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Abstract

We discuss and analyze how regime type and state capacity shape the abilities and incentives of political leaders to respond to COVID-19. We argue that there is likely a complementary relationship between democracy and state capacity, both in terms of mitigating adverse consequences of the pandemic, such as deaths, and the honest reporting of these consequences. Using a recent, global dataset on officially reported COVID-19 deaths and estimated deaths based on excess mortality, we find evidence supporting different implications from our argument. Democracies have much higher officially reported death tolls than autocracies, but this basically reflects underreporting in autocracies. In high-capacity states, democracies have fewer actual deaths than autocracies. State capacity, generally, seems to mitigate both actual deaths and underreporting, but these relationships are stronger in democracies. Countries that combine democracy and high state capacity both experience fewer COVID-19 deaths and provide more accurate tolls of the pandemic's consequences.

Introduction

When news about the COVID-19 outbreak in Wuhan spread globally in early 2020, many observers were awestruck by the Chinese response. A short time-lapse video, displaying dozens of excavators overcrowding a plot of land and raising a new hospital in record time, caught the attention of millions.[1] Noting on February 2 that "construction began on 24 January, with the hospital due to open on 3 February", the BBC asked: "How can China build a hospital so quickly?"[2] Plausible responses pointed to the authoritarian nature of the regime and the Chinese state's relatively high capacity. For instance, Yanzhong Huang, a senior fellow for global health at the Council on Foreign Relations, responded to the BBC that "China has a record of getting things done fast even for monumental projects like this… This authoritarian country relies on this top down mobilisation approach. They can overcome bureaucratic nature and financial constraints and are able to mobilise all of the resources".[3]

Other parts of the Chinese response to COVID-19 have been linked to the same institutional features. Cheibub et al. (2020), for example, note how the strict (and presumably effective) measures undertaken during the lockdown in China violated civil liberties to an extent that would be infeasible in democracies. Authorities placed tens of millions of people under a harsh lockdown with almost no prior notice, with some areas having a full ban on movement.[4] Implementing such measures required not only a willingness to infringe on civil liberties, but also a mobilization- and monitoring capacity that many other countries presumably cannot muster. As summarized by the WHO, the Chinese response was "the most ambitious, agile and aggressive disease containment effort in history".[5] The notion that a rapid and forceful response to a global pandemic is best raised by high-capacity authoritarian countries was reinforced in the coming months when weaker-capacity states such as Brazil and even established, wealthy democracies such as Italy and the United States observed the pandemic wreaking havoc in major population centers.[6] Yet, the notion that a high-capacity autocratic country is best suited for responding to a complex and severe crisis such as a global pandemic should not be readily accepted based on these anecdotal observations. Firstly, two years after COVID-19 broke out, we know that the severity of the

[1] https://www.bbc.com/news/av/world-asia-china-51348297
[2] Ibid.
[3] https://www.bbc.com/news/world-asia-china-51245156
[4] https://www.theguardian.com/world/2020/mar/19/chinas-coronavirus-lockdown-strategy-brutal-but-effective
[5] https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-COVID-19-final-report.pdf
[6] For one explicit account of the benefits of an authoritarian system such as China's in fighting the pandemic, see https://www.nytimes.com/2021/02/05/world/asia/china-covid-economy.html

pandemic has varied immensely across states with similar institutional structures. Notably, many democracies have had comparatively low hospitalization- and death rates, with Taiwan, South Korea, New Zealand, Australia, and Norway being examples. Inferences drawn from the commonly invoked China—the United States comparison may not be representative. We need systematic, controlled comparisons across a wider set of countries to obtain more well-founded answers to general questions such as: how does democracy affect the severity of the pandemic?

Second, statistics and stories coming out of autocracies should not be taken at face value. This insight is far from new and applies to various other areas than reporting on the pandemic (e.g., Hollyer et al. 2018; Knutsen 2021). Autocrats have strong incentives to pursue propaganda and manipulate data to cover up problematic domestic developments and thus put their own regime and policy responses in a better light. This is illustrated well by the Chinese case, with high-quality estimates suggesting that the number of deaths in the initial stages of the pandemic was up to three times as high as officially reported.[7] Official COVID-19 death tolls of other autocracies cannot be trusted blindly either. In Russia, daily official COVID-19 statistics in some regions stayed suspiciously flat for weeks.[8] In Iran, mass graves were built two days after the first case of COVID-19 was officially recorded.[9] In Turkmenistan, President Berdymukhamedov dismissed reports of serious outbreaks as "fake" and official statistics suggest the country has yet to observe a single COVID-19 case almost two years into the global pandemic.[10] In this paper, we show, more systematically, how direct comparisons of official statistics between democracies and autocracies lead to very misleading descriptive patterns for COVID-19-related deaths.

We thus take a fresh look at how regime type and state capacity relate to COVID-19 outcomes, notably focusing on COVID-19-related deaths and reporting of such deaths. We assume that these institutional features shape, first, the abilities and incentives of political leaders to use different policy tools respond to the COVID-19 pandemic, and thus reduce the spread of the disease and number of deaths. Second, these very same institutions also shape the incentives and capabilities to accurately register and honestly report data pertaining to the severity of the pandemic.

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7 https://www.economist.com/graphic-detail/2021/05/30/covid-19-deaths-in-wuhan-seem-far-higher-than-the-official-count. These estimates are based on our preferred cross-country measures for actual COVID-19-related deaths and misreporting, from the Economist (2021), which utilizes information on previous death rates to estimate excess deaths. We discuss these measures in the data section. Other creative proxies, drawing on cremation activities in Wuhan, suggest even more underreporting (He et al. 2020).

8 https://www.economist.com/europe/2020/05/21/russias-covid-19-outbreak-is-far-worse-than-the-kremlin-admits

9 https://www.washingtonpost.com/graphics/2020/world/iran-coronavirus-outbreak-graves/

10 https://edition.cnn.com/2021/09/24/asia/turkmenistan-covid-free-nations-intl-hnk-dst/index.html

We propose that higher state capacity enables a country to implement various policy measures aimed at mitigating the pandemic and its consequences more effectively, thereby contributing to lower death tolls. High state capacity should also enable countries to better monitor the disease and more accurately keep track of COVID-19-related deaths (if the country's leaders so desire), thereby reducing underreporting of deaths. For regime type, the picture is more complicated. Plausible arguments point in both directions with respect to how democracies should perform (relative to autocracies) in mitigating disease severity, and thus deaths. Democratic leaders may be slower to respond, due to more complicated legislative decision-making procedures and more veto players. They may also be more curtailed in what policy options they can bring to the fight against COVID-19, due to stronger protection of civil liberties. Yet, democracies have characteristics, such as contested elections and institutional environments ensuring open debates about policy decisions, that should incentivize leaders to mitigate deaths. The same features also enable democratic leaders to make better informed choices and select appropriate policies even when facing a complex problem such as COVID-19 where it is difficult to tell what the most effective policy prescriptions are (Sebhatu et al. 2020). Concerning reporting accuracy, our expectation is straightforward: Autocratic leaders have stronger incentives and better opportunities to misrepresent "problematic information" to the outside world. Autocracies are thus much more likely to underreport, e.g., the number of COVID-19-related deaths than democracies.

We further argue that regime type and state capacity likely interact in how they induce particular policy responses and thus the actual consequences of the COVID-19 pandemic. Specifically, we propose that democracy is more likely to mitigate the adverse consequences of the pandemic in countries with high state capacity *and* that state capacity should have a stronger "benevolent" effect in the presence of a democratic regime. A similar complementary relationship pertains to the accurate reporting of statistics such as COVID-19 related deaths. Accurate reporting requires both the ability to register and report (ensured by high state capacity) and the willingness of leaders to reveal the correct numbers (ensured by democracy) – if either the capacity or willingness is missing, underreporting is likely to follow.

To test implications from our argument, we use a new, high-quality dataset from the Economist (2021) containing officially reported COVID-19 deaths *and* estimated deaths based on excess mortality. We use these measures to construct a proxy of underreporting of deaths by subtracting estimated deaths from reported deaths. Admittedly, the excess mortality and our underreporting measure likely contain measurement error, and numbers should be interpreted with care for any single country. Still, these measures are less biased and far easier to meaningfully compare across countries than measures based only on official statistics and have very good coverage. They are thus well-suited for large-n analyses of the kind that we conduct in this paper. We combine these data with measures capturing democracy and state capacity from the Varieties of Democracy (V-Dem) dataset, v.11 (Coppedge et al. 2021) and other sources. This allows us to test implications from our argument on data from most countries in the world (up to 175) while accounting for alternative explanations and factors that may impact on both actual COVID-19 deaths and the reporting of such deaths.

First, higher levels of state capacity are correlated with fewer COVID-deaths as well as less underreporting of deaths. These results hold up even when controlling for economic development, demographic characteristics, and health care policies. Second, democracies systematically have more officially reported COVID-19 deaths than autocracies, but this seems to be a mirage: The pattern largely stems from the substantial underreporting of deaths in autocracies. The link between democracy and actual COVID-19 deaths, as estimated by the excess deaths measure, is absent, or at least less clear, in the aggregate. Yet, we find very clear patterns in line with our argument when interacting democracy with state capacity. In high-capacity states, democracies "outperform" autocracies in terms of lower actual death tolls, as proxied by excess mortality. Countries that combine democracy and high state capacity also provide their citizens with much more accurate tolls of the pandemic's mortal consequences.

In the next section, we discuss relevant studies on political factors and the COVID-19 pandemic and on how democracy and state capacity influence health care outcomes and the accurate reporting of public statistics. Thereafter, we lay out our theoretical argument on how democracy and state capacity interact in influencing the consequences of a pandemic, including the reporting of truthful and accurate information of adverse events. Next, we present the data for our main measures. Thereafter, we present the empirical strategy and results. Finally, we summarize our argument and findings, before discussing possible policy implications.

Relevant literature

Several studies have assessed the relationship between state capacity, or related concepts such as quality of government, and benevolent health outcomes such as low infant mortality and life expectancy, typically reporting a positive correlation (e.g., D'Arcy and Nistotskaya 2017; Hanson and Sigman 2021; Holmberg and Rothstein 2011). Weak-capacity states where corruption runs rampant presumably lead to less efficient health care service delivery, especially for those without connections or resources to obtain private health care. The associations between democracy and various public health outcomes have also been extensively studied (for a systematized review, see Gerring et al. 2021). Most studies report that democracy, on average, is related to desirable health outcomes of different kinds, including lower infant mortality (e.g., Wang et al. 2019) and increased life expectancy (e.g., Bollyky et al. 2019).

However, the health benefits of democracy that apply in "normal times" may not necessarily apply during a pandemic. Such a crisis creates a different set of challenges for policy makers and may require different policy tools. Anecdotally, at least early on in the COVID-19 pandemic, some autocracies like China and Singapore appeared to successfully take quick action while several democracies were slower to respond (Kavanagh and Singh 2020). While Edgell et al. (2021) find that violating different democratic standards, such as violently implementing quarantine measures or jailing journalists, did not reduce COVID-19 death rates, empirical analyses have, indeed, found that democracies reacted more slowly and waited for more deaths to occur before imposing restrictive measures such as lockdowns (Cheibub et al. 2020), imposed less stringent pandemic-mitigating measures overall (Dempere 2021), and experienced higher COVID-19 death per capita rates (Cepaluni et al. 2021, Narita and Ayumi 2021).

However, these results should be interpreted with two caveats in mind. First, democracies tend to be richer, more urbanized, and have more open economies, potentially contributing to faster transmission during the early stages of the pandemic for reasons other than how they are governed (Karabulut et al. 2021). Accounting for structural economic (and other) confounders is thus important when assessing the link between democracy and the consequences of the pandemic. Second, and probably more importantly, some studies cited above rely on government information, which may be especially unreliable in autocratic countries where freedom of information is suppressed and official statistics are tightly controlled by self-serving leaders. Autocracies are less likely to publish official statistics (Hollyer et al. 2018) and are systematically more prone to manipulating official statistics than democracies (Knutsen 2021; on manipulation of GDP data, see Magee and Doces 2015; Wallace 2016). Controlling for government censorship, Karabulut et al. (2021) find that democratic countries had higher infection rates, but lower COVID-19 fatality rates as of December 2020. Yet, since government censorship is an inherent feature of autocracies, and government provision of information may itself influence COVID-19 transmission through altering individual risk-perceptions and behavior (e.g., Bilinski et al. 2021), it is difficult to interpret the latter finding as evidence that democracy mitigates COVID-19 deaths. The extent of misreporting of COVID-19 deaths is presumably also correlated with state capacity. Indeed, the ability of state institutions to register and process information from across its territory is considered a key dimension of state capacity by many scholars (e.g., D'Arcy and Nistotskaya 2017; Brambor et al. 2020). In low-capacity states with dysfunctional bureaucracies and limited resources for collecting and aggregating data, official statistics are often wildly inaccurate and hardly comparable across countries (Jerven 2013). Many low-capacity states might be unable to detect COVID-induced deaths (especially in the rural periphery) and register them in officially reported statistics, *even if* government agents would like to provide an honest count.

Insofar as official information, from many countries, on COVID-19 death rates should not be trusted, one must search for alternative proxies when studying how political institutions relate to deaths. The best available such proxy, in most settings, is estimated "excess mortality", calculated as the difference between the number of people who died during a time interval and a hypothetical death rate, typically based on some historical average. Assuming that "excess deaths" during 2020 and 2021 roughly correspond to the approximate number of people who died from COVID-19 in most countries, using this proxy measure can reduce the problems of misreporting, and related biases in cross-country comparisons. (We elaborate on these considerations in the data section.)

To our knowledge, only a few studies on regime type, state capacity and COVID-19 outcomes have used excess mortality measures. These include a recent article by Esarey in the Atlantic (2021); while democracies registered more COVID-19 deaths than autocracies, democracies have fewer excess deaths at all levels of economic development. Badman et al. (2021) use the World Mortality Dataset by Karlinsky and Kobak (2021) and find a negative bivariate correlation between democracy and excess deaths. In a recent a working paper, Jain et al. (2021) use data by the Economist (until May 2021) and find a negative association between democracy and excess deaths for 78 countries. Importantly, most African countries (and, e.g., China and India) are excluded, and the sample is thus potentially biased towards countries with relatively high state capacity. Moreover, Jain et al. (2021) operationalize democracy using the Economist Intelligence Unit (EIU) indicator, which also captures aspects related to state capacity, such as the pervasiveness of corruption and civil service capacity in implementing policies (EIU 2021, 61). Since previous research shows that state capacity decreases the spread (Nabin et al. 2021) and fatality from COVID-19 (Gisselquist and Vaccaro 2021; Serikbayeva et al. 2021), it is unclear if Jain et al.'s (2021) findings are driven by democracy, state capacity, or both.

How democracy and state capacity interact in influencing pandemic response and reporting

We start our theoretical discussion by considering how democracy, in general, may influence the severity *and* accurate reporting of the pandemic's consequences. Next, we discuss how state capacity should generally influence the same outcomes. Finally, we turn to a more nuanced discussion, detailing why there are likely interaction effects between democracy and state capacity on our outcomes of interest.

Democracy

It is *a priori* unclear whether democracy should mitigate or enhance the adverse consequences -- in the form of cases, hospitalizations or deaths -- of a pandemic such as COVID-19, where various strict measures such as lockdowns or bans on multiple people assembling are relevant tools (Kavanagh and Singh 2020). There are two related mechanisms, pertaining to the difficulty of pursuing unpopular policies and to the speed of legislation, that point to more autocratic governments being better positioned for implementing measures that contribute to keep, for example, death tolls low. These mechanisms have been noted in scholarship on COVID-19 (Kavanagh and Singh 2020; Cheibub et al. 2020; Dempere 2021) and in public debates on which regimes are more effective in battling the pandemic (exemplified by our introductory discussion of the Chinese response). These mechanisms reflect arguments that have been invoked in decade-long debates over which regime type is better for promoting better governance and more effective developmental policies (see Przeworski and Limongi 1993; Knutsen 2021).

First, autocracies presumably have a larger toolkit of available policies, simply because they are less restricted by protections of civil liberties and because their leaders are not accountable to an electorate that may throw them out in the next elections. This makes it easier for autocracies to pursue policies that violate civil liberties, such as freedom of movement or assembly, or policies that are widely unpopular but may be effective in reaching a particular goal (such as shutting down shops). Second, there are typically more veto players and procedural requirements for legislation in democracies, making it harder to pass *any* kind of policy or reform in a speedy manner. Insofar as time is of the essence when passing COVID-19 mitigation measures, to stop the exponentially growing number of cases early, this may give autocracies a substantial advantage in reducing adverse consequences of such a pandemic.

Despite these very plausible arguments suggesting that democracies are at a disadvantage in fighting COVID-19, other, at least equally plausible arguments point in the opposite direction. First, the same accountability mechanisms that make it harder for democratic leaders to pursue unpopular COVID-19 mitigation policies may also incentivize leaders to pursue popular COVID-19 mitigation policies, even when these leaders do not personally care about spending resources and efforts on them. Simply put, democracies are better positioned to hold political leaders accountable to the preferences of the wider public. Insofar as many citizens want to mitigate COVID-19 deaths, electoral accountability incentivizes democratic leaders to prioritize an effective pandemic response to increase reelection chances. Where autocrats can afford to forego measures to fight the pandemic that they (for some reason) do not like, democratic leaders do not have the same luxury. US President Donald Trump advocated drinking bleach to fight COVID-19 and is currently out of office, possibly losing a critical number of voters because of his generally lax pandemic response.[11] In contrast, Alexander Lukashenko, in Belarus, advocated drinking vodka to fight COVID-19 at the start of the pandemic, and is still in office. When infections peaked, according to official statistics, Belarusian authorities abolished mask mandates less than two weeks after they were introduced. The decision came after Lukashenko dismissed the measures as unnecessary, presumably knowing he could not be replaced through competitive elections regardless of what effects this action had.[12]

Second, democracies should be especially good at dealing with complex crises where the optimal policy solution is far from obvious, a description that represents the COVID-19 pandemic well (Sebhatu et al. 2020). Democracies, with more transparent government decisions, voice ensured for different interest groups, and civil liberties protection ensuring freer flow of information and more open discussions, are generally better at allowing for the evaluation and selection of good policies under uncertainty (e.g., North 2005; Knutsen 2015; Greer et al. 2020). Even if democracies may react more slowly during crises, they are thus more likely to come up with better policies when they first react and be more responsive to changing course when presented with new information about the virus and the effectiveness of different measures. In contrast, autocracies often suppress and censor information, which may undermine the timing and effectiveness of emergency responses (Ang 2020; Stasavage 2020; Thompson and Ip 2020).

