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JEL Classification: P16, D7, P4

Keywords: COVID-19, institutions, Civil society, authoritarian control

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July 15, 2022

Abstract

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1. INTRODUCTION

Managing the COVID-19 pandemic has called for provision of public goods that require a high state capacity: producing and distributing vaccines, enforcing mask mandates, limiting potential super-spreader events, etc. The rationale for public intervention was that private actions such as getting vaccinated, wearing masks, and avoiding large gatherings have positive externalities, so they are likely to be under-supplied by individuals on their own (Ostrom, Calvert and Eggertsson, 1990). In these circumstances, one might expect the power of the state to coerce others into compliance to have beneficial effects. Might it be that authoritarian leaders, less constrained by institutions and less accountable to voters' whims, are better equipped to deal with the health emergence?

At the same time, authoritarian leaders might want to use the COVID-19 as a pretext for escalating the oppression without any health benefit. In fact, democracy and human rights have worsened in more than 80 countries since the onset of the pandemic, with particularly sharp deterioration of democracy in highly repressive states (Kavaklı, 2020; Luhrmann et al., 2020; Repucci and Slipowitz, 2020; Guasti, 2020; Fong, 2021). However, a cross-country study would not allow to establish a causal link: is that true that authoritarian governments used the COVID-19 pandemic to increase their control over the society? Was the strength of authoritarian control helpful in protecting the public health?

In this paper, we use the regional variation in government response to COVID-19 in Russia to show that the government did exploit the COVID-19 pandemic to maintain its grip on power. In 2020, the Kremlin has effectively delegated responsibility for handling the pandemic to regional governors. Though Russian regions share a similar culture, language, and history, they vary significantly in the capacity of elites to provide public goods and maintain order, in the strengths of civil society, and in the quality of political institutions. We demonstrate that the extent of state information manipulation, measured as the under-reported deaths from COVID-19 (compared to excess mortality), and arrests of

activists are determined by these parameters, the strength of the civil society and quality of regional institutions.

Furthermore, the government's use of information manipulation and repression during pandemic was not innocuous. Information manipulation negatively affects citizens' self-reported compliance with public health guidance, and their willingness to get vaccinated or to recommend the vaccine to vulnerable friends and family (Roozenbeek et al., 2020). In the Russian context, we show that the under-reported COVID-19 related deaths, a propaganda tool, did reduce the citizens' willingness to comply with anti-pandemic measures, and therefore contributed to the pandemic harm. Thus the authoritarian government's supposed advantage in providing the public good – i.e., implementing coercive public-health measures – was compromised by the government's own actions to enhance its power.

The COVID-19 pandemic provided a number of natural experiments that can shed light on some classic issues. For example, information manipulation is a critical instrument in every dictator's playbook (Guriev and Treisman, 2019, 2022), yet systematic empirical evidence is still scarce.[1] The pandemic provides a unique chance to measure information manipulation by focusing on a well-defined variable, the difference between officially reported COVID-related deaths and excess mortality over the same period.

The truthfulness of the reporting strategy for COVID deaths is, essentially, a choice variable for state authorities. There is massive evidence that this data was heavily manipulated.[2] In contrast, the mortality data is much more reliable: even in a weakly institutionalized environment, a death enters, as a record, many independent registers. Manipulating death statistics on a country-wide scale would require coordination of many

[1] King, Pan and Roberts (2013, 2014) are pioneer studies of censorship in China. Rozenas and Stukal (2019) study the mechanisms and impact of government propaganda in Russia; Knight and Tribin (2018) demonstrates that availability of propaganda-free sources reduced the impact of state propaganda in Venezuela; Glaessel and Paula (2020) confirmed these results using pre-unification German data.

[2] Kilani (2021) shows that countries with low freedom scores are more likely to manipulate their COVID-19 reporting. Governments' efforts to manipulate COVID-19 statistics are documented in Ahinkorah et al. (2020) for African countries, in Pomeranz and Schwid (2021) for Belarus, and in Ricard and Medeiros (2020) for Brazil.

