svstterr

**Tourist arrivals.** This records the number of international inbound tourists entering a country. When tourist data is unavailable, total visitors (tourists, same-day visitors, cruise passengers and crew members) is reported instead. Data is for 2019. Interval scale, with a larger number indicating more arrivals. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Tourism\_Arrivals

**Tourist departures.** This records the number of international outbound tourists departing a country to visit another country. Data is for 2019. Interval scale, with a larger number indicating more departures. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Tourism\_Departures

**Transparency.** This index measures the extent to which a country's government reports economic data about the country to the World Bank World Development Indicators. Data is from 2010. Interval scale, with a higher number indicating greater transparency. Source: Hollyer, J. R., Rosendorff, B. P. and Vreeland, J. R., 'Measuring transparency', *Political Analysis*, 22/4 (2014), pp. 413–34, <<https://doi.org/10.1093/pan/mpu001>>. transparencyindex

**Tropical.** This measures the percentage of a country's land area with a tropical climate. Data is from 2012. Interval scale. Source: Nunn, N. and Puga, D., 'Ruggedness: The blessing of bad geography in Africa', *Review of Economics and Statistics*, 94/1 (2012), pp. 20–36, <[https://doi.org/10.1162/REST\\_a\\_00161](https://doi.org/10.1162/REST_a_00161)>, retrieved from Teorell, J. et al., The Quality of Government Standard Dataset, version Jan21 (Gothenberg: Quality of Government Institute, 2021), <<https://doi.org/10.2139/ssrn.3786283>>. nunn\_tropical

**Trust in government.** This records the percentage of survey respondents in a country who responded 'a lot' or 'some' when asked how much they trust their national government. Possible responses were 'a lot', 'some', 'not much' and 'not at all'. Interval scale, with larger numbers indicating higher reported trust. Source: Gallup, *Wellcome Global Monitor 2018* (London: Gallup, 2019), <<https://wellcome.ac.uk/reports/wellcome-global-monitor/2018>>, aggregated by and retrieved from Ortiz-Ospina, E. and Roser, M., 'Trust', Our World in Data, 2016, <<https://ourworldindata.org/trust>>. Gov\_Trust

**Urbanization.** This measures the percentage of a country's population who live in urban areas, as defined by national governments' statistical offices, in 2019. Interval scale, with larger value indicating greater level of urbanization. Source: World Bank, World Development Indicators (WDI), 2020, <<https://databank.worldbank.org/source/world-development-indicators>>. Urbanization

**Vaccine doubt.** This variable measures the percentage of respondents in a country who said they 'somewhat disagree' or 'strongly disagree' with the statement 'vaccines are safe'. Data is from 2018. Interval scale, range 0 (lowest) to 100 (highest). Source: Gallup, *Wellcome Global Monitor 2018* (London: Gallup, 2019), <<https://wellcome.ac.uk/reports/wellcome-global-monitor/2018>>. Vaccine\_Doubt

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# Endnotes

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# About International IDEA

The International Institute for Democracy and Electoral Assistance (International IDEA) is an intergovernmental organization with the mission to advance democracy worldwide, as a universal human aspiration and enabler of sustainable development. We do this by supporting the building, strengthening and safeguarding of democratic political institutions and processes at all levels. Our vision is a world in which democratic processes, actors and institutions are inclusive and accountable and deliver sustainable development to all.

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## WHAT DO WE DO?

In our work we focus on three main impact areas: electoral processes; constitution-building processes; and political participation and representation. The themes of gender and inclusion, conflict sensitivity and sustainable development are mainstreamed across all our areas of work. International IDEA provides analyses of global and regional democratic trends; produces comparative knowledge on good international democratic practices; offers technical assistance and capacity-building on democratic reform to actors engaged in democratic processes; and convenes dialogue on issues relevant to the public debate on democracy and democracy building.

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## WHERE DO WE WORK?

Our headquarters is located in Stockholm, and we have regional and country offices in Africa, the Asia-Pacific, Europe, and Latin America and the Caribbean. International IDEA is a Permanent Observer to the United Nations and is accredited to European Union institutions.

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Despite the narratives of authoritarian states, the concerns of journalists and public intellectuals in democracies, and the results of some early studies, this paper shows that democracies fare no worse than authoritarian regimes in combating the Covid-19 pandemic.

Democracy is not associated with higher Covid-19 death rates, nor is it associated with lower vaccination rates. Moreover, among many democratic countries, high levels of key democratic components -such as fundamental rights and impartial administration—seem to help prevent deaths and boost vaccination rates. These conclusions are based on statistical analyses of democracy components, as measured by International IDEA's Global State of Democracy (GSoD) Indices, and the reported Covid-19 death rates and Covid-19 vaccination rates in all countries of the world with a population of at least one million people.

International IDEA's Global State of Democracy (GSoD) Reports review the state of democracy around the world. The 2021 edition covers developments in 2020 and 2021, with democratic trends since 2015 used as a contextual reference. This paper is one of three thematic papers which complement a global report and four regional reports. The GSoD reports draw on data from the Global State of Democracy Indices and lessons learned from International IDEA's on-the ground technical assistance to understand the current democracy landscape. The 2021 reports also draw heavily on data collected by International IDEA's Global Monitor of COVID-19's Impact on Democracy and Human Rights.