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[11] https://www.politico.com/news/2021/02/01/trump-campaign-autopsy-paints-damning-picture-of-defeat-464636

[12] https://apnews.com/article/coronavirus-pandemic-europe-health-pandemics-belarus-23001be567f93f12980c60bedd81a77c

One illustration of the latter point is the early Chinese response to the outbreak in Wuhan. Kavanagh (2020) argues that it was the suppression of information at the early stage of the outbreak that allowed the virus to spread to such an extent that drastic measures were eventually needed. In December 2019 and January 2020, the authorities detained health workers who tried to raise alarm about COVID-19, censored social media, and suppressed information on the nature of the virus; "through much of January, 2020, the Wuhan Municipal Health Commission reported no evidence of human-to-human transmission, no infection among health workers, that severe cases of disease caused by 2019-nCoV infection were confined to those with underlying conditions" (Kavanagh 2020: e135). Consequently, five million people left the city of Wuhan by the start of the travel ban in January 2020 (Chen et al. 2020), which contributed to the virus spreading throughout China and globally.

While plausible arguments point in different directions concerning the relationship between democracy and COVID-19-related deaths, expectations are much clearer for our other outcome, the accurate reporting of death rates. Indeed, the suppression-of-information argument speaks directly to this issue. The stricter control over information flows in autocracies, enabled by curtailing the freedom of the press and limiting critical opposition and independent organizations, makes it easier to report false statistics without being called out. Fewer checks on their power also makes it relatively easier for autocratic leaders to instruct government agencies to falsify statistics that are undesirable from the leaders' point of view. Conducting data fraud is much easier to do, and cover up, in autocracies (see Knutsen 2021). Insofar as political leaders may want to underreport the adverse consequences of COVID-19–for instance, to falsely indicate that they are pursuing very effective anti-COVID-19 policies or to mitigate the sense of crisis in the country–we expect that autocracies will underreport the number of COVID-19 deaths to a greater extent than democracies.

State capacity

Mobilizing an effective response to an urgent and complicated crisis and providing up-to-date statistics depend not only on the willingness of the government to pursue certain policies and disclose information, but also on its capacity to do so. Dealing with COVID-19 requires the capacity to implement resource-demanding emergency measures as well as test for and record COVID-19 cases and deaths. Hence, having state institutions with high capacity that can take on such complex tasks likely contributes to reducing the negative consequences of the pandemic as well as the misreporting on these consequences.

We are unable to identify any plausible mechanism that suggests that higher state capacity should lead to worse COVID-19-related consequences. Instead, we anticipate that state capacity and its prerequisite, a rule-following and impartial bureaucracy, mitigate detrimental consequences such as deaths. A well-organized and rule-following bureaucracy staffed by competent personnel should be better at implementing new and complicated policies in limited time. Whenever politicians propose policies to stem the spread of COVID-19, for example, the ability to implement these policies–be they social distancing requirements, mask mandates, or vaccination roll-outs–is vital for generating the intended consequences. The same goes for ensuring that policies that aim to limit severe disease and deaths across the country, such as moving ventilators to the locations most in need or training specialized medical personnel, work as intended.

High-capacity states should also be better at gathering information from across the territory, processing and aggregating such information, and reporting it in a timely and correct fashion. Regarding COVID-19-deaths, low state capacity is presumably related not only to inaccurate reporting, but to underreporting, more specifically. When government agencies cannot monitor, register, or process information about causes of deaths in large parts of the country, deaths due to COVID-19 will be left out of the statistics. Both democracies and autocracies that lack state capacity may thus struggle to report on the proportions of the epidemic, for instance due to inadequate testing or subpar hospital conditions (Thornton 2020).

In sum, we expect that higher state capacity is associated with fewer deaths from COVID-19 as well as a lower discrepancy between officially reported and actual deaths.

Democracy and state capacity interacting

Despite the plausible hypotheses on the directions of relationships proposed above, we do not assume that these relationships are of similar strength across all contexts. In fact, we anticipate that regime type and state capacity interact in how they shape the policy responses to, and reporting of, the pandemic. This comes from the general insight that for a country to effectively contain the pandemic, it must both have leaders with incentives to select appropriate policies *and* the capability to implement these policies swiftly and competently across the territory. If one of the two components–the "will" or the "ability"–are missing, case numbers and death tolls will increase. The same goes for accurate reporting of COVID-19-related deaths; countries must have leaders who are incentivized to report accurately, no matter how dire the news are, *and* the capability to obtain and process relevant information.

Having a democratic regime enhances the likelihood that one of the two components, namely the political "will" to mitigate and report accurately about COVID-19, is present. The argument pointing to a democracy advantage noted the importance of electoral accountability–accompanied by a free media and vocal opposition parties that may fuel debates about threats from the disease and importance of stopping it–for incentivizing politicians to fight COVID-19. In contrast, the above discussion suggested that having an autocratic regime and having high state capacity were both associated with the other required component, namely an increased "ability" to fight the pandemic (and for state capacity also capabilities to report consequences more accurately). With respect to potential autocracy advantages, arguments pointed to the speed with which policies could be implemented, and that even costly and presumably unpopular policies that mitigated the spread of COVID-19 (such as a full-scale Wuhan-style lockdown) are available options. For state capacity, quicker implementation with effective bureaucrats at the helm should also advance speed. Further, effective implementation should ensure that even less strict and civil liberty-encroaching policies, such as restrictions on particular events, mask mandates or social distancing requirements, will be followed according to plan, and thus be relatively effective. Hence, a high-capacity state may achieve many of the same benefits as an autocratic regime, even with different policy measures. The marginal benefits of having an autocratic regime, in terms of capability of fighting COVID-19, may thus be smaller when state capacity is high.

In contrast, the democracy advantages, pertaining to increased political incentives to fight (and avoid covering up) COVID-19, should be much stronger when the intentions and policies of leaders are effectively translated into actions on the ground by a capable bureaucracy. Similarly, the benefits of having a high-capacity state should be much stronger when the rule-following and effective bureaucracy is provided with instructions and policies from a democratic political leadership intent on mitigating deaths. Hence, we expect a complementary relationship between democracy and high state capacity on COVID-19 deaths. We expect a similar complementary relationship for accurate reporting of COVID-19 deaths since this requires both the ability to gather information from across the territory and process it correctly (high state capacity) *and* the political will to publish this information (democracy).

Data and measurement

Main independent variables

For democracy, we use a measure that captures a conventional understanding of the concept, focusing on its electoral aspect (Coppedge et al. 2020). More specifically, the Polyarchy index (Teorell et al. 2019) from V-Dem is constructed to operationalize Robert Dahl's (1971) definition, focusing on contested elections and their prerequisites (e.g., free discussion and freedom to form new parties) as well as widespread participation rights in these elections.
Polyarchy is continuous measure and ranges theoretically from 0 to 1. We measure Polyarchy in 2019 to mitigate endogeneity concerns related to pandemic responses influencing democracy (Edgell et al. 2021), and the empirical range in our sample is .02 (Saudi Arabia) to .91 (Denmark). The index is comprised of five sub-indices capturing, respectively, whether the chief executive and legislature are elected, the extent to which these elections represent free and fair contests between multiple parties, the extension of suffrage rights in the adult population, freedom of association, and freedom of expression. Each sub-index is, in turn, made up of several indicators (see Teorell et al. 2019 for details on indicators and aggregation procedures.) We employ alternative measures in robustness tests, including a binary measure of electoral democracy using (updated) data from Skaaning et al. (2015).

Broader definitions and operationalizations of democracy exist, some of which incorporate the rule of law, absence of corruption, or features of state bureaucracies. We avoid such maximalist definitions here for two main reasons: First, the theoretical arguments linking democracy to pandemic response centered on mechanisms of accountability induced by contested elections as well as freedom of expression (a central prerequisite for contested elections captured in Polyarchy). We favor democracy measures centering on regime aspects that are theoretically most relevant. Second, since we are interested in disentangling and studying the interactive relationship between democracy and state capacity empirically, we must avoid *a priori* conceptual overlap between measures of our two independent variables. Hence, we cannot employ measures, such as V-Dem's Liberal Democracy index, which incorporate aspects pertaining to how rule of law is enforced, for example.

Concerning state capacity, this is a difficult concept to measure, as it is inherently unobservable (Lindvall and Teorell 2016). Following Gjerløw et al. (2021: 34), we consider "state capacity" to be "the ability of state institutions to implement (various) policies, as envisioned by those that drafted these policies and across the state's territory, even when social actors oppose the implementation of these policies". While capacity can vary across policy areas and substantive tasks, the idea that states can effectively implement whatever policies the government legislates is a common core. Since the policies that mitigate the consequences of a pandemic span different policy areas (enforcement of lockdowns, workplace policies, monitoring of borders, health care, information gathering, providing information to all citizens, etc.), we want to use a measure of state capacity that is not focused on one policy area (e.g., health care).

We use the "impartial and rule-following administration" indicator from V-Dem as our benchmark measure for state capacity. The indicator draws on the following question, which are scored by multiple V-Dem country experts on an ordinal five-point scale: "Are public officials rigorous and impartial in the performance of their duties?" (Coppedge et al. 2021: 175). Before responding to this question, the experts are told that they should consider "the extent to which public officials generally abide by the law and treat like cases alike or conversely, the extent to which public administration is characterized by arbitrariness and biases (i.e., nepotism, cronyism or discrimination)". The measure is later transformed by V-Dem's measurement model (Pemstein et al. 2021) into a latent, continuous scale, which we normalize by using the minimum (-2,5; Libya) and maximum (4.0; Denmark) values in our sample (measured in 2019) so that it ranges from 0 to 1.

This is not a direct measure of state capacity, but rather a proxy, and our choice of main measure builds on a key assumption: The main requirement for states to effectively implement different policies is that their bureaucracies are capable and willing to perform tasks according to the law and through applying clearly codified rules, rather than, e.g., using personal discretion. To be effective and reflect the intent of the original legislation, decisions made by bureaucrats must follow clearly specified rules and procedures and they must be conducted in an impersonal manner. Yet, since state capacity is such a difficult concept to measure, we want to ensure that results do not hinge on this specific operationalization. We therefore employ other relevant measures that tap into the quality and effectiveness of the bureaucracy, mainly using alternative indicators from V-Dem (results are presented in Appendix B). We also test relevant measures from other data sources with extensive cross-country coverage, notably the recent State Capacity index by Hanson and Sigman (2021). This index is formed through Bayesian latent variable analysis on several, quite different indicators tapping into the state capacity concept. Using this index truncates the sample by about 10 countries due to missing data and the most recent year of measurement is 2015. Still, this index has the advantage of capturing different aspects of state capacity. And, since it differs in terms of construction and content from the impartial administration measure from V-Dem (their bivariate correlation in our sample is .79), using it constitutes an important robustness test. We therefore report our main specifications for both these measures.

Dependent variables

To measure COVID-19 deaths, we use data on excess deaths from the Economist (2021). Excess mortality is "the increase of the all-cause mortality over the mortality expected based on historic trends" (Karlinsky and Kobak 2021) or "deaths above the number that would be expected on past trends, given demographic changes" (Economist 2021). Excess mortality measures are increasingly being used in research on COVID-19 and has also been used to estimate deaths during previous pandemics and natural disasters (Karlinsky and Kobak 2021). While the official death toll from COVID-19, globally, surpassed 5 million as of November 2021, the excess mortality-based estimate was close to 17 million.[13] This is a first indication that choice of mortality measure matters when studying the pandemic.

While excess mortality measures also suffer from limitations, they are widely deemed as more accurate proxies for actual deaths and more comparable across countries than publicly reported deaths. One reason is limitations in testing capacity and reach in many countries, meaning that not everyone who died from COVID-19 got tested, and thus registered appropriately (Ioannidis 2020). In Ecuador, Cuéllar et al. (2021) estimate that confirmed COVID-19 deaths made up only 21% of excess deaths in 2020 where undercounting was partly due to insufficient testing.

Countries also use different definitions for what counts as a COVID-19 death, making direct cross-country comparisons of public death tolls difficult *even when* reporting is accurate. Such differences include whether a positive COVID-19 test or hospitalization is required or not for registering that the person died from COVID-19 (Giattino et al. 2021). People who die from COVID-19 often have other underlying diseases, and such cases may be recorded as deaths from other diseases (Ioannidis 2020). Russia, for example, registers only cases where COVID-19 is confirmed the main cause of death based on autopsy results (Beaney et al. 2020). This approach excludes, for example, patients infected with COVID-19 whose direct cause of death was a heart attack.[14] Based on the state's own excess deaths estimate, Russia's COVID-19 death toll was three times the officially reported number of COVID-19 deaths by November 2020 (Kobak 2021). The

[13] https://www.economist.com/graphic-detail/2021/11/02/the-number-of-people-who-have-died-from-covid-19-is-likely-to-be-close-to-17m?fsrc=core-app-economist

[14] https://www.nytimes.com/2021/04/10/world/europe/covid-russia-death.html

government statistics agency Rosstat even confirmed that more than 81% of the increase in excess mortality is due to COVID-19.[15] Yet, official COVID-19 death statistics were not changed.

Another example is Peru where the death toll more than doubled after the government changed its definition of a COVID-19 death (Karlinsky and Kobak 2021). Prior to June 2020, Peru only counted deaths with a previously positive COVID-19 test. With low testing capacity, Peru did not have the resources to test all suspected cases.[16] After expanding the definition to cases with COVID-19 symptoms and those who had contact with someone infected with COVID-19, COVID-19 mortality increased from 69,342 to 180,764 deaths, which comes close to excess mortality estimates (Karlinsky and Kobak 2021).

While the Peruvian case demonstrates involuntary underreporting, some countries voluntarily misreport official numbers (Cassan and Steenvoort 2021). For example, a former employee at Rosstat proposed that Russia has manipulated its mortality statistics, whereby a regional official "just draws a line by hand to flatten the curve".[17] In Belarus, authorities stopped publishing (general) mortality data in June 2020 (see Figure 1). Yet hacked passport data allowed for an accurate and independent analysis, suggesting that excess mortality was about 14 times the official COVID-19 death toll from March 2020 to March 2021.[18]

In sum, using official statistics for cross-country studies is problematic because of differences in how different countries identify COVID-19 deaths, as well as involuntary (e.g., due to lack of testing capacity) and voluntary (e.g., manipulation of data in autocracies) misreporting. Official statistics may even be biased towards larger death tolls in high-capacity democratic countries and lower death tolls in autocracies or low-capacity states.

While excess mortality is a more objective indicator of actual death tolls than officially reported deaths (Beaney et al. 2020), excess mortality estimates also come with caveats and limitations. In contrast to official mortality figures, excess death estimates capture the total effect of the pandemic on mortality (Giattino et al. 2021), including deaths from secondary effects of the pandemic such as healthcare system collapses. More problematically, it captures deaths from other crises, such as wars and natural disasters if they are left unaccounted for (Karlinsky and Kobak 2021). Some countries, New Zealand and Norway being two examples during COVID-19, even

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15 https://www.theguardian.com/world/2020/dec/28/russia-admits-to-world-third-worst-covid-19-death-toll-underreported
16 https://www.bbc.com/news/world-latin-america-57307861
17 https://www.washingtonpost.com/world/europe/russia-covid-count-fake-statistics/2021/10/16/b9d47058-277f-11ec-8739-5cb6aba30a30_story.html
18 https://www.euronews.com/2021/09/14/the-regime-is-bleeding-brains-meet-the-hackers-trying-to-bring-down-belarus-disputed-presi

have negative excess mortality, which might seem strange. While this could partly stem from measurement error, it could, however, also be partly related to COVID-19, as lockdowns and social distancing resulted in reduced mortality from other communicable diseases. Restrictions on movement may also have reduced deaths from other causes such as air pollution and traffic incidents (Beaney et al. 2020). While excess mortality therefore surely captures more than just deaths from COVID-19, we maintain that it, in most countries, approximates the actual death toll from COVID-19 better than official estimates.

Most data sources that estimate excess mortality rely on official mortality data published by governments over several years (to calculate the historical baseline). This includes Karlinsky and Kobak's (2021) World Mortality dataset, which scores 103 countries based on officially available information, but excludes most of Africa as well as China and India. In countries with low state capacity, governments may struggle to register deaths at any point in time, even in the absence of large-scale crises. There are well-known discrepancies between the ability of governments and statistical offices to accurately record deaths. According to Giattino (2021), approximately one-third of all countries register less than 90% of all deaths, with some countries registering fewer than 10%. During a pandemic, capacity for registering deaths may be further undermined. Hence, officially reported excess death data from several countries (typically with low state capacity) are often not calculated or measured with substantial error.

We use a new and carefully constructed dataset by the Economist (2021) that tries to mitigate some of the above-mentioned issues and expands the cross-country coverage. It includes excess mortality estimates for more than 200 countries and territories based on 121 indicators and various data sources, including the World Mortality dataset, data from statistics agencies, data on healthcare quality, prevalence of antibodies, mobility, etc. For countries that do not publish excess mortality data, the Economist uses a machine-learning algorithm to produce the best estimate based on factors such as official deaths, percentages of positive COVID-19 tests, demographic and geographic factors, and estimates of excess deaths from certain regions where data for the entire country is missing. One issue with using these data for our purposes is that the Economist machine-learning model uses V-Dem data, particularly the Liberal Democracy and Freedom of Expression indices, plus data on political regimes from other sources such as Freedom House and Polity. While political regime variables comprise only a modest proportion of the 121 predictors, and it is far from clear that their inclusion bias our results in a particular direction, we still caution that this could influence observed correlations reported below.

We use the Economist's measures of excess deaths per 100 thousand inhabitants and officially reported deaths per 100k inhabitants. We also construct a measure of underreporting of Covid-19 deaths by subtracting official deaths per 100k inhabitants from excess deaths per 100k inhabitants. For our main tests, we draw on numbers updated to September 26, 2021 and enter the death rates directly without any transformation. The reason for extending the data to the end of September 2021 is that long time-series coverage should mitigate fluctuations stemming from random factors making particular countries experiencing more COVID-19 cases in particular time periods. There are, however, drawbacks to extending the time series; countries have different lags in the reporting of COVID-19 deaths and officially reported death counts might change when more data becomes available; such delays might range from days to months, or even years (Karlinsky and Kobak 2021). Because there is no ideal end-date that would ensure sufficiently long time intervals *and* that all official data has been reported for all countries, we use different temporal cut-offs as robustness checks. Specifically, we conduct tests with data until December 2020. In other tests, we log-transform the different dependent variables and try out excess death rates from the Giattino et al. (2021) dataset. Descriptive statistics for all measures used in our analyses are in Appendix A.