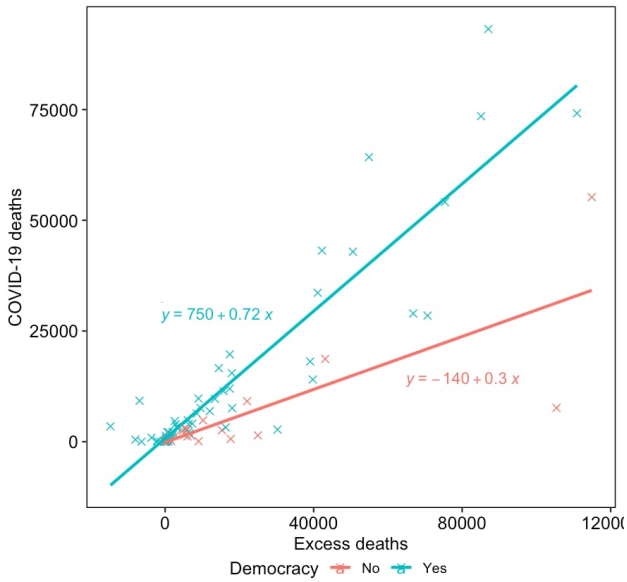

Figure 1: Relationship Between Excess Mortality and Officially Reported COVID-Related Deaths in Democracies and Non-Democracies; data from Kobak (2021); authors' calculations.

independent institutions such as tax authorities, pension and social institutions, courts that manage inheritance, etc. Given that the mortality data is typically well-understood and can be used to calculate reliable excess-deaths estimates, the difference between the reported COVID deaths and excess mortality is a ready proxy for the government's information manipulation.

Even without targeted manipulation, estimates of COVID-related deaths depend on many factors, including country-specific medical protocols and definitions. Developed, well-institutionalized countries such as the United States and the United Kingdom exhibit discrepancies between excess deaths and official statistics. Still, the differences there are an order of magnitude smaller than the discrepancy observed in countries like Russia. Karlinsky and Kobak (2021) find significant variation when comparing excess deaths and officially reported deaths in different countries, and establishes the following general pattern. On average, non-democracies tend to heavily under-report COVID-related deaths. Figure 1 presents the relationship between excess mortality and officially reported COVID-related deaths in democracies and non-democracies.