Figure 1 demonstrates the Economist data for Belarus (left) and Tanzania (right). Above, we discussed how Belarus is one autocracy that presumably manipulated official COVID-19 statistics and eventually even stopped publishing general mortality statistics. The leftmost dashed line shows excess mortality based on official and hacked sources from April 2020 to March 2021, whereas the rightmost dashed line is excess mortality as predicted by the Economist model for the subsequent period when official data on overall mortality is missing. The different excess mortality estimates suggest much higher and more volatile COVID-19 mortality rates than the suspiciously low and stable government-reported COVID-19 death numbers (solid line). The right panel for Tanzania shows excess deaths estimated by the Economist (dashed line) and officially reported COVID-19 deaths (solid line). Tanzania was labeled "the Most Blatant Covid-19 Coverup" by the Wall Street Journal,[19] as former President John Magufuli, who suspectedly died from COVID-19-related complications about a year later, declared the country COVID-19 free in May 2020 (Carlitz et al. 2021). The numbers corroborate the "Coverup" label; based on the Economist estimates until September 2021, estimated excess deaths in the country, which took an authoritarian turn

[19] https://www.wsj.com/articles/covid-19-coronavirus-coverup-tanzania-11636042309

under President Magufuli, were more than 1000 times larger than officially reported COVID-19 deaths.

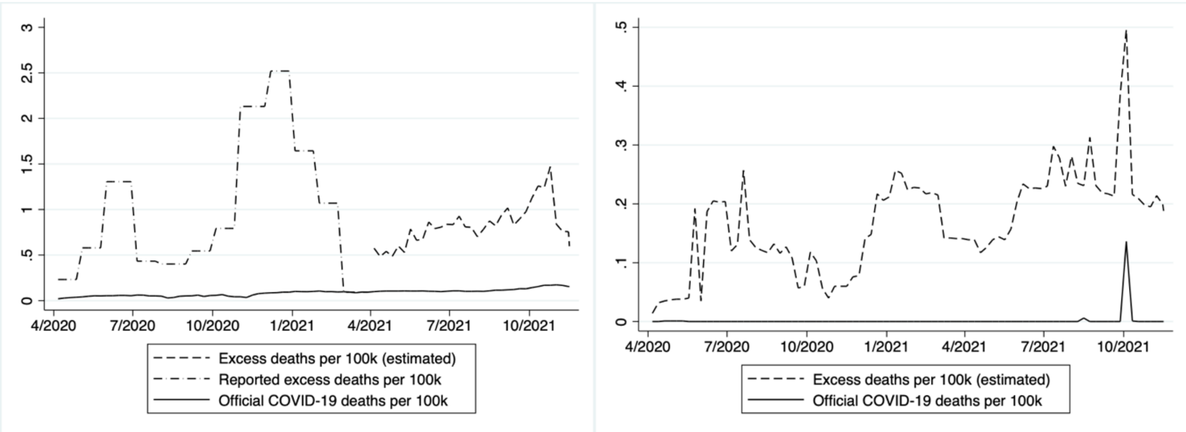


Figure 1. Official COVID-19 deaths and excess deaths per 100,000 inhabitants in Belarus (left) and Tanzania (right).

Empirical analysis

Before proceeding to our regression analyses, we visualize and discuss descriptive patterns in the data. More specifically, we show how our two main independent variables – democracy as measured by the Polyarchy index and state capacity as proxied by the impartial and rule following administration measure from V-Dem, both measured in the last pre-pandemic year (2019) – correlate with the three dependent variables of interest. Appendix A contains scatterplots for different democracy and state capacity measures.

Figure 2 displays scatterplots and best linear fit lines for democracy (left plot) or state capacity (right plot) along the X-axes and COVID-19 deaths reported by governments along the Y-axes. If we are to believe the official statistics, democratic countries typically have more COVID-19 deaths than autocratic ones; the bivariate correlation is .43. The average number of reported COVID-19 deaths among the 91 relatively democratic countries scoring ≥.5 on Polyarchy is about 116 dead per 100,000 inhabitants. (When excluding the outlier Peru, the equivalent number is still 110). Among the 81 relatively autocratic countries scoring <.5 on Polyarchy, the average number of deaths is almost a third as large, at 39 per 100,000 inhabitants.

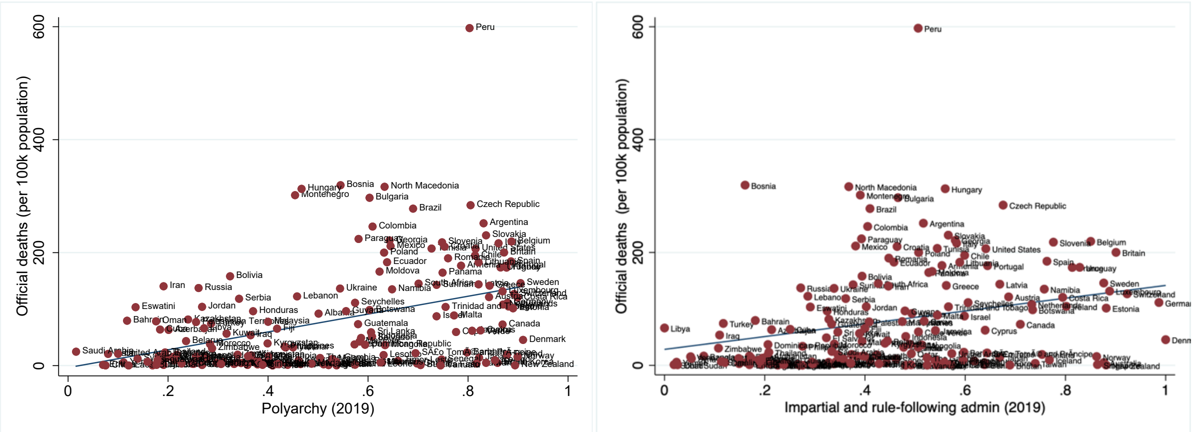


Figure 2: Bivariate relationships democracy (left plot) or state capacity (right plot) and officially reported COVID-19 deaths (per 100,000 inhabitants): Scatterplots overlaid with best-fit lines. The impartial and rule-following administration measure used to proxy for state capacity is normalized to range between 0 and 1 in the year of measurement (2019).

Interestingly, a similar, albeit weaker, correlation of .27 obtains for the impartial and rule-following administration indicator. Correlation coefficients are similar or stronger when using alternative measures of state capacity, such as indicators on state fiscal capacity (.39) or meritocratic recruitment of public officials from V-Dem (.25), or the state capacity index (.42) from Hanson and Sigman (2021). In short, countries with higher state capacity tend to report more COVID-19 deaths.

Yet, these correlations with officially reported deaths should not be conflated with democracy and state capacity going together with more actual COVID-19 deaths. While it is a proxy associated with noise, there is far less reason to worry about substantial biases and better reason to assume cross-country comparability for the excess mortality measure coded by the Economist (2021). When using this measure, the moderate to strong correlations registered for officially reported deaths not only disappear, but the correlation coefficients change sign. More democratic countries have fewer excess deaths than autocratic ones (r=-0.11 for Polyarchy) and countries with higher state capacity have fewer deaths than low-capacity countries (r=-0.22 for Impartial administration). This is a first indication that the pattern of lower reported COVID-19 deaths for autocracies and for low-capacity states is due to biased reporting.

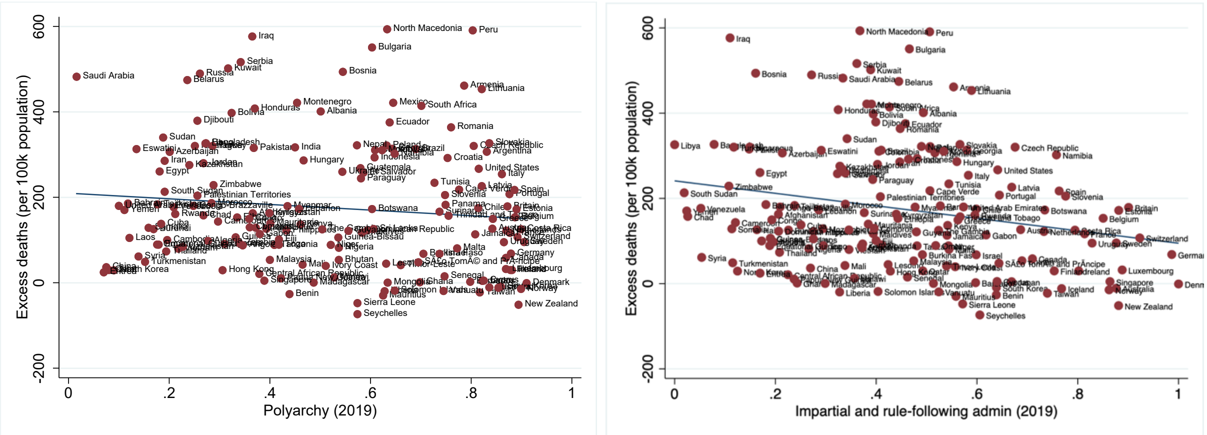


Figure 3: Bivariate relationships democracy (left plot) or state capacity (right plot) and excess deaths (per 100,000 inhabitants): Scatterplots overlaid with best-fit lines.

The latter point is illustrated also by Figure 4, which maps our measure of reporting bias for COVID-19 deaths on the Y-axes. There is a fairly tight negative relationship between democracy and reporting bias (r=-0.49) and an even tighter one for state capacity (r=-0.51). These correlations are retained when using alternative measures for democracy and state capacity (Appendix A). Moreover, the implied differences are substantial in size. To illustrate, the average under-reporting of COVID-19 deaths for relatively autocratic countries (Polyarchy below 0.5) is 152 per 100 thousand population – almost four times the number of officially registered deaths among autocracies – whereas democracies, on average, under-report COVID deaths by only 51, less than half the number of officially registered deaths in these countries.

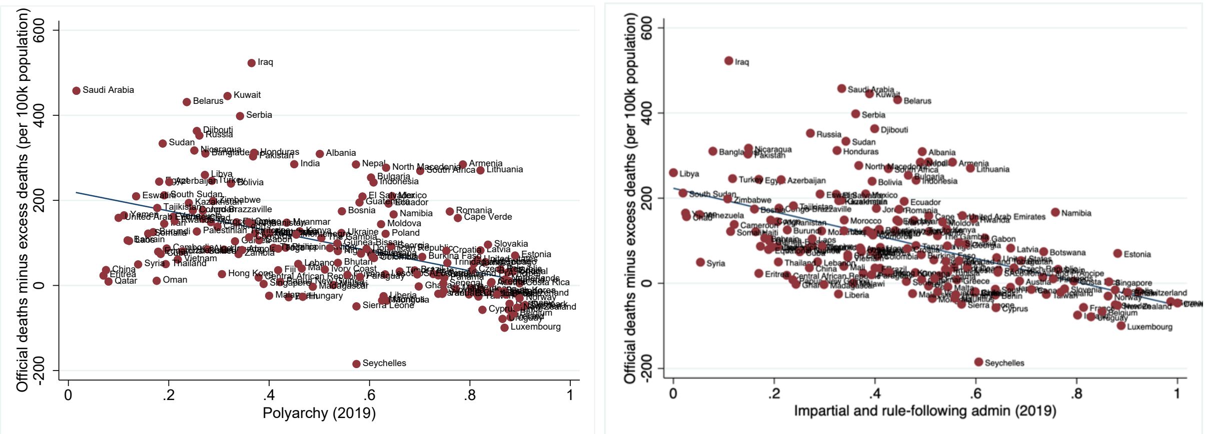


Figure 4: Bivariate relationships democracy (left plot) or state capacity (right plot) and under-reporting of COVID-19 deaths (per 100,000 inhabitants): Scatterplots overlaid with best-fit lines.

These bivariate patterns turn out fairly robust to accounting for various plausible confounders, i.e., different factors that might simultaneously influence the two political-institutional measures as well as COVID-19 deaths or the reporting of such deaths, in different regression specifications. Table 1 presents our main specifications, whereas Online Appendix B contains several others, controlling for additional potential confounders (such as ongoing conflict, natural resource income, or recent GDP p.c. growth), using alternative measures, or delimiting the sample (e.g., by removing outliers or all countries with negative excess death estimates).

There are three specifications in Table 1, each run for all three dependent variables. The first, parsimonious specification only contains democracy and state capacity as covariates. The estimator is Ordinary Least Squares (OLS), but we use robust HC(3) errors to properly account for heteroskedasticity (see Hayes and Cai 2007).

The second specification introduces several plausible confounders for which we find the risk of introducing post-treatment bias to be relatively low. These are Ln GDP per capita (p.c.), Ln Population, and Population density, all measured in 2014, i.e., five years before democracy and state capacity. GDP and population data are taken from Fariss et al. (2017), and the land area data are taken from Coppedge et al. (2021). Although life expectancy (Gerring et al. 2021) and other demographic features such as birth rates (Przeworski et al. 2000) may be affected by regime type and presumably also state capacity, and thus introduce post-treatment bias, we opted to also include two slow-moving demographic features measured prior to democracy and state capacity. These are share of population >65 years and life expectancy, which may both critically influence the probability of dying from COVID-19 once contracted. Both variables are gathered from Bosancianu et al. (2020).

In the final specification, we include additional controls that expectedly correlate with COVID-19 deaths, but which may be "bad controls" since they represent manipulable health policy measures that are likely influenced both by political regime type (democracies spend more on health policies for the broader population; Gerring et al. 2021) and state capacity (high-capacity states provide better health services, Rothstein 2012, and may more accurately keep track of how prevalent diseases are). These three controls, collated from Bosancianu et al. (2020), are Doctors p.c., Hospital beds p.c., and Respiratory disease prevalence in the population. We deliberately do *not* control for COVID-19 policies and vaccination rates because including such variables is even more likely to introduce post-treatment bias (as indicated by our theoretical argument on expected policy differences across regimes and states with varying capacity).

While changing the sets of controls alters the coefficient sizes and significance levels somewhat, they are not very consequential for the results. What matters far more, is the choice of dependent variable, especially for the democracy coefficient. Democracy is consistently positive and highly significant when officially reported deaths is the dependent variable in Models 1-3. In contrast, democracy is far from significant at conventional levels, and the coefficient sign flips between specifications, when excess deaths is used in Models 4-6. Hence, while trusting official statistics would lead us to conclude that democracy enhanced the number of COVID-19 deaths, using the more appropriate and less biased excess deaths measure leads to the conclusion that democracy, on average, does not clearly relate to COVID-19 deaths.

In contrast, Models 7-9 suggest that democracy does relate to reporting bias. More democratic countries typically have far smaller under-counts of COVID-19 deaths than more autocratic countries, and this result is statistically significant at the 5% level in the parsimonious (Model 7) and intermediate (Model 8) specifications, and at 10% in Model 9 controlling also for policy measures that are arguably post-treatment to democracy. The point estimates are substantial; Model 8 suggests that going from the theoretical minimum to maximum on Polyarchy reduces the number of under-reported COVID-19 deaths by about 150 per 100,000 inhabitants.

For state capacity, the picture is somewhat different. The impartial administration coefficient is negative for officially reported deaths, which stands in contrast with the bivariate correlation. This goes even for the parsimonious Model 1, controlling only for Polyarchy. Hence, the positive correlation between state capacity and officially reported COVID-19 deaths seems mainly to stem from high-capacity states also being more democratic, and democratic countries have more reported deaths. The relationship between state capacity and officially reported COVID-19 deaths is only strengthened when adding control variables in Models 2 and 3.

The relationship with the less biased excess death measure is even stronger, both in terms of size of the coefficient and statistical significance, as reported in Models 4-6. Going from the minimum to maximum level on state capacity, according to Models 5 and 6, reduces the number of COVID-19 deaths by around 320 deaths per 100,000 inhabitants.

Finally, Models 7-9 indicate that state capacity also plays a major role in reducing under-reporting of deaths. In fact, the impartial administration coefficient is even larger in size than the (very sizeable) Polyarchy coefficient and always significant at 1 percent. Models 8 and 9 suggest that going from minimum to maximum on this proxy of state capacity reduces under-reporting of COVID-19 deaths by about 190 per 100,000 inhabitants.

Table 1: Democracy, state capacity, and COVID-19 related outcomes: Linear specifications with different control variable sets

	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)
Polyarchy index	191.21***	137.36***	149.12***	76.88	-20.29	16.42	-117.23**	-153.51**	-129.45*
	(4.77)	(2.67)	(2.82)	(1.07)	(-0.23)	(0.17)	(-2.17)	(-2.10)	(-1.72)
Impartial administration	-49.65	-130.79***	-128.53***	-212.56***	-322.52***	-318.29***	-175.39***	-194.07***	-191.85***
	(-1.17)	(-3.17)	(-3.02)	(-2.92)	(-4.24)	(-4.09)	(-3.30)	(-3.27)	(-3.20)
Ln GDP p.c.		2.81	8.10		-4.30	2.49		-7.38	-6.05
		(0.42)	(0.96)		(-0.26)	(0.13)		(-0.53)	(-0.40)
Ln Population		-0.18	1.29		5.87	9.37		5.28	7.36
		(-0.04)	(0.29)		(0.75)	(1.14)		(0.84)	(1.13)
Population density		-0.01**	-0.01*		-0.01*	-0.01**		-0.01	-0.01
		(-2.06)	(-1.96)		(-1.84)	(-2.15)		(-1.39)	(-1.62)
Life expectancy		3.54**	2.85		6.68**	5.83*		3.07	2.93
		(2.02)	(1.43)		(2.37)	(1.97)		(1.43)	(1.40)
Share of population >65		3.62	3.39		5.01	2.42		1.35	-1.01
		(1.53)	(1.20)		(1.28)	(0.49)		(0.44)	(-0.27)
Doctors p.c.			0.06			0.11			0.05
			(0.64)			(0.54)			(0.37)
Hospitals p.c.			-0.04			0.01			0.04
			(-0.66)			(0.05)			(0.69)
Respiratory disease prevalence			-21.88**			-39.13**			-16.54
			(-2.05)			(-2.24)			(-1.37)
Constant	1.32	-240.53**	-180.08	230.65***	-201.28	-114.96	239.79***	53.74	76.62
	(0.13)	(-2.22)	(-1.37)	(9.56)	(-1.25)	(-0.60)	(11.88)	(0.41)	(0.56)
N	172	164	164	175	165	165	172	164	164
R^2	0.19	0.37	0.39	0.06	0.23	0.26	0.29	0.33	0.34

Notes: ***p<0.01; **p<0.05; *p<0.1. Linear regressions with HC(3) robust standard errors. Outcome in top row. Country is unit of analysis. COVID-19-related outcomes are aggregated across time and measured in September 2021. Polyarchy and impartial administration (normalized to 0-1) are measured in 2019. Control variables are measured before 2019, typically in 2014.

Table 2: Democracy, state capacity, and COVID-19 outcomes: Robustness tests using state capacity measure from Hanson and Sigman

	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)	b/(t)
Polyarchy index	115.89***	100.82**	116.79**	-86.24	-122.5	-76.54	-207.72***	-215.82***	-187.01***
	(3.77)	(2.14)	(2.39)	(-1.39)	(-1.55)	(-0.89)	(-4.01)	(-3.36)	(-2.80)
State capacity	104.58***	-143.76**	-161.04***	78.20	-334.78***	-369.27***	-37.47	-204.58**	-220.00**
	(2.62)	(-2.43)	(-2.69)	(1.01)	(-2.82)	(-3.17)	(-0.61)	(-2.04)	(-2.25)
Ln GDP p.c.		4.02	10.54		1.25	11.99		-2.48	1.41
		(0.57)	(1.20)		(0.07)	(0.58)		(-0.16)	(0.09)
Ln Population		0.21	2.24		6.31	10.85		5.00	7.53
		(0.04)	(0.44)		(0.70)	(1.15)		(0.72)	(1.05)
Population density		-0.01	-0.01		-0.03	-0.02		-0.01	-0.01
		(-0.41)	(-0.46)		(-0.57)	(-0.59)		(-0.83)	(-0.74)
Life expectancy		4.14**	3.45		7.75**	6.96**		3.56	3.48
		(2.20)	(1.65)		(2.47)	(2.15)		(1.51)	(1.50)
Share of population >65		4.76**	4.83*		7.45*	5.67		2.71	0.84
		(1.98)	(1.66)		(1.81)	(1.09)		(0.90)	(0.22)
Doctors p.c.			0.06			0.08			0.02
			(0.60)			(0.37)			(0.13)
Hospitals p.c.			-0.04			-0.00			0.04
			(-0.77)			(-0.01)			(0.69)
Respiratory disease prevalence			-22.67**			-43.68**			-20.11
			(-2.13)			(-2.40)			(-1.59)
Constant	-36.43**	-264.92**	-211.20	185.34***	-251.06	-182.51	233.89***	29.77	41.84
	(-2.45)	(-2.23)	(-1.53)	(6.15)	(-1.40)	(-0.88)	(9.91)	(0.20)	(0.28)
N	162	158	158	165	159	159	162	158	158
R^2	0.23	0.38	0.40	0.01	0.18	0.22	0.23	0.29	0.30

Notes: ***p<0.01; **p<0.05; *p<0.1. Linear regressions with HC(3) robust standard errors. Outcome in top row. Country is unit of analysis. COVID-19-related outcomes are aggregated across time and measured in September 2021. Polyarchy measured in 2019 and state capacity (normalized to 0-1) in 2015 (last year data). Control variables are measured prior to 2015, typically in 2014.

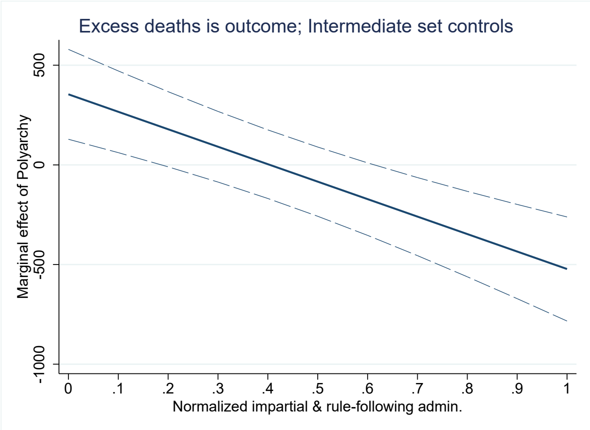
Table 2 replicates Table 1 when replacing the impartial administration measure Hanson and Sigman's (2021) State Capacity index. Despite the very different nature of the measure, this index being measured in 2015 (last year of data) instead of 2019, and the samples being truncated with six to ten fewer countries, patterns are fairly similar, except for in the specifications without controls where state capacity loses significance.

In Appendix B, we show how robust the results reported in Table 1 are to adding more control variables, using alternative measures of democracy and state capacity, log-transforming COVID-19 deaths, using alternative data on excess deaths, using alternative standard errors, omitting observations with negative excess death scores, and running robust regression that omits highly influential observations and downweighs influential ones. Results are generally robust, although results on under-reporting are insignificant for state capacity when using the alternative excess death data. Yet, in sum, the results presented in Table 1 are fairly (although not entirely) robust across numerous, important measurement and specification choices.

Yet, our theoretical argument suggested that specifications assuming homogeneous relationships with democracy and state capacity may mask considerable heterogeneity. More specifically, we anticipated that the relationships between state capacity and actual COVID-19 deaths or accurate reporting of such deaths would be even more prominent in more democratic countries. Likewise, we anticipated that any "benevolent effects" of democracy on deaths and accurate reporting may be clearer in high-capacity states than in low-capacity states.

To assess these propositions, we expand the nine models in Table 1 with a multiplicative interaction term between Polyarchy and Impartial administration. The tabular presentation is provided in Appendix C. The results corroborate our expectations that democracy and state capacity are complementary in reducing COVID deaths as well as in mitigating under-reporting. Indeed, the interaction term has the expected sign and is statistically significant *at least* at 10% in all nine models.

To be more specific about the predicted relationship between democracy and the outcomes at different levels of state capacity (and vice versa), we present interaction plots for equivalents to Models 5 (intermediate set of controls, excess deaths) and 8 (intermediate controls, under-reporting of deaths). Similar plots for the other models are in Appendix C. These plots show the estimated marginal effects of democracy (state capacity), surrounded by 95% confidence intervals, for different levels of state capacity (democracy).



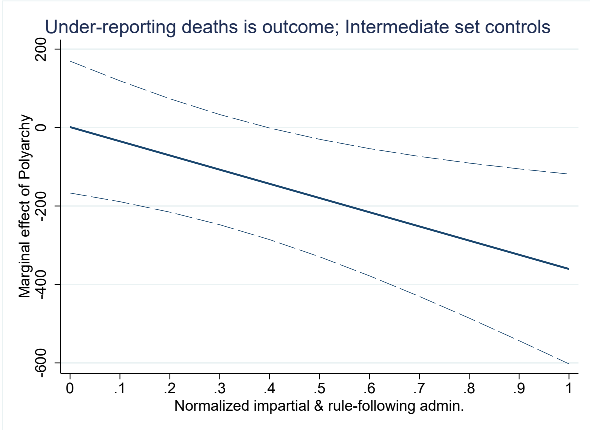


Figure 5: Marginal effects of Polyarchy on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Impartial and rule-following administration. Marginal effects are calculated from specifications with intermediate sets of controls (i.e., Ln GDP p.c.; Ln Population; Population density; Life expectancy; Share of population >65)

Figure 5 presents the estimated marginal effects of Polyarchy for, respectively, excess deaths (left) and under-reporting (right). Both lines are downward sloping, suggesting that the marginal effect of democracy becomes "more benevolent", both for reducing COVID-19 deaths and for mitigating underreporting, as state capacity increases. As for the sign of these marginal effects, the leftmost plot suggests that democracy may actually contribute to increasing COVID-19 deaths somewhat at the very lowest levels of state capacity. But the marginal effect becomes statistically indistinguishable from zero once the normalized impartial administration measure goes beyond 0.2, around the current level of Bosnia-Herzegovina or Egypt. When impartial administration reaches intermediate levels (around 0.6, close to current Mexico or Poland), the marginal effect of Polyarchy once again turns statistically significant at 5%, but now suggesting that democracy systematically contributes to reducing COVID-19 deaths.

For reporting bias, the estimated marginal effect of democracy is always negative. Yet, this negative marginal effect decreases in state capacity, as expected, and turns statistically significant at 5% once the impartial administration measure goes beyond 0.4. Hence, for intermediate and high levels of state capacity, democracy is clearly associated with less under-reporting of COVID-19 deaths.

Figure 6 shows similar plots for the estimated marginal effects of Impartial state administration, calculated at different levels of Polyarchy. The downward-sloping marginal effects follow our expectations concerning the complementarities between democracy and state capacity in mitigating both COVID-19 deaths and reporting bias: The more democratic a country is, the more a given increase in state capacity contributes to fewer deaths and more accurate reporting of deaths. At very low levels of democracy, however, the marginal effects of state capacity are statistically indistinguishable from zero for both outcomes. When Polyarchy increases to around 0.35, around the current democracy level of, e.g., Iraq or Pakistan, the marginal effect of state capacity turns statistically significant at 5% for both outcomes. That is, for semi-authoritarian and democratic countries, increases in state capacity contributes to mitigating both COVID-19 deaths and under-reporting of such deaths.

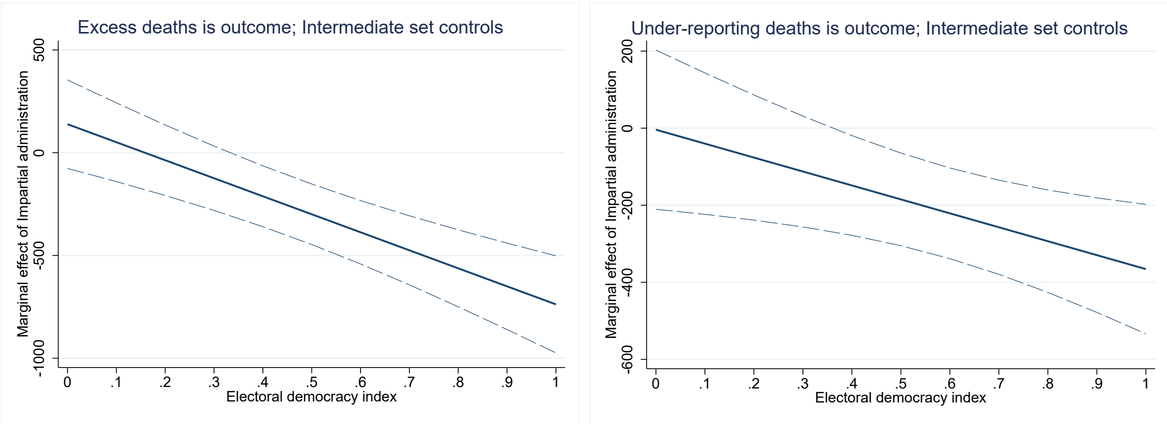


Figure 6: Marginal effects of Impartial state administration on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Polyarchy index. Marginal effects are calculated from specifications with intermediate sets of controls (i.e., Ln GDP p.c.; Ln Population; Population density; Life expectancy; Share of population >65)

In Appendix C, we present several additional interaction and split-sample tests (democracies vs autocracies and low- vs. high-capacity states), trying out different measures of democracy and state capacity and different control variable sets. While the exact strength of the interaction and the predicted levels of state capacity (democracy) at which democracy (state capacity) starts contributing to fewer deaths and less under-reporting vary with the specification, the general pattern remains the same. Figures 7 and 8 provide an important illustration. Here we substitute the impartial and rule-following administration indicator with the Hanson and Sigman index for State Capacity (measured in 2015). While the state capacity measure is very different and the sample reduced by about ten countries, the patterns remain very similar to those reported in Figures 5 and 6.

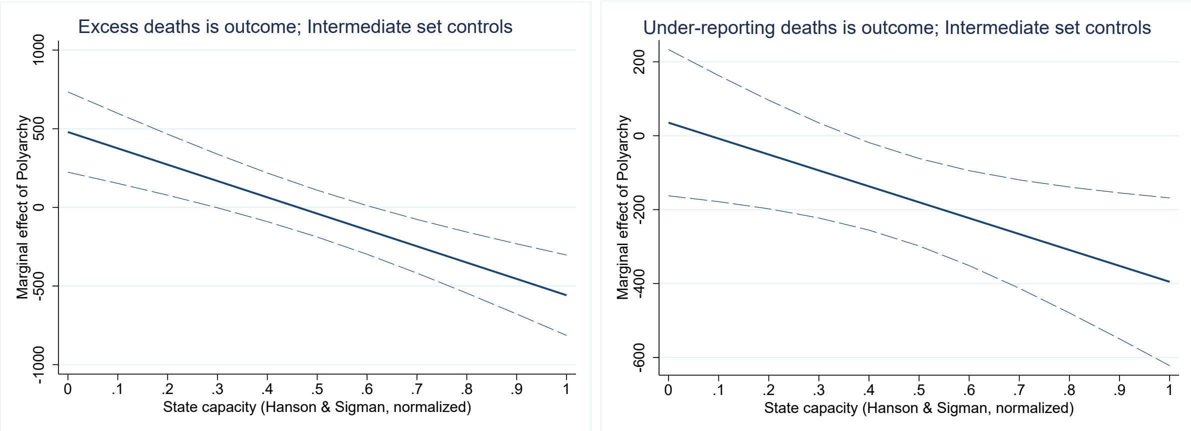


Figure 7: Marginal effects of Polyarchy on Excess deaths (left) and Under-reporting of deaths (right), at different levels of State Capacity (index from Hanson and Sigman 2021). Marginal effects are calculated from specifications with intermediate sets of controls (i.e., Ln GDP p.c.; Ln Population; Population density; Life expectancy; Share of population >65)

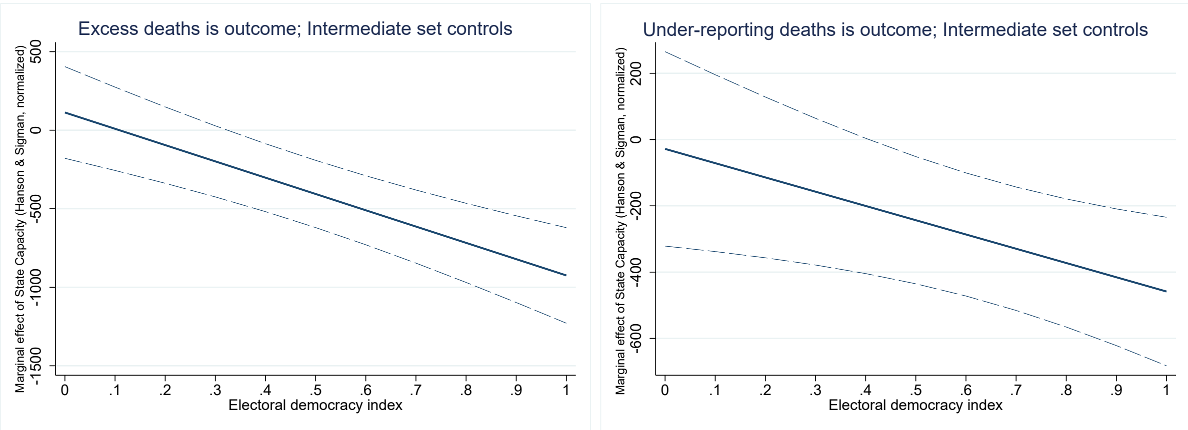


Figure 8: Marginal effects of State Capacity (normalized index from Hanson and Sigman) on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Polyarchy index. Marginal effects are calculated from specifications with intermediate sets of controls (i.e., Ln GDP p.c.; Ln Population; Population density; Life expectancy; Share of population >65)

There is thus quite robust evidence from the global cross-country data that corroborates the expectation that democracy and state capacity are complementary both in terms of reducing the severity of and misreporting on COVID-19. In terms of predicted number of deaths from COVID-19, these are clearly lowest in countries that simultaneously have strong state institutions and a democratic regime. These countries are also the ones that most accurately report how many perished over the last couple of years due to this deadly pandemic.

Conclusion

We have investigated the relationship between regime type, state capacity and COVID-19 outcomes using a novel dataset from the Economist on excess mortality. In line with previous research, we find that more democratic countries officially report more COVID-19 deaths per capita than autocracies, but we also demonstrate that this result is driven by underreporting in autocracies. A consistently robust finding is that state capacity reduces excess deaths from COVID-19. While high levels of state capacity in authoritarian countries still result in better policies and reduced death tolls, we find that the relationship with state capacity is the strongest in democracies where the incentives of political leaders to devise better policies are complemented by the capacity of the state to effectively implement them.

Our findings may have several implications for researchers, policy makers and others. First, researchers and other consumers of statistics on COVID-19 should think twice before trusting numbers published by governments that may lack the capacity or willingness to publish accurate information. We find that the extent of underreporting of COVID-19 deaths is considerable in autocracies and low-capacity states. As researchers have discussed for other seemingly objective numbers (e.g., GDP numbers; Jerven 2013; Magee and Doces 2015), directly comparing public statistics across countries with different institutions–especially on outcomes that are hard to measure or where governments have strong incentives to misinform–may lead to false inferences. Researchers making such comparisons are likely to draw the wrong lessons about important relationships. Even worse, policy makers may make mistakes when naively drawing and acting on such public statistics. In the case of COVID-19 statistics, for example, governments may implement travel-bans or impose entry requirements on the "wrong countries" when relying on officially reported statistics about the pandemic.

Our findings may also carry some implications for how to fight the next global pandemic. Following the SARS (Severe Acute Respiratory Syndrome) outbreak in 2002 and 2003, China developed a state-of-the-art network for reporting infectious diseases which was supposed to facilitate communication between doctors and the central government on potential disease outbreaks (Alon et al. 2020). Yet doctors who tried to raise alarm at the early stages of the pandemic were silenced. This example illustrates that having the capacity to detect early signs of infectious diseases needs to be complemented with systems that ensure a free flow of information and allow for citizens' voice to be heard. As our article shows, the combination of democratic institutions with high state capacity is necessary for preventing similar crises in the future. The advancement of both democracy and state capacity in countries across the world could thus carry positive sideeffects, even for those citizens who are lucky to live in high-capacity states with democratic regimes.

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Online Appendices for: Fighting the Disease or Manipulating the Data? Democracy, State Capacity, and the COVID-19 Pandemic

December 17, 2021

This document contains three online appendices. The first online appendix contains descriptive statistics for all variables used in the main analyses of the paper as well as several scatter plots showing bivariate relationships on different measures of the main independent and dependent variables. The second appendix contains tables with all robustness tests for the linear specifications without interaction terms. The final appendix contains tabular presentations of the main interaction specifications discussed in the paper as well as results from robustness tests for the interaction specifications, plotted in figures.