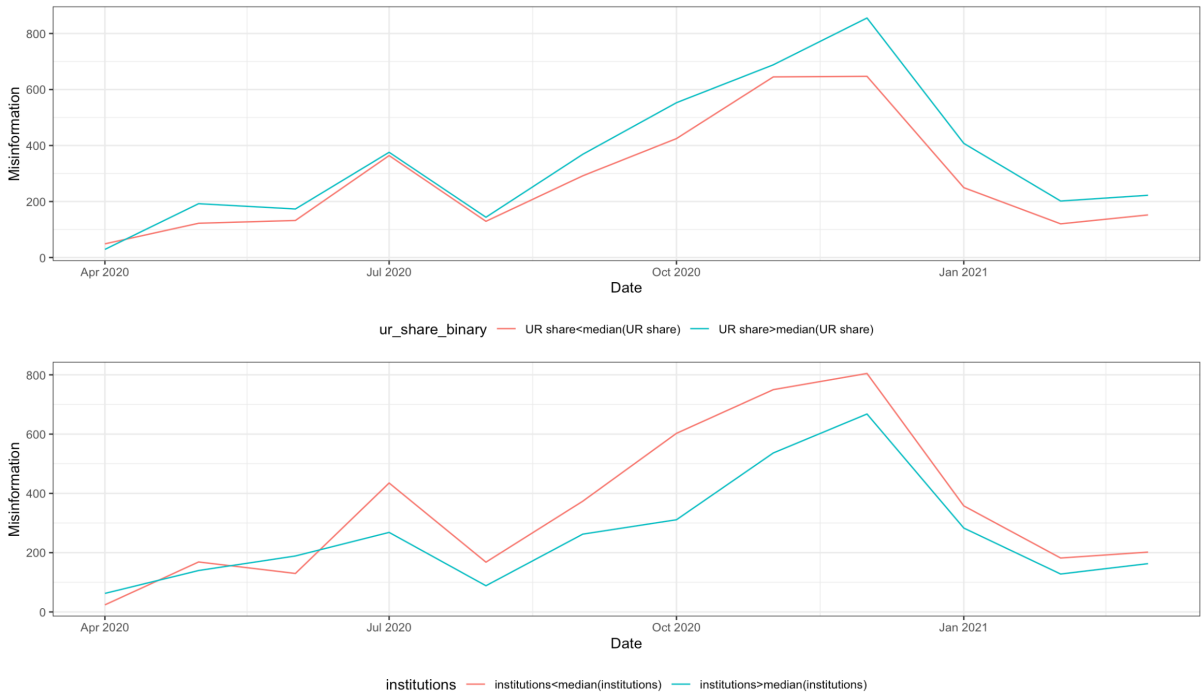

Figure 2: Difference Between Excess Mortality and Officially Reported COVID-Related Deaths Based on United Russia's Presence in Regional Parliaments and Quality of Institutions

The spread of COVID-19 in Russia and the authorities' efforts to suppress information is documented in a number of academic papers (Zemtsov and Baburin, 2020; Lifshits, 2020; Kobak, 2021; Nusratullin et al., 2021) and major news media.[3] In our analysis, information manipulation by Russian regional authorities turns out to be a function of the Moscow's political control. Figure 2 depicts raw data on the difference between excess mortality and officially reported COVID-related deaths over time, based on the representation of United Russia, the ruling party, in regional legislatures. The figure suggests that regions with a strong United Russia majority produce more information manipulation about COVID-related deaths in the region (above). It also shows that regions with higher-quality institutions produce less information manipulation (below). In Sections 5-

[3]Among other reports: Russia's Covid Death Toll Could Be 70 Per Cent Higher Than Official Figure, (*Financial Times*, 05/11/2020), 'You Can't Trust Anyone': Russia's Hidden Covid Toll Is an Open Secret (*New York Times*, 04/10/2021), Data Suggests Russia's COVID-19 Death Toll Is Far Higher Than Reported, (*ABC News*, 7/30/2021), In Russia, Experts Are Challenging Official Pandemic Figures as Too Low. They Refuse to Be Silenced (*Washington Post*, 10/16/2021).

5.3, we show that these suggestive results point to casual connection, rather than simple correlations, and robust with respect to many specifications.

Another important issue in authoritarian politics is the relationship between information manipulation and repressions, two main instruments of authoritarian control (Svolik, 2012).[4] Guriev and Treisman (2019) consider propaganda as a substitute for repression: modern dictators use information manipulation instead of rely on repressions. In contrast, our theoretical model in Section 3 demonstrates that repression and informational control are natural complements to each other. The main mechanism is that repressing those who are most skeptical of the regime allows to increase the volume of propaganda for the others. When the skeptics are repressed, their incentive constraint is relaxed, and the rest of the population receives more pro-regime information. In Table 3 we provide empirical evidence that repression and information manipulation are indeed complementary.

Our empirical results survive a number of robustness checks. For example, the decision of the regional elites to report COVID-related deaths or to engage in repressions might depend not only on the COVID impact, but also on the speed of accumulation of its casualties. Tables A-6 and A-7 report results of the estimations that account for non-linearity, and figures A-2 and A-3 present relevant marginal effects. Similarly, a relatively low number of prosecutions in regions with stronger civil society could be driven by the fact that strong civil societies promote better compliance with anti-pandemic measures. To test whether such a link exists, we estimate the effect of the pandemic threat on the willingness of citizens to stay at home using the Yandex self-isolation index. We show