A Descriptive statistics

Table A-1: Descriptive statistics for all main variables in the paper, calculated for the 164 countries included in Model 2c, Table 1

Variable	Mean	Std. Dev.	Min.	Max.
Official Covid deaths (per 100k)	80.92	94.46	.08	597.41
Excess deaths (per 100k)	181.62	149.29	-73.519	593.34
Excess deaths minus official Covid deaths (per 100k)	100.71	121.68	-184.73	522.85
Polyarchy index	0.53	0.25	.02	.91
Impartial public administration (normalized)	0.45	0.23	0.00	1.00
Ln GDP p.c.	8.63	1.30	5.93	11.36099
Ln population	9.25	1.64	4.55	14.12215
Population density	254.28	1161.04	1.79	11192.62
Life expectancy	72.00	7.89	48.70	84.20
Share population over 65 years	8.86	6.46	1.09	27.58
Doctors p.c.	168.07	153.24	1.50	751.90
Hospital beds p.c.	283.99	238.89	10.00	1340.00
Respiratory disease prevalence	3.41	0.64	1.61	4.92

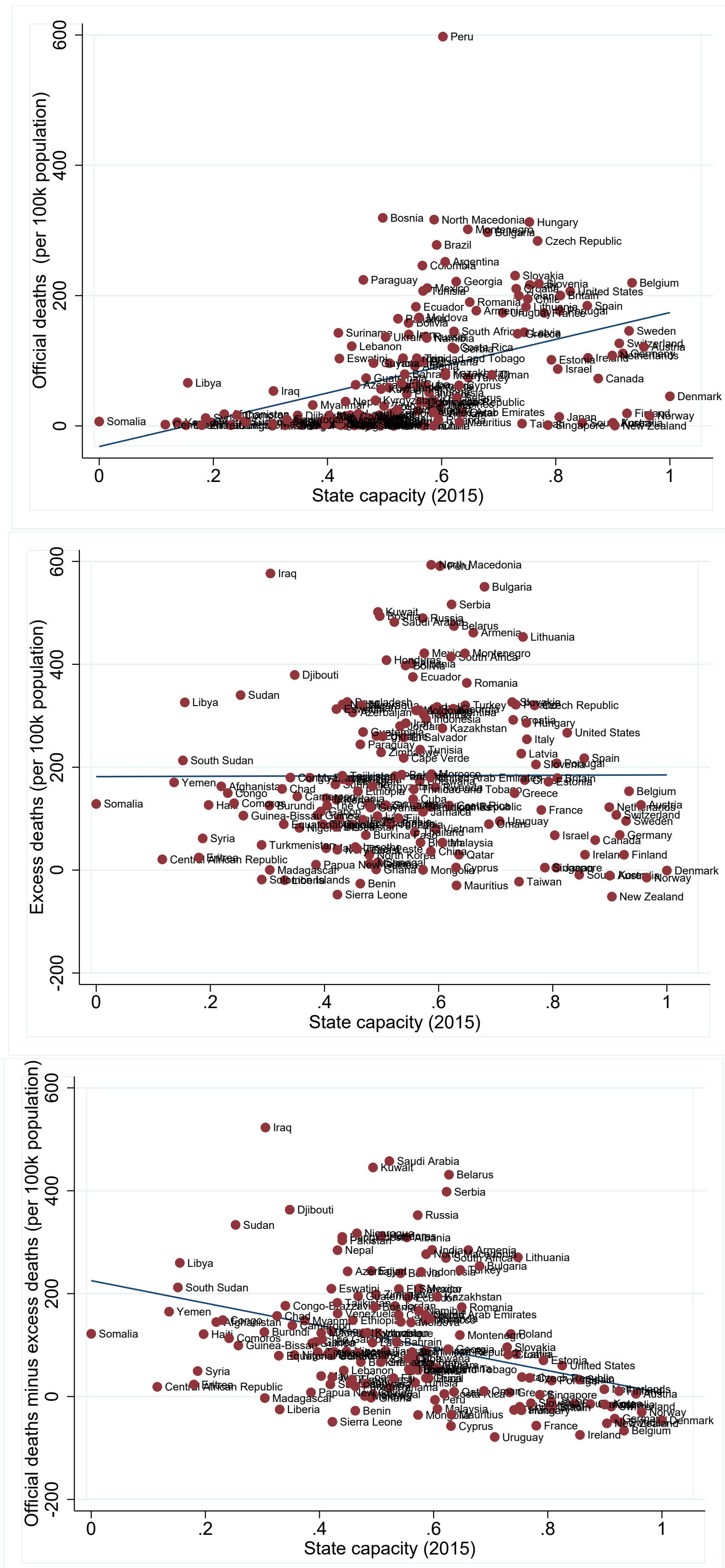

Figure A-1: Bivariate relationships between State capacity index (2015) from Hanson and Sigman and various Covid outcomes.

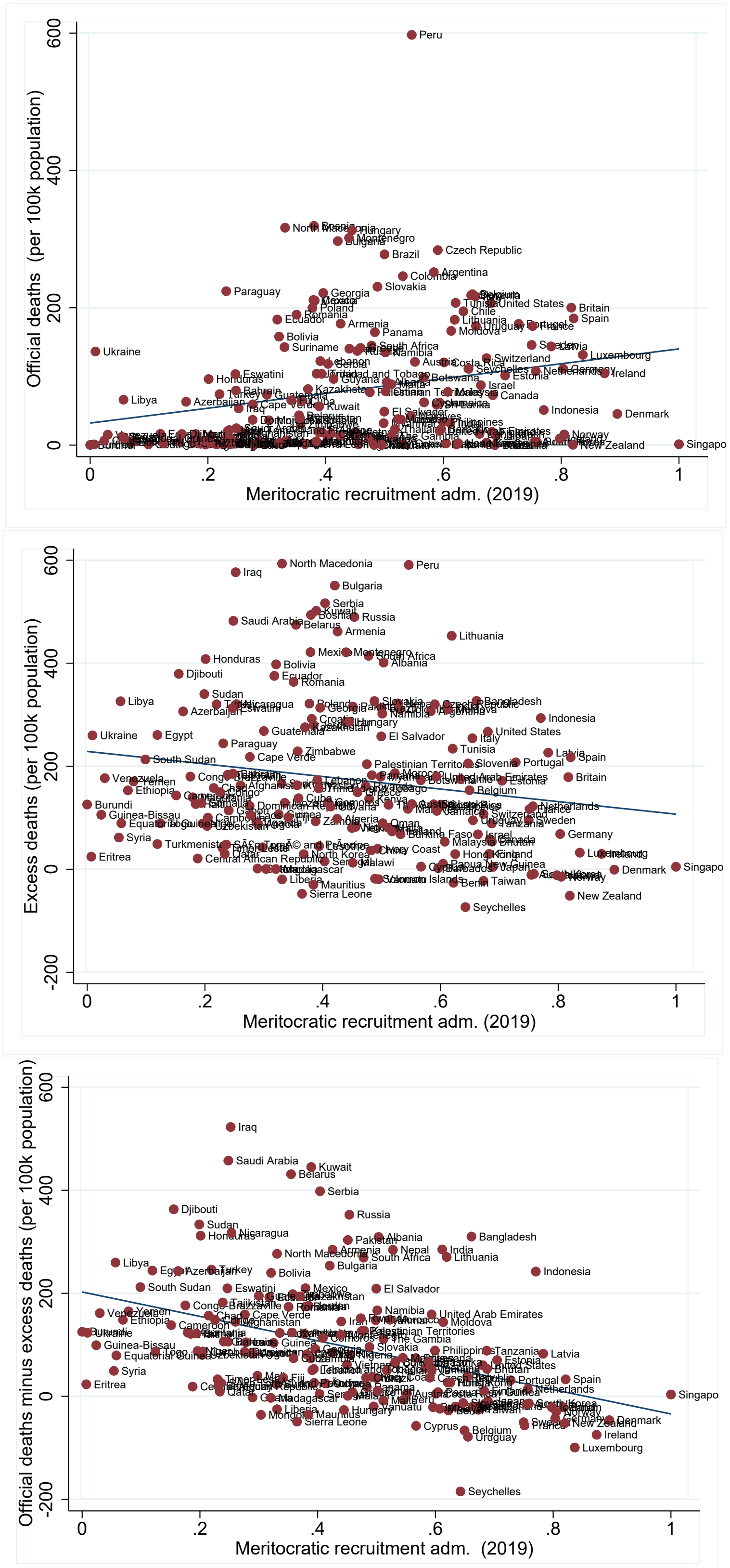

Figure A-2: Bivariate relationships between Meritocratic recruitment state administrators (2019) from V-Dem and various Covid outcomes.

Figure A-3: Bivariate relationships between Freedom Houses’ Political Rights index (2018) and various Covid outcomes.

B Robustness tests for linear specifications

Table A-2: Testing for additional confounders (natural resource dependence, urbanization, literacy)

Outcome measure	Officially reported deaths (per 100k)				Excess deaths (per 100k)				Off. rep. deaths – Exc. deaths (per 100k)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	137.36***	148.98***	143.32***	157.30***	-20.29	-13.54	-34.71	-14.23	-153.51**	-157.48*	-172.75**	-166.00**
	(2.67)	(2.71)	(2.75)	(2.91)	(-0.23)	(-0.14)	(-0.38)	(-0.15)	(-2.10)	(-1.92)	(-2.18)	(-2.11)
Imp. public admin.	-130.79***	-139.18***	-117.06**	-114.49***	-322.52***	-297.35***	-289.17***	-294.84***	-194.07***	-162.45***	-175.50***	-184.11***
	(-3.17)	(-3.01)	(-2.55)	(-2.67)	(-4.24)	(-3.73)	(-3.50)	(-3.64)	(-3.27)	(-2.83)	(-2.73)	(-2.87)
Ln GDP p.c.	2.81	10.17	-12.57	-8.50	-4.30	-9.14	-26.10	-11.47	-7.38	-18.94	-12.80	-3.02
	(0.42)	(1.03)	(-1.25)	(-1.08)	(-0.26)	(-0.35)	(-1.25)	(-0.60)	(-0.53)	(-0.86)	(-0.75)	(-0.19)
Ln population	-0.18	-2.00	-1.29	-1.06	5.87	2.38	1.32	1.45	5.28	3.18	1.66	1.32
	(-0.04)	(-0.46)	(-0.31)	(-0.25)	(0.75)	(0.26)	(0.15)	(0.16)	(0.84)	(0.42)	(0.23)	(0.18)
Population density	-0.01**	-0.01	-0.01	-0.01	-0.01*	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01
	(-2.06)	(-0.24)	(-0.30)	(-0.22)	(-1.84)	(-0.25)	(-0.34)	(-0.26)	(-1.39)	(-0.25)	(-0.35)	(-0.29)
Life expectancy	3.54**	3.36*	3.50*	3.47*	6.68**	6.90**	6.03**	6.33**	3.07	3.45	2.52	2.83
	(2.02)	(1.72)	(1.94)	(1.91)	(2.37)	(1.98)	(1.99)	(2.06)	(1.43)	(1.24)	(1.08)	(1.19)
Share pop. over 65	3.62	2.32	3.55	1.86	5.01	5.49	5.52	3.57	1.35	3.03	1.86	1.67
	(1.53)	(0.93)	(1.51)	(0.74)	(1.28)	(1.28)	(1.35)	(0.86)	(0.44)	(0.96)	(0.57)	(0.53)
Nat. resource dep.		-0.60				0.66				1.20		
		(-1.37)				(0.42)				(0.81)		
Urbanization			1.06**				1.75**				0.61	
			(2.58)				(2.09)				(0.85)	
Literacy				1.11***				0.97				-0.18
				(3.94)				(1.28)				(-0.28)
Constant	-240.53**	-257.78**	-159.42	-218.13**	-201.28	-163.27	-26.61	-148.72	53.74	111.43	140.56	86.40
	(-2.22)	(-2.34)	(-1.64)	(-2.03)	(-1.25)	(-0.99)	(-0.15)	(-0.87)	(0.41)	(0.87)	(0.88)	(0.62)
N	164	155	154	154	165	156	155	155	164	155	154	154
R^2	0.37	0.40	0.41	0.42	0.23	0.22	0.24	0.22	0.33	0.32	0.31	0.31

Notes: *p<0.1; **p<0.05; ***p<0.01. Linear regressions with HC(3) robust standard errors and country as unit. Additional covariates are from Miller (2015).

Table A-3: Robustness tests using Freedom House's Political Rights index (normalized to 0-1) to measure democracy

Outcome measure	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Political Rights	133.86***	90.94***	95.60***	57.35	-11.60	6.38	-74.03**	-97.49**	-84.62*
	(5.41)	(3.42)	(3.24)	(1.19)	(-0.21)	(0.10)	(-2.09)	(-2.04)	(-1.73)
Impartial public admin.	-46.46	-119.96***	-114.26***	-215.77***	-326.60***	-314.13***	-187.31***	-210.74***	-203.72***
	(-1.20)	(-3.23)	(-3.01)	(-3.08)	(-4.56)	(-4.31)	(-3.71)	(-3.81)	(-3.62)
Ln GDP p.c.		1.69	5.18		-3.26	2.59		-5.14	-3.03
		(0.23)	(0.58)		(-0.19)	(0.14)		(-0.37)	(-0.21)
Ln population		-0.69	0.51		6.47	9.65		6.41	8.43
		(-0.16)	(0.11)		(0.81)	(1.18)		(0.99)	(1.25)
Population density		-0.01*	-0.01*		-0.01*	-0.01**		-0.01	-0.01
		(-1.75)	(-1.78)		(-1.84)	(-2.11)		(-1.40)	(-1.36)
Life expectancy		3.35*	2.69		6.51**	5.64*		3.08	2.91
		(1.88)	(1.32)		(2.25)	(1.86)		(1.38)	(1.32)
Share pop. over 65		3.87*	3.50		5.06	2.67		1.10	-0.96
		(1.84)	(1.31)		(1.34)	(0.55)		(0.36)	(-0.26)
Doctors p.c.			0.07			0.11			0.04
			(0.79)			(0.55)			(0.29)
Hospital beds p.c.			-0.03			0.00			0.04
			(-0.65)			(0.04)			(0.65)
Respiratory disease prev.			-18.30			-38.28**			-19.25
			(-1.62)			(-2.18)			(-1.55)
Constant	28.10**	-196.03**	-131.90	241.11***	-206.79	-107.33	223.17***	3.85	36.45
	(2.52)	(-2.07)	(-1.10)	(10.73)	(-1.36)	(-0.59)	(12.54)	(0.03)	(0.27)
N	171	163	163	174	164	164	171	163	163
R^2	0.20	0.37	0.39	0.06	0.23	0.26	0.28	0.33	0.34

Notes: *p<0.1; **p<0.05; ***p<0.01. Linear regressions with HC(3) robust standard errors and country as unit of analysis.

Table A-4: Robustness tests using meritocratic recruitment to the state administration (V-Dem) as proxy for state capacity

Outcome measure	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	169.86***	119.58**	124.37**	0.66	-69.62	-52.77	-180.16***	-189.08***	-177.08***
	(5.79)	(2.52)	(2.58)	(0.01)	(-0.83)	(-0.59)	(-4.15)	(-2.91)	(-2.64)
Meritocratic recruitm.	-21.67	-118.03***	-110.93***	-122.32**	-276.53***	-253.58***	-99.35**	-155.79***	-140.39**
	(-0.69)	(-3.55)	(-3.15)	(-1.97)	(-3.97)	(-3.52)	(-2.16)	(-2.85)	(-2.47)
Ln GDP p.c.		0.77	5.95		-10.15	-4.06		-11.24	-10.38
		(0.10)	(0.68)		(-0.56)	(-0.21)		(-0.78)	(-0.68)
Ln population		3.55	4.48		14.38*	16.53**		10.39*	11.67*
		(0.75)	(0.95)		(1.83)	(2.04)		(1.66)	(1.81)
Population density		-0.00	-0.00		-0.01	-0.01		-0.00	-0.00
		(-1.20)	(-0.98)		(-0.89)	(-0.94)		(-0.56)	(-0.74)
Life expectancy		3.77**	3.07		7.20**	6.32**		3.38	3.22
		(2.12)	(1.52)		(2.48)	(2.07)		(1.54)	(1.48)
Share pop. over 65		3.67	3.97		5.11	3.70		1.42	-0.30
		(1.54)	(1.40)		(1.26)	(0.74)		(0.46)	(-0.08)
Doctors p.c.			0.05			0.08			0.04
			(0.54)			(0.45)			(0.30)
Hospital beds p.c.			-0.05			-0.02			0.03
			(-0.89)			(-0.19)			(0.49)
Respiratory disease prev.			-19.55*			-33.47**			-13.63
			(-1.91)			(-1.98)			(-1.12)
Constant	-0.40	-272.75**	-212.16	228.61***	-266.18	-176.82	237.17***	15.43	42.40
	(-0.04)	(-2.45)	(-1.58)	(9.12)	(-1.61)	(-0.91)	(11.26)	(0.11)	(0.30)
N	172	164	164	175	165	165	172	164	164
R^2	0.18	0.37	0.38	0.03	0.22	0.23	0.26	0.31	0.32

Notes: *p<0.1; **p<0.05; ***p<0.01. Linear regressions with HC(3) robust standard errors and country as unit of analysis.

Table A-5: Robustness tests using an V-Dem's Political Corruption index as proxy for state capacity. Please note that higher scores on the Political Corruption index is assumed to correspond to lower state capacity.

Outcome measure	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	170.29***	136.51***	147.48***	21.60	-55.95	-23.19	-154.54***	-189.24***	-168.22**
	(4.57)	(2.69)	(2.84)	(0.31)	(-0.63)	(-0.24)	(-2.84)	(-2.62)	(-2.27)
Pol. Corruption index	15.08	121.59***	121.31***	107.57*	243.57***	238.69***	98.15**	122.97**	118.27**
	(0.51)	(3.29)	(3.19)	(1.96)	(3.72)	(3.50)	(2.37)	(2.43)	(2.23)
Ln GDP p.c.		7.07	12.71		0.93	7.91		-6.42	-5.22
		(1.00)	(1.47)		(0.05)	(0.39)		(-0.46)	(-0.34)
Ln population		-0.25	1.07		6.22	9.51		5.76	7.77
		(-0.06)	(0.25)		(0.82)	(1.21)		(0.94)	(1.22)
Population density		-0.01	-0.01		-0.01	-0.01		-0.01	-0.01
		(-1.58)	(-1.42)		(-1.22)	(-1.36)		(-0.91)	(-1.16)
Life expectancy		3.61**	2.86		6.83**	5.86*		3.16	2.96
		(2.04)	(1.43)		(2.35)	(1.93)		(1.44)	(1.37)
Share pop. over 65		3.96*	4.00		5.71	3.57		1.71	-0.46
		(1.75)	(1.46)		(1.49)	(0.71)		(0.56)	(-0.12)
Doctors p.c.			0.06			0.11			0.05
			(0.69)			(0.63)			(0.44)
Hospital beds p.c.			-0.04			-0.01			0.03
			(-0.88)			(-0.13)			(0.55)
Respiratory disease prev.			-21.78*			-38.97**			-16.54
			(-1.93)			(-2.08)			(-1.34)
Constant	-17.44	-402.70***	-339.15**	111.66*	-513.26***	-412.78*	132.57***	-98.09	-63.93
	(-0.60)	(-2.93)	(-2.15)	(1.87)	(-2.70)	(-1.92)	(2.70)	(-0.63)	(-0.40)
N	172	164	164	175	165	165	172	164	164
R^2	0.18	0.39	0.41	0.04	0.23	0.26	0.27	0.31	0.33

Notes: *p<0.1; **p<0.05; ***p<0.01. Linear regressions with HC(3) robust standard errors and country as unit of analysis.