[4]Early formal theories of authoritarian government considered repression as a mechanical instrument of keeping power; the trade-offs were about allocation of resource to one of the instruments of non-democratic control (Wintrobe, 1990). Modern theories of repressions focus on strategic targeting and selection. Tyson (2018) and Dragu and Przeworski (2019) combine an agency model of a dictatorship with targeted repressions. In Esteban, Morelli and Rohner (2015), the authoritarian government chooses the extent of the "strategic mass killings". Montagnes and Wolton (2019) and Rozenas (2020) use communist purges in Stalin's Russia and Mao's China to demonstrate the effect of repression on performance and selection of subordinates. In our model, repressions do not have any incentive effect; still, it effect might be added at the cost of having a more cumbersome model.

that pandemic severity, as measured by excess deaths, does not have any effect on compliance. By contrast, officially reported COVID deaths are associated with greater compliance with anti-pandemic measures. One can use different measures of institutional quality. Table A-10 utilizes the measures of regional political institutions from Yakovlev and Zhuravskaya (2013) and shows that the results in the regressions with alternative specifications are consistent with our main findings.

The rest of the paper is organized as follows. Section 2 provides the necessary background. Section 3 offers a theoretical model. Section 4 presents the data. Section 5 describes our estimation strategy, main results, and robustness checks. Section 6 concludes.

2. The Context: Politics, Propaganda, and COVID-19

In contrast to many countries such as Hungary, Philippines, Thailand, Egypt, Turkey, and Jordan, where the authorities used the pandemic to further centralize their power, the Russian leader Vladimir Putin, who accumulated unprecedented personal power over the course of his twenty-year rule, chose to delegate responsibility for fighting the pandemic to the regions. On April 2, 2020, regional governors were granted special authority to choose measures for preventing the spread of COVID-19 in their regions.

After the collapse of the Soviet Union in 1991, President Boris Yeltsin famously proclaimed that Russian regions should "take as much freedom as they could swallow." During Putin's presidency, this course has sharply reversed: in 2001, regional governors lost their positions in the Federation Council, while fiscal reforms of the early 2000s revoked most regional tax privileges (Petrov and Nazrullaeva, 2018). Starting in 2004, regional governors were no longer elected directly by the citizens; the federal center played a major role in determining their appointments and subsequent fate.

Regions approached the pandemic in profoundly different ways. About 30 regions chose to impose electronic passes to leave the house. Only a few regions declared a *force*

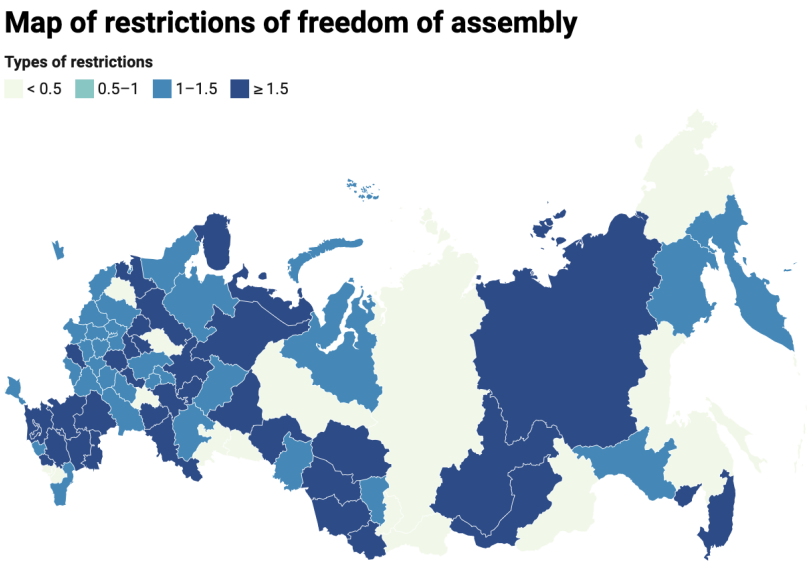

Figure 3: Prohibition of Public Events in Russian Regions, September 2020
Source: OVD-Info. $[< 0.5]$, no restrictions; $[0.5 - 1]$, participation limited; $[1 - 1.5]$, mass gatherings are banned; $[> 1.5]$, public gatherings are banned.

majeure, while in most cases regions labeled lockdowns as "non-working days", making it harder for businesses to handle lapses in contractual obligations that arose during the pandemic. Figure 3 depicts the map of restrictions on public gatherings in September 2020 (Smirnova et al., 2020). In addition, regions varied in the extent of information manipulation about the gravity of the COVID threat and the number of COVID-related prosecutions.

Just as policy responses in the regions varied, so did the regions themselves: in the strength of the civil society as measured by share of workforce employed by NGOs (Salamon, Skokova and Krasnopolskaya, 2020) and in the quality of formal political institutions (Kynev, 2017). They also differ in the extent to which the Putin-led ruling party, United Russia, has control of each regional parliament.[5]

Table A-2 provides preliminary evidence on the relationship between Putin's party control over regions and anti-pandemic responses. Column 1 predicts whether public

[5]United Russia, the largest party in the country, has been the ruling party since the early years of Vladimir Putin's presidency. As of 2021, it holds 336 (74.66%) of the 450 seats in the State Duma. The party was formed in December 2001 through a merger of the Unity and the Fatherland–All Russia parties

meetings were banned in September 2020. It shows that a large share of seats held by United Russia in regional parliaments is associated with a higher probability that meetings would be banned. On the other hand, high-quality regional institutions are negatively correlated with the probability of a ban on meetings. Column 2 predicts whether or not the region would declare a state of emergency. It suggests that high-quality political institutions are positively correlated with a state of emergency.

As was discussed in the Introduction, counting COVID-related deaths in Russia has appeared to be more challenging than in many developed countries. Absent information manipulation, the excess mortality and COVID-related deaths should be almost identical. In reality, the excess mortality was four to five times higher than officially reported deaths from COVID-19 or COVID-related conditions.

During the pandemic, regional authorities have had to report daily data on COVID-19 to two official databases, **stopcoronavirus.rf** and *Rosstat*. Investigative media such as *Mediazona*, *Meduza*, and others found out that some regions under-report data for both databases. In these regions, the reported COVID-related deaths were 20 to 120 times lower than the excess mortality. In such regions, doctors receive recommendations to attribute death to other conditions (pneumonia, thrombosis, etc). These regions included Bashkortostan, Tatarstan, Chuvash Republic, Lipetsk, Bryansk, Chlyabinsk, Ryazan, Yaroslavl, and Leningrad.

Some regions reported fewer deaths to **stopcoronavirus.rf**, but not to Rosstat. Still, all indicators are lower in these regions than the excess mortality. These regions were Kaliningrad, Saratov, Samara, Orenburg, Sakhalin, Kaluga, Mordovia, Karachaevo Cherkess, North Ossetia, and Krasnodar. Curiously, for some of these regions, the **stopcoronavirus.rf** data differ from the excess mortality with a fixed coefficient over time. Finally, there are regions for which all data closely matched the excess mortality, which implies minimum levels of information manipulation. They include Tula and Murom regions, Moscow, Tyva, Adygeya, and Krasnoyark.

Table A-3 presents the conditional correlations of average excess mortality, COVID-related deaths, and deaths officially attributed to COVID-19 from March 2020 through April 2021 in Russian regions. It shows that population size is positively correlated with COVID-related deaths and excess deaths. But, surprisingly, in the official statistics (COVID-related and COVID-attributed deaths) the number of deaths drops when the next regional parliamentary election gets closer and when the number of United Russia seats in the regional parliament is greater. So, one can to use the excess mortality data as a measure of the severity of the pandemic in a given region.

After the onset of the COVID-19 pandemic, the Russian government introduced or amended several normative acts that enabled the prosecution of political activists, protesters, and members of the media. Though the new legislation was passed at the federal level, its enforcement has varied widely across regions.

On April 1, 2020, Federal Law No. 100-FZ was adopted, imposing criminal liability for violations of sanitary and epidemiological rules. Notably, criminal liability for violation of sanitary and epidemiological rules under Part 1 of Article 236 of the Criminal Code of the Russian Federation can be imposed not only for causing a massive disease or poisoning of people through negligence but also for "creating a threat" of such consequences.[6] Furthermore, the law criminalizes the "public dissemination of deliberately false information" about threats to the life and safety of citizens, and/or about measures taken to ensure the safety of the population (Articles 2071 and 2072 of the Criminal Code).