Table A-6: Benchmark analyses, but with classical errors

Outcome measure	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	191.21***	137.36***	149.12***	76.88	-20.29	16.42	-117.23**	-153.51***	-129.45**
	(4.90)	(3.31)	(3.51)	(1.15)	(-0.28)	(0.22)	(-2.48)	(-2.78)	(-2.28)
Impartial public admin.	-49.65	-130.79***	-128.53***	-212.56***	-322.52***	-318.29***	-175.39***	-194.07***	-191.85***
	(-1.13)	(-2.88)	(-2.85)	(-2.81)	(-4.06)	(-4.04)	(-3.28)	(-3.21)	(-3.17)
Ln GDP p.c.		2.81	8.10		-4.30	2.49		-7.38	-6.05
		(0.31)	(0.80)		(-0.27)	(0.14)		(-0.60)	(-0.45)
Ln population		-0.18	1.29		5.87	9.37		5.28	7.36
		(-0.05)	(0.33)		(0.87)	(1.37)		(1.02)	(1.39)
Population density		-0.01	-0.01		-0.01	-0.01		-0.01	-0.01
		(-1.38)	(-1.25)		(-1.46)	(-1.39)		(-0.89)	(-0.89)
Life expectancy		3.54**	2.85*		6.68**	5.83**		3.07	2.93
		(2.30)	(1.81)		(2.48)	(2.13)		(1.50)	(1.39)
Share pop. over 65		3.62**	3.39		5.01*	2.42		1.35	-1.01
		(2.24)	(1.58)		(1.78)	(0.65)		(0.63)	(-0.35)
Doctors p.c.			0.06			0.11			0.05
			(0.79)			(0.84)			(0.49)
Hospital beds p.c.			-0.04			0.01			0.04
			(-0.92)			(0.08)			(0.80)
Respiratory disease prev.			-21.88**			-39.13**			-16.54
			(-2.01)			(-2.07)			(-1.14)
Constant	1.32	-240.53***	-180.08**	230.65***	-201.28	-114.96	239.79***	53.74	76.62
	(0.08)	(-2.89)	(-2.03)	(8.77)	(-1.39)	(-0.75)	(12.68)	(0.48)	(0.64)
N	172	164	164	175	165	165	172	164	164
R^2	0.19	0.37	0.39	0.06	0.23	0.26	0.29	0.33	0.34

Notes: *p<0.1; **p<0.05; ***p<0.01. Linear regressions with country as unit of analysis.

Table A-7: Benchmark analyses, but with log-transformed dependent variables

Outcome measure	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	2.89***	2.13***	2.39***	0.20	-0.18	-0.07	-0.29	-0.41	-0.31
	(3.91)	(2.76)	(2.82)	(0.72)	(-0.54)	(-0.18)	(-1.44)	(-1.59)	(-1.11)
Impartial public admin.	-0.25	-2.51***	-2.46***	-0.89***	-1.23***	-1.21***	-0.91***	-0.81***	-0.79***
	(-0.30)	(-3.22)	(-3.16)	(-2.95)	(-3.95)	(-3.76)	(-3.53)	(-3.80)	(-3.70)
Ln GDP p.c.		0.31**	0.32*		-0.04	-0.01		-0.08	-0.08
		(2.21)	(1.95)		(-0.55)	(-0.17)		(-1.32)	(-1.04)
Ln population		-0.05	-0.03		0.05	0.06		0.07	0.08
		(-0.69)	(-0.35)		(1.40)	(1.64)		(1.14)	(1.26)
Population density		-0.00	-0.00		-0.00	-0.00		0.00	0.00
		(-0.88)	(-1.02)		(-0.95)	(-1.06)		(0.05)	(0.02)
Life expectancy		0.07***	0.06**		0.03***	0.02**		0.01	0.01
		(2.78)	(2.25)		(2.68)	(2.11)		(1.45)	(1.19)
Share pop. over 65		0.03	0.01		0.02	0.01		0.01	-0.00
		(1.27)	(0.19)		(1.41)	(0.60)		(0.81)	(-0.20)
Doctors p.c.			0.00			0.00			0.00
			(1.43)			(0.75)			(0.81)
Hospital beds p.c.			-0.00			-0.00			0.00
			(-0.19)			(-0.29)			(0.11)
Respiratory disease prev.			-0.23			-0.14*			-0.07
			(-1.34)			(-1.87)			(-1.51)
Constant	2.03***	-4.32***	-3.35**	5.72***	3.78***	4.20***	6.11***	5.28***	5.54***
	(7.69)	(-3.26)	(-2.04)	(62.77)	(6.21)	(5.73)	(103.66)	(8.50)	(10.62)
N	172	164	164	175	165	165	172	164	164
R^2	0.17	0.47	0.48	0.07	0.25	0.27	0.20	0.25	0.27

Notes: *p<0.1; **p<0.05; ***p<0.01. Linear regressions with HC(3) robust standard errors and country as unit of analysis.
The log-transformation of each dependent variable (y) is done by taking Ln(y+1-min), where min is the minimum value of y.

Table A-8: Benchmark analyses when omitting all observations with negative excess death estimates

Outcome measure	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	208.71***	159.99***	168.60***	104.45	13.10	52.13	-113.30**	-146.89*	-116.47
	(5.16)	(3.14)	(3.19)	(1.45)	(0.14)	(0.53)	(-2.04)	(-1.95)	(-1.50)
Impartial public admin.	-18.46	-108.82***	-103.36**	-172.06**	-284.52***	-281.61***	-160.19***	-175.70***	-178.25***
	(-0.44)	(-2.69)	(-2.46)	(-2.31)	(-3.67)	(-3.55)	(-2.86)	(-2.78)	(-2.81)
Ln GDP p.c.		5.64	7.92		-1.45	2.86		-7.10	-5.06
		(0.89)	(0.97)		(-0.09)	(0.15)		(-0.50)	(-0.34)
Ln population		-1.13	0.08		0.63	4.69		1.76	4.60
		(-0.25)	(0.02)		(0.08)	(0.52)		(0.27)	(0.67)
Population density		-0.01**	-0.01***		-0.02**	-0.02***		-0.01*	-0.01*
		(-2.38)	(-2.64)		(-2.31)	(-2.82)		(-1.69)	(-1.76)
Life expectancy		3.74**	3.05		6.52**	5.85**		2.77	2.81
		(2.19)	(1.51)		(2.36)	(2.00)		(1.27)	(1.32)
Share pop. over 65		3.02	2.44		3.97	0.77		0.96	-1.67
		(1.28)	(0.87)		(1.02)	(0.15)		(0.31)	(-0.43)
Doctors p.c.			0.09			0.10			0.02
			(0.84)			(0.49)			(0.13)
Hospital beds p.c.			-0.03			0.03			0.06
			(-0.53)			(0.27)			(0.88)
Respiratory disease prev.			-15.53			-34.12*			-18.59
			(-1.46)			(-1.88)			(-1.46)
Constant	-13.25	-279.65***	-214.84	214.22***	-176.86	-107.20	237.03***	102.78	107.64
	(-1.34)	(-2.62)	(-1.56)	(8.86)	(-1.09)	(-0.55)	(11.42)	(0.75)	(0.76)
N	159	152	152	161	152	152	159	152	152
R^2	0.27	0.45	0.46	0.03	0.19	0.22	0.25	0.28	0.30

Notes: *p<0.1; **p<0.05; ***p<0.01. Linear regressions with HC(3) robust standard errors and country as unit of analysis.

Table A-9: Benchmark analyses when using the excess death estimates until end December 2020

Outcome measure	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	78.14***	57.57**	56.74**	31.25	-49.04	-33.15	-50.72	-113.11***	-89.48**
	(4.41)	(2.52)	(2.39)	(0.78)	(-1.02)	(-0.66)	(-1.57)	(-2.76)	(-2.17)
Impartial public admin.	-9.56	-42.25**	-42.24**	-66.73*	-135.78***	-133.64***	-53.59*	-88.08***	-87.03***
	(-0.50)	(-2.41)	(-2.35)	(-1.68)	(-3.73)	(-3.62)	(-1.85)	(-3.05)	(-3.05)
Ln GDP p.c.		0.22	1.50		-2.29	-1.00		-2.96	-2.43
		(0.08)	(0.39)		(-0.30)	(-0.10)		(-0.44)	(-0.31)
Ln population		1.55	1.71		4.23	5.63		-0.49	1.06
		(0.77)	(0.87)		(0.99)	(1.28)		(-0.15)	(0.32)
Population density		-0.00**	-0.00*		-0.01	-0.01*		-0.00	-0.00**
		(-2.18)	(-1.74)		(-1.43)	(-1.86)		(-1.45)	(-2.28)
Life expectancy		1.70**	1.51		2.77**	2.44*		1.21	1.15
		(2.17)	(1.63)		(2.16)	(1.81)		(1.15)	(1.11)
Share pop. over 65		1.32	1.63		5.79***	4.34*		4.21***	1.94
		(1.30)	(1.24)		(2.94)	(1.78)		(2.78)	(1.05)
Doctors p.c.			0.01			0.06			0.04
			(0.21)			(0.46)			(0.40)
Hospital beds p.c.			-0.02			0.01			0.04
			(-0.60)			(0.11)			(0.99)
Respiratory disease prev.			-3.23			-13.56			-11.38*
			(-0.69)			(-1.55)			(-1.87)
Constant	-7.17	-130.91***	-118.24*	80.88***	-111.07	-74.06	93.54***	49.54	62.65
	(-1.47)	(-2.71)	(-1.96)	(6.37)	(-1.42)	(-0.74)	(8.48)	(0.80)	(0.86)
N	165	157	157	175	165	165	165	157	157
R^2	0.20	0.36	0.37	0.02	0.28	0.30	0.14	0.29	0.32

Notes: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$. Linear regressions with HC(3) robust standard errors and country as unit of analysis.

Table A-10: Benchmark analyses when using the official excess death numbers (from OWD)

Outcome measure	Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	98.02*	6.00	31.37	-176.67***	-209.52**	-193.37**
	(1.82)	(0.08)	(0.33)	(-2.87)	(-2.51)	(-2.08)
Impartial public admin.	-247.20***	-176.78**	-178.12**	49.54	71.12	66.35
	(-4.35)	(-2.41)	(-2.24)	(0.84)	(0.85)	(0.81)
Ln GDP p.c.		-23.44	-17.78		3.34	-5.72
		(-1.26)	(-0.76)		(0.15)	(-0.23)
Ln population		8.16	11.24		6.86	6.03
		(1.05)	(1.35)		(0.77)	(0.56)
Population density		-0.00	-0.00		0.00	0.00
		(-0.00)	(-0.00)		(0.02)	(0.11)
Life expectancy		0.30	1.17		-3.21	-1.81
		(0.08)	(0.24)		(-0.87)	(-0.45)
Share pop. over 65		5.48**	4.76		3.18	0.12
		(2.35)	(1.41)		(1.27)	(0.03)
Doctors p.c.			0.05			0.07
			(0.27)			(0.50)
Hospital beds p.c.			-0.03			0.07
			(-0.29)			(1.51)
Respiratory disease prev.			-22.32			10.39
			(-0.81)			(0.48)
Constant	159.82***	233.59	150.71	34.93	152.86	85.31
	(5.35)	(0.96)	(0.48)	(1.21)	(0.65)	(0.33)
N	84	81	81	84	81	81
R^2	0.16	0.27	0.28	0.15	0.19	0.22

Notes: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$. Linear regressions with HC(3) robust standard errors and country as unit.

Table A-11: Benchmark analyses using Economist data, but for limited sample (obs. that also have official estimates of excess deaths from OWD)

Outcome measure	Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	231.96**	115.29	141.94	-42.73	-100.24	-82.80
	(2.41)	(0.82)	(0.84)	(-0.52)	(-0.92)	(-0.64)
Impartial public admin.	-642.15***	-536.61***	-534.96***	-345.41***	-288.71**	-290.49**
	(-6.94)	(-3.23)	(-3.06)	(-5.01)	(-2.22)	(-2.13)
Ln GDP p.c.		-29.64	-14.55		-2.87	-2.49
		(-0.78)	(-0.33)		(-0.09)	(-0.07)
Ln population		2.48	7.63		1.17	2.41
		(0.20)	(0.58)		(0.12)	(0.21)
Population density		0.00	0.00		0.00	0.00
		(0.01)	(0.01)		(0.02)	(0.02)
Life expectancy		-3.36	-2.99		-6.87	-5.97
		(-0.40)	(-0.29)		(-1.05)	(-0.72)
Share pop. over 65		8.16*	9.25		5.86	4.61
		(1.73)	(1.24)		(1.49)	(0.76)
Doctors p.c.			0.02			0.04
			(0.07)			(0.20)
Hospital beds p.c.			-0.09			0.01
			(-0.57)			(0.13)
Respiratory disease prev.			-41.06			-8.35
			(-0.82)			(-0.24)
Constant	421.25***	853.48	772.95	296.37***	772.74	707.55
	(8.00)	(1.53)	(1.09)	(7.04)	(1.63)	(1.17)
N	84	81	81	84	81	81
R^2	0.33	0.40	0.41	0.38	0.44	0.45

Notes: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$. Linear regressions with HC(3) robust standard errors and country as unit.

Table A-12: Robust regression estimates

Outcome measure	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	142.52***	94.92***	110.47***	71.66	-79.22	-60.62	-81.98**	-116.08**	-102.91**
	(4.27)	(3.29)	(3.57)	(1.05)	(-1.08)	(-0.83)	(-2.03)	(-2.43)	(-2.10)
Impartial public admin.	0.11	-51.71	-56.11*	-194.56**	-284.29***	-283.86***	-178.07***	-173.76***	-174.90***
	(0.00)	(-1.64)	(-1.70)	(-2.52)	(-3.55)	(-3.67)	(-3.90)	(-3.33)	(-3.36)
Ln GDP p.c.		10.74*	12.66*		-11.61	-0.50		-16.31	-9.96
		(1.68)	(1.72)		(-0.72)	(-0.03)		(-1.55)	(-0.86)
Ln population		0.73	2.28		9.29	14.93**		6.24	8.09*
		(0.27)	(0.79)		(1.37)	(2.22)		(1.40)	(1.77)
Population density		-0.01	-0.00		-0.01	-0.01		-0.00	-0.00
		(-1.35)	(-1.19)		(-1.15)	(-0.94)		(-0.32)	(-0.18)
Life expectancy		1.28	0.89		6.68**	5.55**		2.58	2.01
		(1.19)	(0.78)		(2.46)	(2.06)		(1.46)	(1.11)
Share pop. over 65		4.15***	3.16**		7.20**	6.64*		1.80	1.53
		(3.70)	(2.02)		(2.53)	(1.81)		(0.97)	(0.62)
Doctors p.c.			0.04			0.01			0.01
			(0.76)			(0.08)			(0.15)
Hospital beds p.c.			0.01			0.03			-0.01
			(0.28)			(0.47)			(-0.18)
Respiratory disease prev.			-11.99			-45.53**			-18.38
			(-1.51)			(-2.45)			(-1.47)
Constant	-8.20	-181.95***	-150.62**	213.29***	-185.95	-111.06	205.54***	104.37	131.49
	(-0.61)	(-3.14)	(-2.33)	(7.93)	(-1.27)	(-0.73)	(12.71)	(1.09)	(1.28)
N	172	164	164	175	165	165	172	164	164
R^2	0.20	0.53	0.52	0.04	0.25	0.31	0.30	0.35	0.36

Notes: *p<0.1; **p<0.05; ***p<0.01. The robust regressions are run with *rreg* in Stata, using default specifications: All obs. with Cook's D > 1 are removed and the biweight tuning constant is 7.

C Robustness tests for interaction specifications

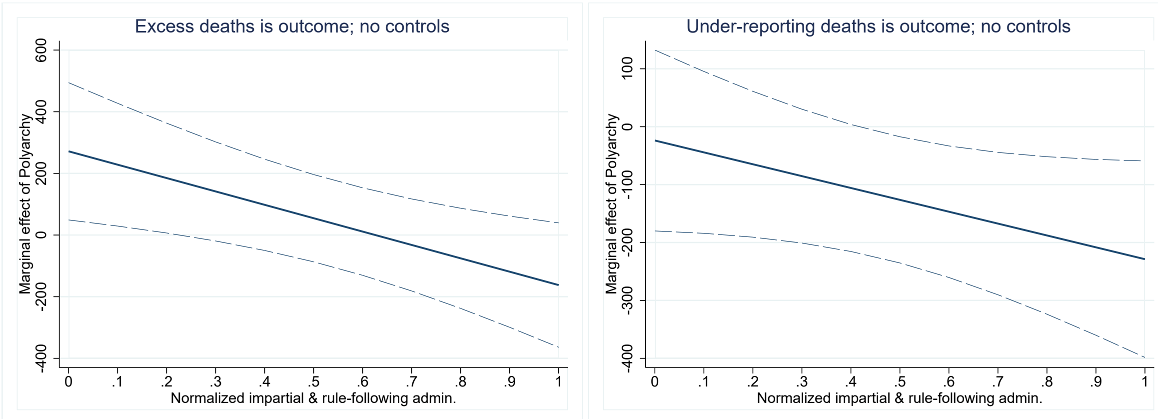

Figure A-4: Marginal effects of Polyarchy on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Impartial and rule-following administration. Marginal effects are calculated from specifications with no controls in Table 1.