After anti-Putin protests erupted in January 2021, Article 263 was applied almost exclusively to opposition activists such as members of Alexei Navalny's team or his supporters. Article 263 was applied by the prosecution for "stimulating the people to violate quarantine" (Borodikhin, 2021). The prosecution stated that the protests attracted some people who should have been self-isolating, making the organizers of the protest liable.

[6]Violations of Article 236 are punishable by a fine of 500,000 to 700,000 rubles, or the income accrued by the convicted person over a 1–18 month period, or by prohibiting the violator from holding certain offices or engaging in certain activities for one to three years, or imprisonment, restriction of freedom, or being required to perform public works for a period of two years.

All in all, 32 people were prosecuted under this article by March 2021.

Much more widespread was the use of Article 6.3 of the Administrative Code. On April 1, 2020, Federal Law No. 99-FZ was adopted to introduce administrative liability for violation of sanitary and epidemiological norms, under conditions of the spread of the dangerous disease. In its previous iteration, Article 6.3 of the Code denoted administrative liability for violations of legislation on the sanitary and epidemiological welfare of the population.[7]

Repeated convictions under administrative articles can also lead to a criminal conviction. Article 6.3, Item 2 was created as a response to the pandemic, but most of the cases opened under this statute were political, applied to protesters, including solo nonviolent protesters who maintained social distancing and were fully masked. In our empirical exercise, we use prosecutions under Article 6.3 as a measure of state repression.

As mentioned earlier, the enforcement of federal statutes, including Article 6.3, has varied significantly across regions. Figure A-1 depicts raw data[8] on Article 6.32 cases, aggregated by the strengths of civil society in the region (above or below median) and by the quality of institutions (above or below median). It suggests that regions with stronger civil society have fewer arrests under Article 6.32, and so do the regions with better institutions.

3. THEORY

In this Section, we develop a formal model, in which people care about the government's competence, and the government influences people's action via information manipulation. In equilibrium, rational agents are misled with certain probability, i.e., information

[7]The new amendments add additional liability for committing such violations during the state of emergency, in the event of a threat of spread of the disease, which poses a danger to others, or during a period of the quarantine. A conviction under Article 6.3 results in a fine of 15,000 to 45,000 rubles (approximately 200 USD to 615 USD) for private individuals, 50,000 to 150,000 rubles for public officials, and 200,000 to 500,000 rubles for companies.

[8]The data come from investigative journalists at OVD-info.

manipulation does work. Consistent with our empirical results, strong local institutions that allow citizens to avoid using the manipulated information lead to less manipulation. If, in addition to information operations, the government has an opportunity to repress citizens who are, on average, more skeptical about the competence of the government than others, this allows the government to increase the extent of information manipulation.

3.1. Setup

There are two possible states of the world, $\omega \in \{0,1\}$: the government might be either competent ($\omega = 1$) or incompetent ($\omega = 0$). Receiver i has to make an action $a_i \in \{0,1\}$, which she wants to match the state, $u^R(a_i) = -|a_i - \omega|$. We interpret action $a_i = 1$ broadly as support for the government. Then, the specified preferences describe an environment, in which people prefer to support the government if they consider it competent, and prefer not to support otherwise. Naturally, the government is interested in maximizing the share of citizens who support it, i.e., choose $a_i = 1$, $\int_I a_i di$.

Formally, agent i's utility depends on both the action and the state of the world as follows. Let $u_i(a_i = 0, s_i = 0) = 1 - q_i$, and $u_i(a_i = 1, s_i = 1) = q_i$, so $q_i \in (0,1)$ proxies the congruence with the government for agent i. If the action and the state are not matched, then the agents' utility is normalized to 0 : $u_i(a_i = 0, s_i = 1) = u_i(a_i = 1, s_i = 0) = 0$.

There are two types of citizens, $q_i \in \{q_L, q_H\}$, $q_L < q_H$. The share of skeptics, i.e., agents with low congruence with the government q_L, is λ.

The common prior is $P(\omega = 1) = \theta$.

The government chooses an information design, i.e., the signal $s : \{0,1\} \to \Delta(\{0,1\})$, and then each agents observes the signal's realization and chooses an action. With probability γ, the government has an opportunity to manipulate the outcome *ex post*, i.e. the commitment to the information design fails. Thus, in the particular case when $\gamma = 0$, this is a Bayesian persuasion (Kamenica and Gentzkow, 2011). With $\gamma > 0$ it is a more general

model of persuasion, which does not require the full commitment assumption. The case $\gamma = 1$ corresponds to the Crawford-Sobel "no commitment" communication protocol.

Finally, we let the agents to make a conscious decision to assess the information that the government provides. Specifically, if they watch it, they bear the cost $a > 0$. This parameter proxies the quality of local institutions – if this is easy to get information elsewhere, an agent would not need to get information from the government channel which he knows to be self-serving.

Before the government does propaganda, it might engage in repressions, which we model in the simplest possible form. The government can repress the share of μ of the population, targeted, at the cost of $c > 0$.

The timing is as follows.

1. The government makes a decision on repressions.
2. The government chooses the information design.
3. The state of the world ω is realized; $s(\omega)$ is determined.
4. With probability γ, the government can, unbeknownst to people, to change the signal.
5. Those people who decided to watch the goverment media receive the public signal s, which is determined by the information design with probablity $1 - \gamma$ and by the government with probability γ.
6. Each agent i chooses $a_i \in \{0, 1\}$.
7. Payoffs are received.

We will look for the sender-optimal Bayesian-perfect equilibrium.

3.2. *Analysis*

We start with the optimal information manipulation from the government standpoint. It is a standard exercise to demonstrate that the optimal design has the following type. When the state is favorable to the government, i.e., the government is indeed competent, $\omega = 1$, report $s = 1$; when $\omega = 0$, report $s = 1$ with some probability β and report $s = 0$ otherwise. If the commitment to the information design fails, which happens with probability γ, the optimal action for the government is to report $s = 1$.

Consider the optimal response of agents who received the information about the government competence. (We will analyze the decision to pay the cost and acquire this information later.) Start with the case $s = 0$. Then every agent i knows that $\omega = 0$ and chooses $a_i = 0$.

Now, suppose that $s = 1$. In this case, we use the Bayes formula to calculate the posterior beliefs of agents over the government's competence.

$$\begin{aligned} P(\omega &= 1|s = 1) = \frac{P(s = 1|\omega = 1)P(\omega = 1)}{P(s = 1|\omega = 1)P(\omega = 1) + P(s = 1|\omega = 0)P(\omega = 0)} \\ &= \frac{\theta}{\theta + ((1 - \gamma)\beta + \gamma)(1 - \theta)} \end{aligned}$$

We used that $P(s = 1|\omega = 1) = 1$ and $P(s = 1|\omega = 0) = (1 - \gamma)\beta + \gamma$.

Agent i chooses $a_i = 1$ whenever

$$\frac{\theta}{\theta + (1 - \phi)((1 - \gamma)\beta + \gamma)(1 - \theta)} q_i \geq \frac{(1 - \phi)((1 - \gamma)\beta + \gamma)(1 - \theta)}{\theta + (1 - \phi)((1 - \gamma)\beta + \gamma)(1 - \theta)} (1 - q_i),$$

which is equivalent to

$$q_i \geq 1 - \frac{\theta}{\theta + ((1 - \gamma)\beta + \gamma)(1 - \theta)}$$

Now recall that, depending on the opportunity cost, an agent might not want to watch the government-influenced news. For example, if local media are strong, the necessary information might obtained from them, rather than from the government. The expected

value of information for agent i is $\theta q_i - (1-\theta)\left((1-\gamma)\beta + \gamma\right)(1-q_i)$. So, if one wants agent i to watch the news, then

$$\theta q_i - (1-\theta)\left((1-\gamma)\beta + \gamma\right)(1-q_i) \geq a,$$

which implies

$$\beta \leq \frac{1}{1-\gamma}\left(\frac{q_i\theta - a}{(1-q_i)(1-\theta)} - \gamma\right). \tag{1}$$

Summing up, the maximum slant β such that agent i is willing to receive the message and then follow it is given by (1).