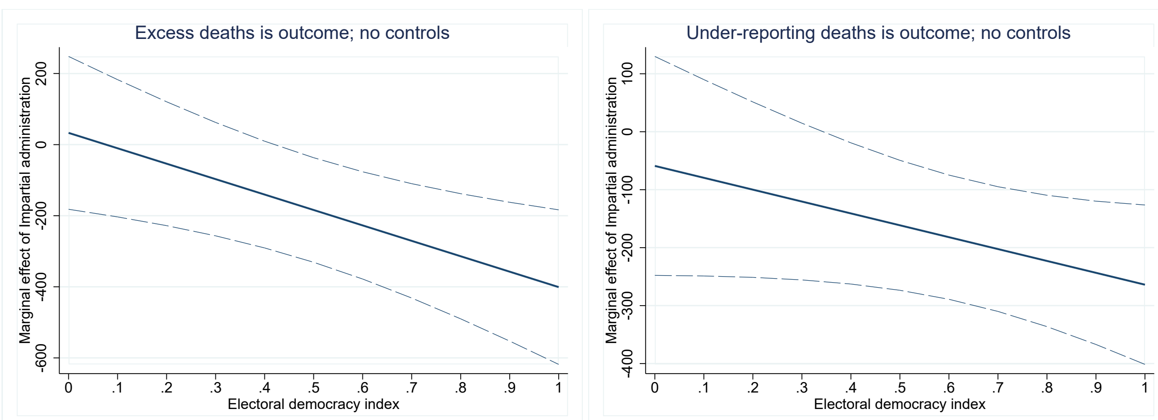

Figure A-5: Marginal effects of Impartial state administration on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Polyarchy index. Marginal effects are calculated from specifications with no controls in Table 1.

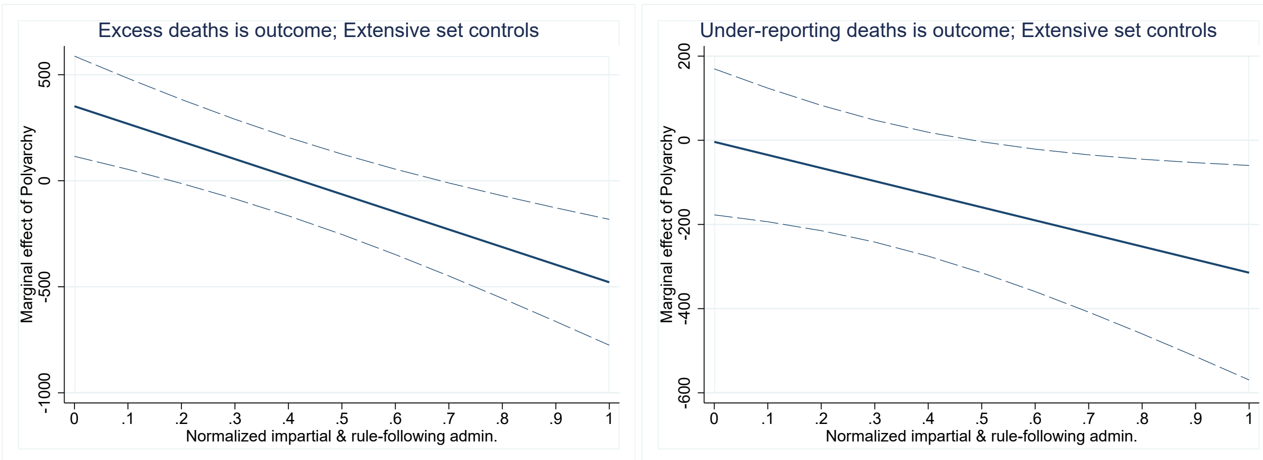

Figure A-6: Marginal effects of Polyarchy on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Impartial and rule-following administration. Marginal effects are calculated from specifications with full set controls in Table 1.

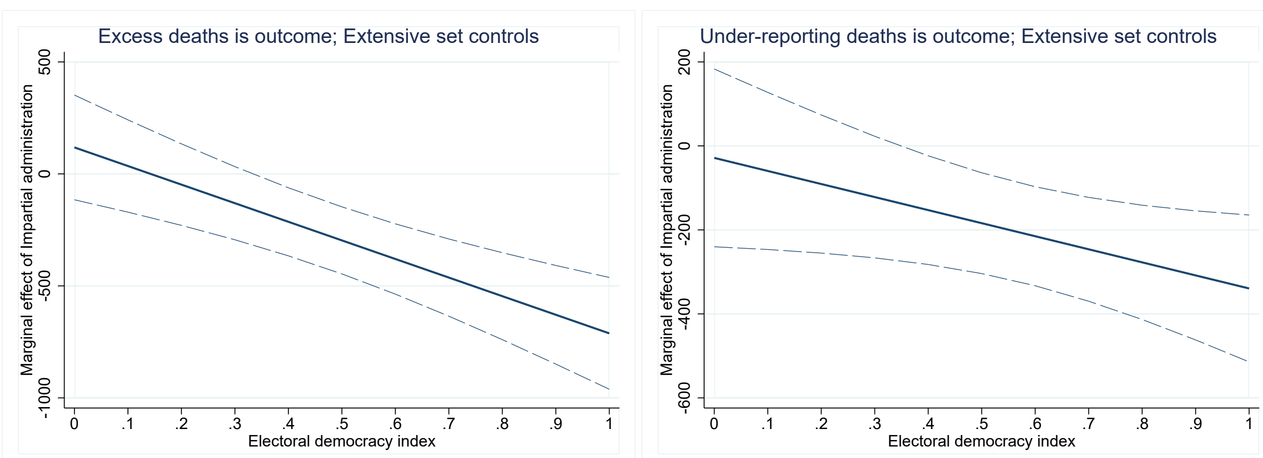

Figure A-7: Marginal effects of Impartial state administration on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Polyarchy index. Marginal effects are calculated from specifications with no controls in Table 1.

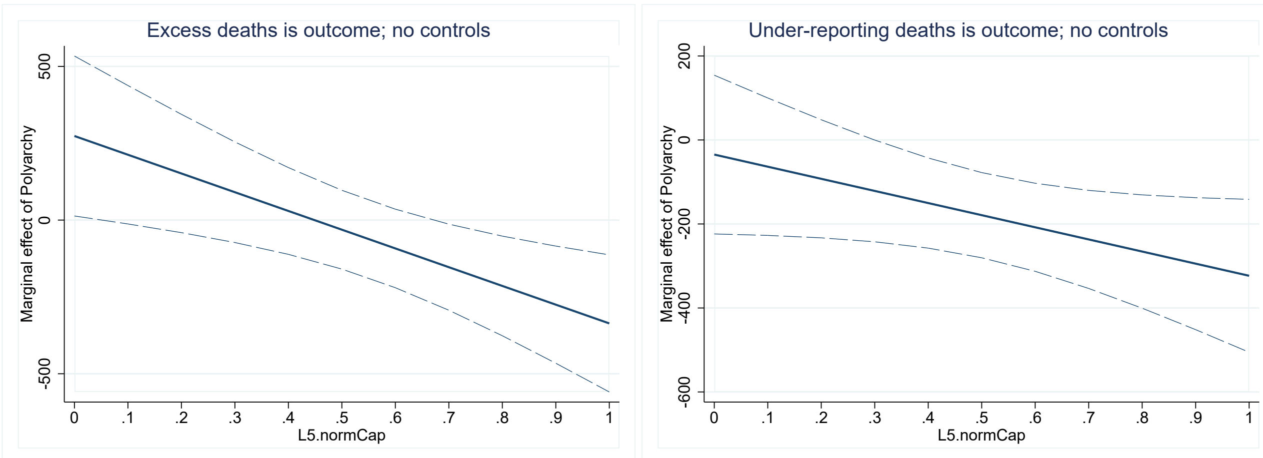

Figure A-8: Marginal effects of Polyarchy on Excess deaths (left) and Under-reporting of deaths (right), at different levels of State capacity (Hanson and Sigman). Marginal effects are calculated from specifications with no controls in Table 1.

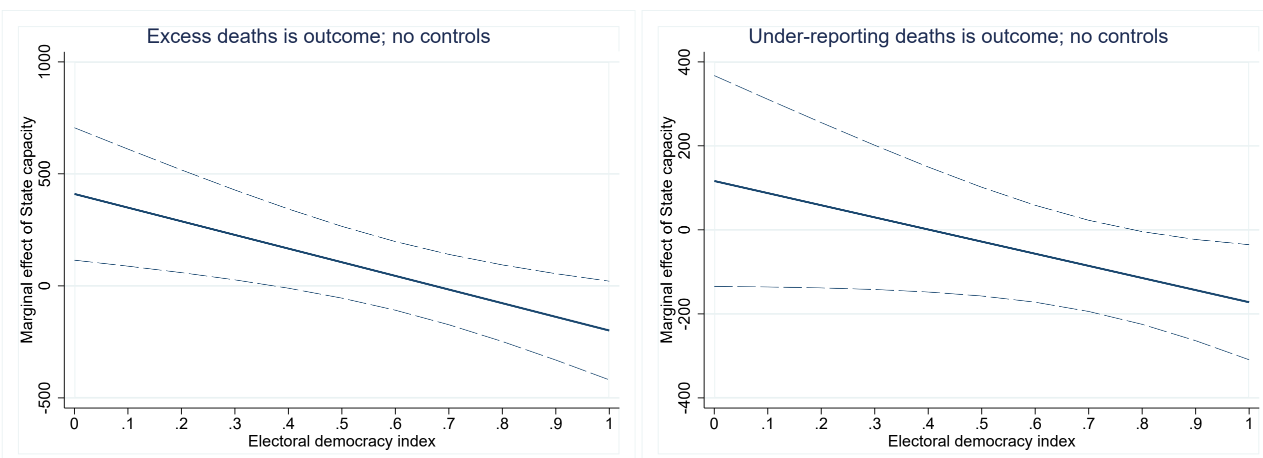

Figure A-9: Marginal effects of State capacity (Hanson and Sigman) on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Polyarchy index. Marginal effects are calculated from specifications with no controls in Table 1.

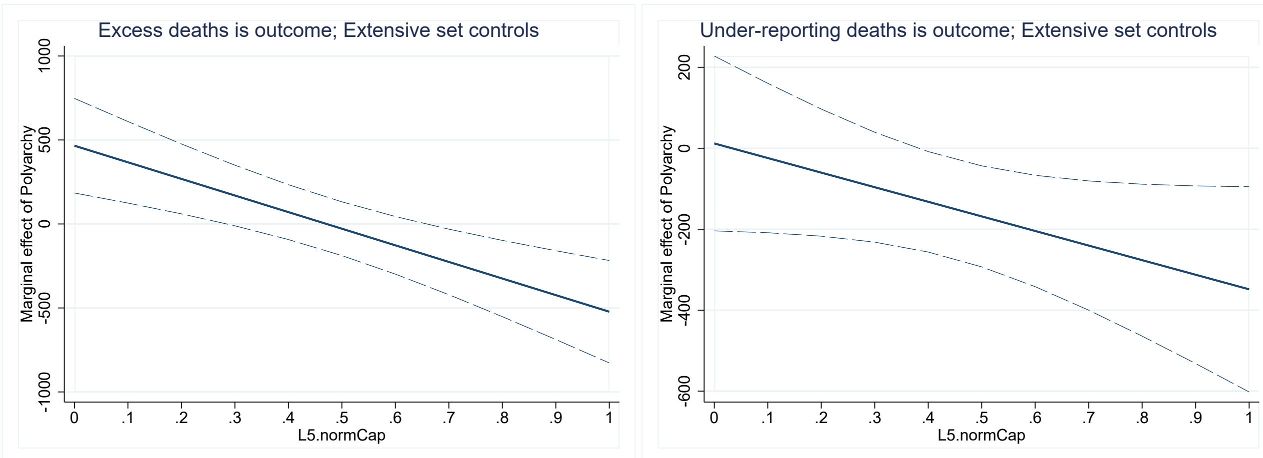

Figure A-10: Marginal effects of Polyarchy on Excess deaths (left) and Under-reporting of deaths (right), at different levels of State capacity (Hanson and Sigman). Marginal effects are calculated from specifications with full set controls in Table 1.

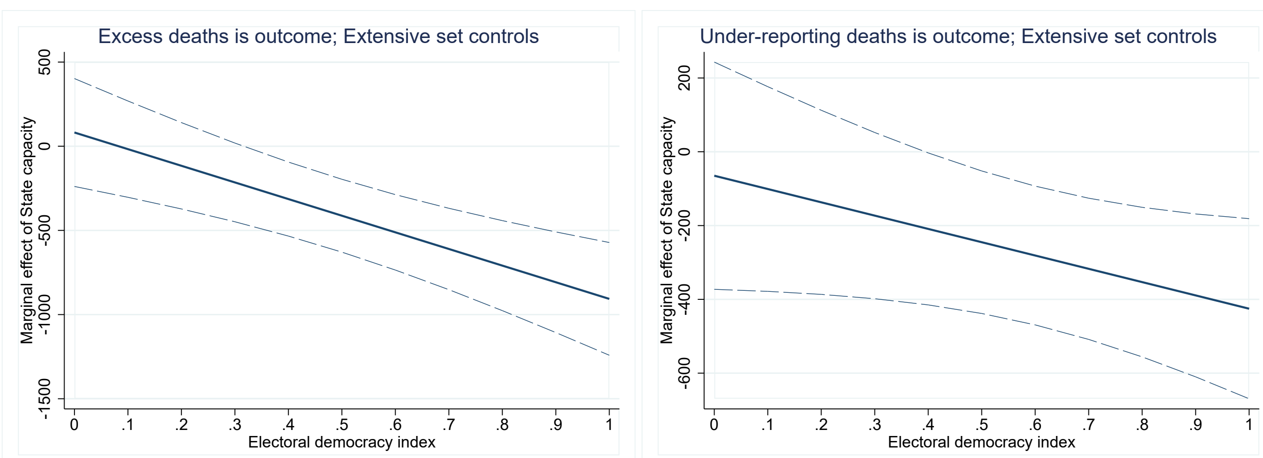

Figure A-11: Marginal effects of State capacity (Hanson and Sigman) (left) and Under-reporting of deaths (right), at different levels of Polyarchy index. Marginal effects are calculated from specifications with no controls in Table 1.

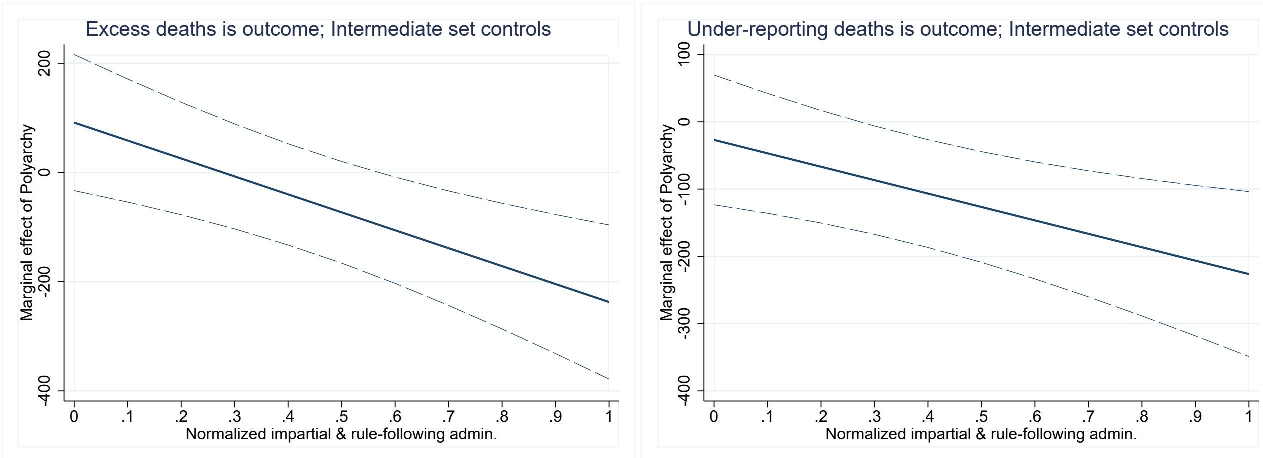

Figure A-12: Robustness tests only using data to end December 2020. Marginal effects of Polyarchy on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Impartial and rule-following administration. Marginal effects are calculated from specifications with intermediate set controls.

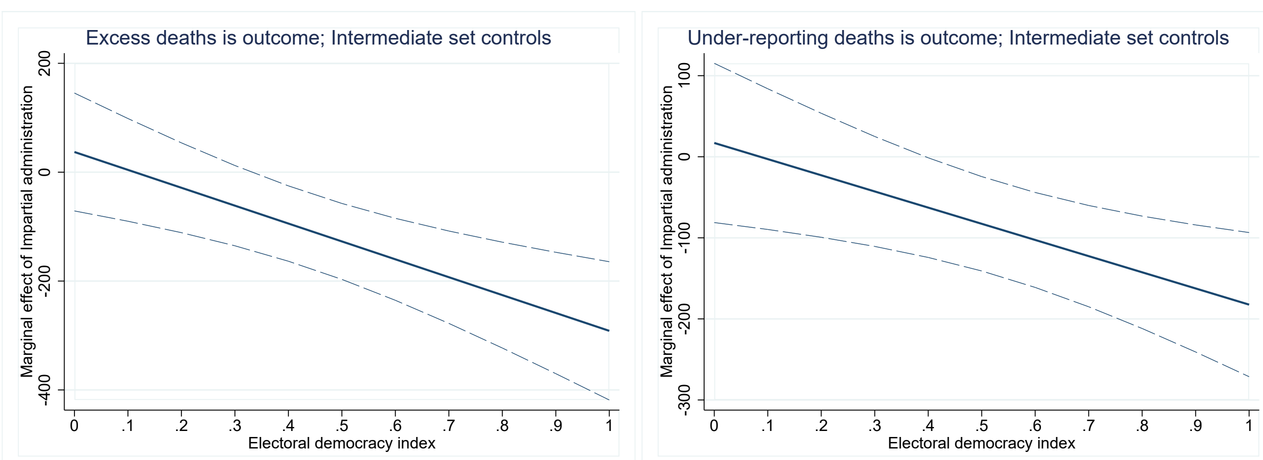

Figure A-13: Robustness tests only using data to end December 2020. Marginal effects of Impartial state administration on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Polyarchy index. Marginal effects are calculated from specifications with intermediate set controls.

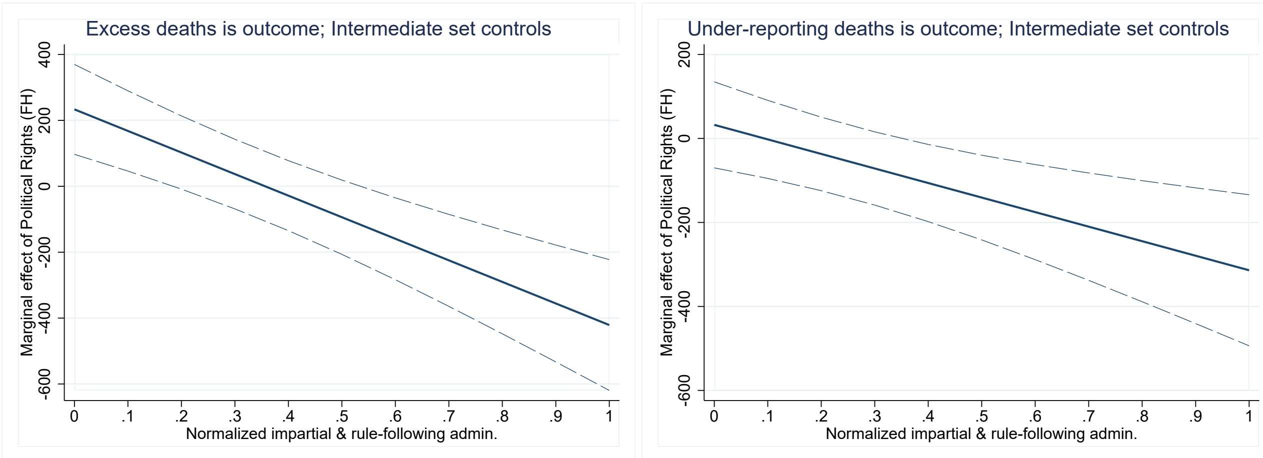

Figure A-14: Robustness tests using Political Rights index from Freedom House (normalized to 0–1, with 1 as most democratic) as democracy measure. Marginal effects of Political rights on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Impartial and rule-following administration. Marginal effects are calculated from specifications with intermediate set controls.

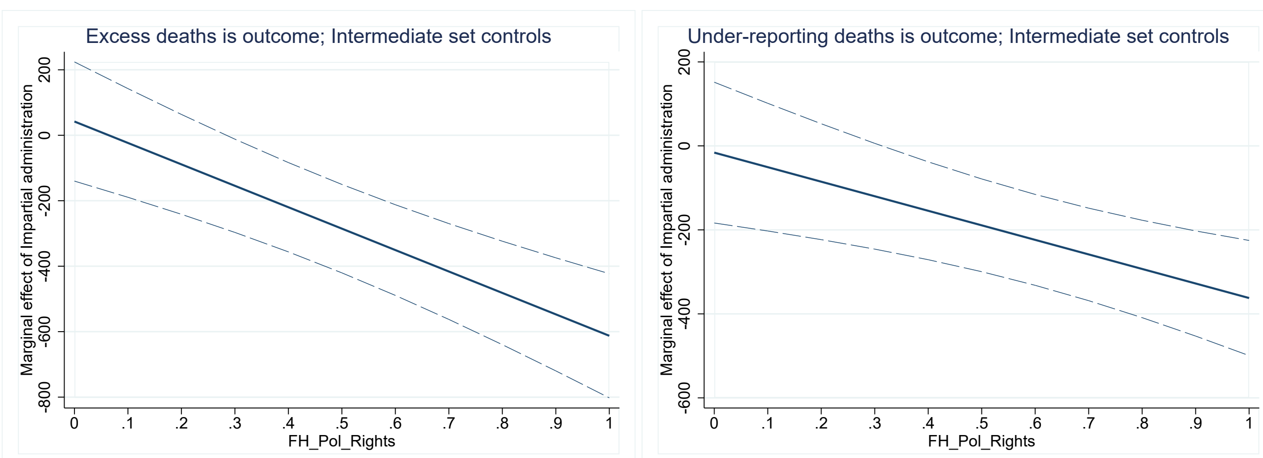

Figure A-15: Robustness tests using Political Rights index from Freedom House (normalized to 0–1, with 1 as most democratic) as democracy measure. Marginal effects of Impartial state administration on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Political rights index. Marginal effects are calculated from specifications with intermediate set controls.

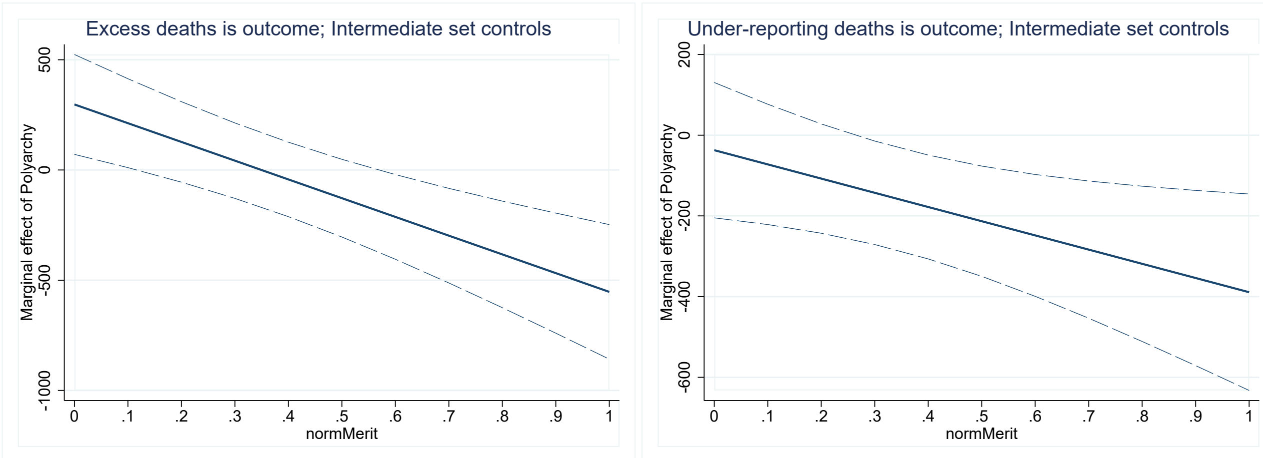

Figure A-16: Robustness tests using V-Dem's indicator of meritocratic recruitment of public administrators (normalized to 0–1) as state capacity measure. Marginal effects of Polyarchy on Excess deaths (left) and Under-reporting of deaths (right), at different levels of meritocratic recruitment. Marginal effects are calculated from specifications with intermediate set controls.

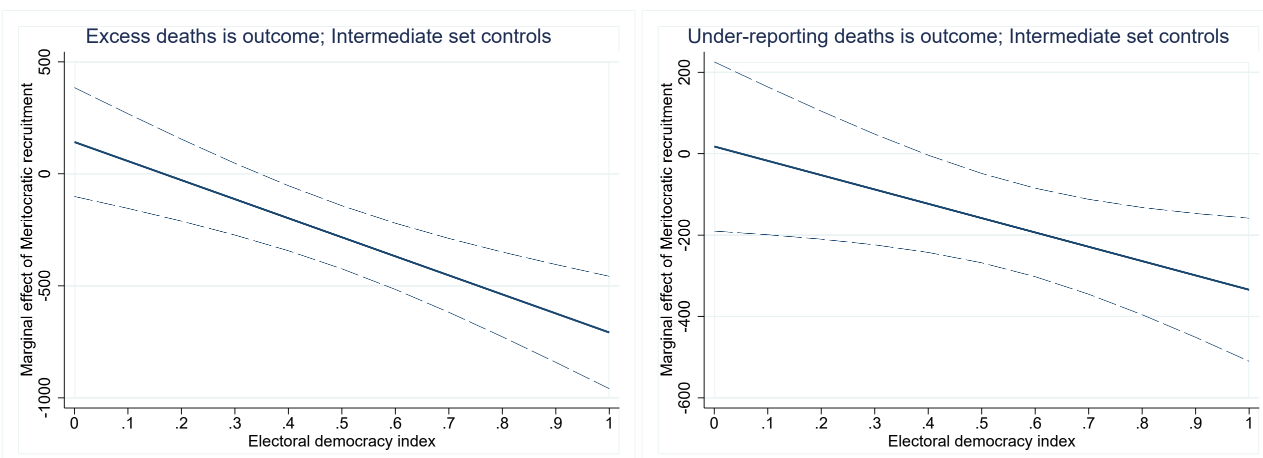

Figure A-17: Robustness tests using V-Dem's indicator of meritocratic recruitment of public administrators (normalized to 0–1) as state capacity measure. Marginal effects of Meritocratic recruitment on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Polyarchy index. Marginal effects are calculated from specifications with intermediate set controls.

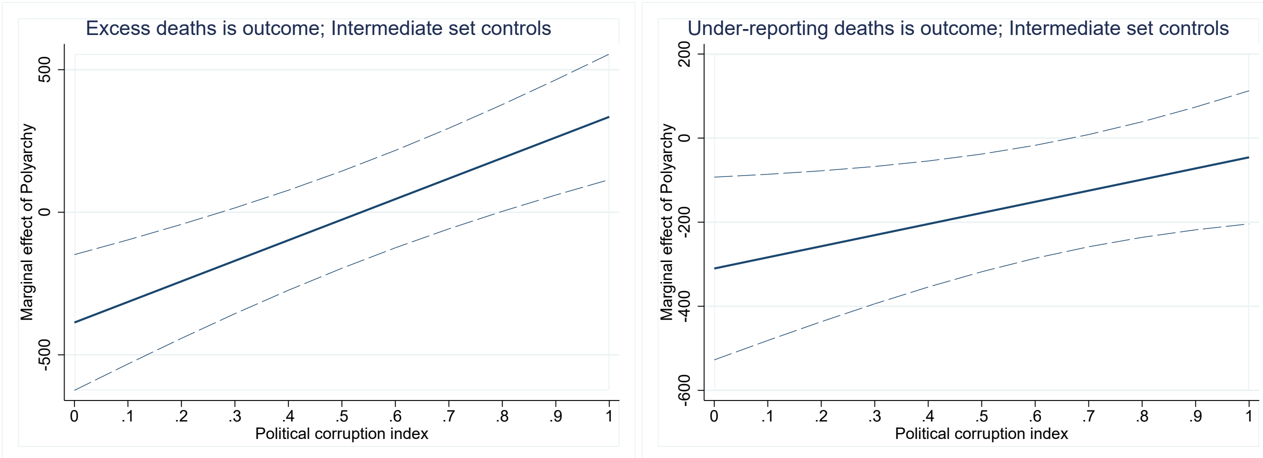

Figure A-18: Robustness tests using V-Dem's Political Corruption index as state capacity measure. Marginal effects of Polyarchy on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Political corruption. Marginal effects are calculated from specifications with intermediate set controls. Please note that higher scores on the Political Corruption index is assumed to correspond to lower state capacity.

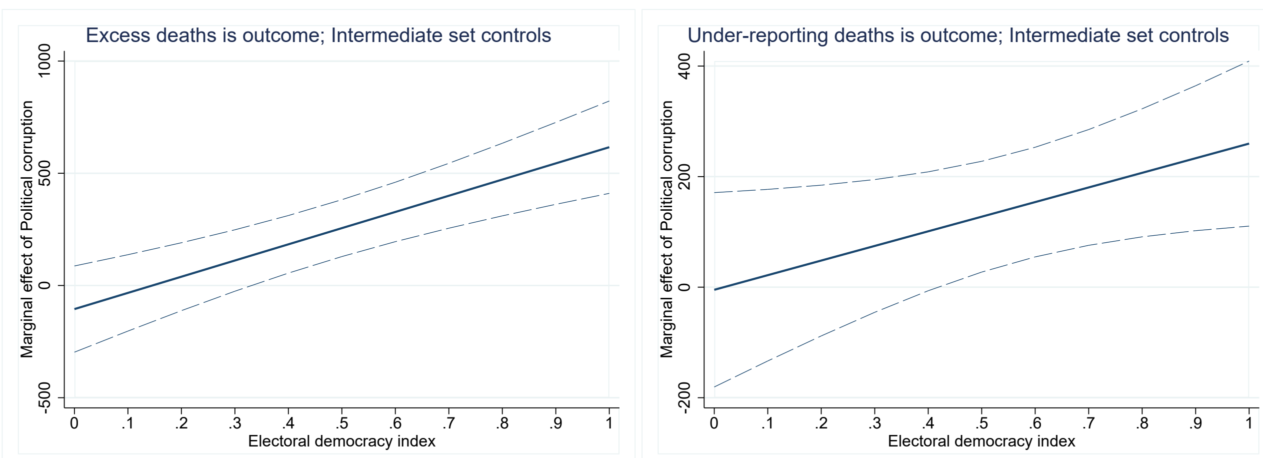

Figure A-19: Robustness tests using V-Dem's Political Corruption index as state capacity measure. Marginal effects of Political corruption on Excess deaths (left) and Under-reporting of deaths (right), at different levels of Polyarchy index. Marginal effects are calculated from specifications with intermediate set controls. Please note that higher scores on the Political Corruption index is assumed to correspond to lower state capacity.

Table A-13: Main interaction specifications (see also Figures 3 and 4 in paper)

Outcome measure	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	278.64***	360.50***	363.44***	271.61**	354.09***	351.47***	-23.83	1.27	-3.69
	(3.95)	(5.00)	(4.72)	(2.41)	(3.10)	(2.94)	(-0.30)	(0.01)	(-0.04)
Impartial public admin.	59.33	143.45***	149.84**	33.12	138.67	118.37	-58.98	-3.85	-28.49
	(1.12)	(2.61)	(2.52)	(0.30)	(1.27)	(1.00)	(-0.62)	(-0.04)	(-0.27)
Polyarchy X Impartial admin.	-191.85*	-521.55***	-529.89***	-433.94***	-876.44***	-830.26***	-204.94*	-361.77**	-310.95**
	(-1.92)	(-4.78)	(-4.40)	(-2.70)	(-5.05)	(-4.32)	(-1.67)	(-2.47)	(-2.01)
Ln GDP p.c.		8.60	10.32		5.47	6.08		-3.37	-4.74
		(1.39)	(1.25)		(0.33)	(0.32)		(-0.24)	(-0.31)
Ln population		0.19	0.39		6.60	8.12		5.53	6.83
		(0.05)	(0.09)		(0.89)	(1.05)		(0.90)	(1.05)
Population density		-0.01	-0.01		-0.02	-0.02*		-0.01	-0.01*
		(-1.62)	(-1.49)		(-1.50)	(-1.72)		(-1.29)	(-1.68)
Life expectancy		3.19*	2.51		6.09**	5.32*		2.82	2.74
		(1.94)	(1.36)		(2.31)	(1.90)		(1.33)	(1.30)
Share pop. over 65		5.07**	5.51**		7.45**	5.75		2.35	0.23
		(2.21)	(2.10)		(1.99)	(1.24)		(0.77)	(0.06)
Doctors p.c.			0.08			0.15			0.06
			(0.88)			(0.71)			(0.47)
Hospital beds p.c.			-0.06			-0.03			0.03
			(-1.16)			(-0.34)			(0.49)
Respiratory disease prev.			-8.14			-17.76			-8.48
			(-0.78)			(-1.00)			(-0.67)
Constant	-40.23**	-375.50***	-319.61**	139.05***	-430.24***	-336.20*	195.41***	-39.89	-5.26
	(-2.06)	(-3.47)	(-2.41)	(3.50)	(-2.75)	(-1.82)	(5.54)	(-0.30)	(-0.04)
N	172	164	164	175	165	165	172	164	164
R^2	0.20	0.44	0.46	0.08	0.31	0.32	0.29	0.35	0.35

Notes: *p<0.1; **p<0.05; ***p<0.01. Linear regressions with HC(3) robust standard errors and country as unit of analysis.

Table A-14: Interaction specifications for Hanson and Sigman state capacity measure (see also Figures 5 and 6 in paper)

Outcome measure	Officially reported deaths (per 100k)			Excess deaths (per 100k)			Offic. rep. deaths – Excess deaths (per 100k)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
Polyarchy	305.42***	469.08***	484.76***	273.57**	479.11***	466.09***	-34.70	35.25	11.92
	(3.36)	(5.26)	(4.76)	(2.08)	(3.71)	(3.27)	(-0.36)	(0.35)	(0.11)
State capacity	285.23***	144.19*	157.09*	410.51***	112.77	81.70	116.46	-28.14	-64.87
	(3.54)	(1.91)	(1.85)	(2.74)	(0.76)	(0.50)	(0.92)	(-0.19)	(-0.42)
Polyarchy X State cap.	-322.93**	-637.60***	-671.34***	-609.67***	-1037.58***	-988.45***	-288.65*	-430.40**	-360.43*
	(-2.35)	(-4.62)	(-4.17)	(-2.93)	(-4.94)	(-3.97)	(-1.83)	(-2.40)	(-1.78)
Ln GDP p.c.		13.05*	13.59		17.79	18.05		5.20	4.30
		(1.87)	(1.49)		(0.99)	(0.85)		(0.33)	(0.26)
Ln population		0.97	0.95		7.83	9.16		5.47	6.68
		(0.21)	(0.21)		(0.88)	(1.00)		(0.79)	(0.93)
Population density		-0.02	-0.02		-0.03	-0.03		-0.02	-0.02
		(-0.64)	(-0.87)		(-0.88)	(-1.01)		(-1.27)	(-1.10)
Life expectancy		3.09*	2.49		6.09**	5.58*		2.87	2.98
		(1.78)	(1.33)		(2.08)	(1.84)		(1.22)	(1.28)
Share pop. over 65		7.24***	7.99***		11.69***	10.48**		4.55	2.67
		(2.95)	(3.01)		(2.88)	(2.18)		(1.46)	(0.70)
Doctors p.c.			0.08			0.12			0.03
			(0.76)			(0.49)			(0.22)
Hospital beds p.c.			-0.06			-0.03			0.03
			(-1.28)			(-0.33)			(0.57)
Respiratory disease prev.			-1.64			-12.22			-7.99
			(-0.15)			(-0.64)			(-0.57)
Constant	-131.76***	-442.28***	-405.83***	9.44	-553.07***	-482.04**	151.19***	-97.09	-69.82
	(-3.23)	(-3.74)	(-2.86)	(0.14)	(-3.11)	(-2.38)	(2.64)	(-0.65)	(-0.45)
N	162	158	158	165	159	159	162	158	158
R^2	0.26	0.46	0.47	0.05	0.28	0.29	0.25	0.31	0.32

Notes: *p<0.1; **p<0.05; ***p<0.01. Linear regressions with HC(3) robust standard errors and country as unit of analysis.