There are two candidate strategies for optimal persuasion. One is to target both skeptics and non-skeptics; the other is to ignore the skeptics who have a lower congruence with the government than non-skeptics, $q_L < q_H$. If both groups are targeted, then the maximum slant is given by the following formula.

$$\beta^L = \frac{1}{1-\gamma}\left(\frac{q_L\theta - a}{(1-q_L)(1-\theta)} - \gamma\right)$$

Otherwise, if propaganda focuses on the non-skeptics only, the optimal β is given by

$$\beta^H = \frac{1}{1-\gamma}\left(\frac{q_H\theta - a}{(1-q_H)(1-\theta)} - \gamma\right).$$

Naturally, skeptics are harder to persuade, so the non-skeptics could be fed more propaganda: $\beta^H > \beta^L$. As a result, they support the government with a higher probability than the skeptics.

Let us discuss the role of the parameter γ, which proxies the government's ability to commit to an information design. As β cannot be lower than 0, it must be the case that $\gamma \leq \overline{\gamma} = \frac{q_L\theta - a}{(1-q_L)(1-\theta)}$. If this condition is not fulfilled, which means that the level of commitment is very low, persuasion does not work at all.

Let $A(\beta)$ denote the share of population that consumes and follows the government-

provided information; for any $i \in A(\beta)$, $a_i(1) = 1$. Thus, $A(\beta^L) = 1$ and $A(\beta^H) = 1 - \lambda$.

The government's optimization problem is as follows.

$$\begin{aligned}\max_{\beta} P_\beta(s &= 1)A(\beta) \\ &= \max\left\{\theta + \left((1-\gamma)\beta^L + \gamma\right)(1-\theta), (1-\lambda)\left(\theta + \left((1-\gamma)\beta^H + \gamma\right)(1-\theta)\right)\right\} \\ &= \max\left\{\frac{\theta - a}{1 - q_L}, (1-\lambda)\frac{\theta - a}{1 - q_H}\right\}.\end{aligned}$$

The left expression is the maximum expected support that can be reached when the leader targets the whole population; the right expression corresponds to the case when the leader targets only non-skeptics. If skeptics are included into the targets of propaganda, then the optimal slant, $\beta^* = \beta^L$ and is lower than the optimal slant when skeptics are not targeted, $\beta^* = \beta^H$.

In either case, the optimal slant, β^*, is decreasing in a, the opportunity cost of watching the government-manipulated news. The following proposition summarizes the above discussion.

Proposition 1. *The extent of the government's optimal information manipulation,β^*, depends positively on the congruence between the people and the government: the optimal slant β^* is weakly increasing in q_L and q_H. The strength of local institutions limits information manipulation: β^* is a decreasing function of a.*

When it is optimal to target both skeptics and non-skeptics? The condition boils down to

$$1 - \lambda \leq \frac{1 - q_H}{1 - q_L}. \tag{2}$$

Naturally, the propaganda targets both groups if the share of skeptics, λ, is relatively high, and the skeptics congruence with the regime is not very low relative to the non-skeptics congruence.

Suppose that the optimal strategy for the government is to target both groups; that

is, condition (2) is fulfilled. In addition, recall that the regime can repress some share of population μ at the cost of some $c > 0$. For simplicity, let us assume that the repression can be targeted exclusively on skeptics; this assumption can be easily relaxed. Finally, suppose that μ, the share of skeptics who are repressed, satisfies

$$1 + \mu - \lambda > \frac{1 - q_H}{1 - q_L}.$$

If (3.2) is true, then after the share μ is repressed, the optimal propaganda targets not the whole population, but the non-skeptics only. The new optimal level of slant β^* is β^H; that is, there is now more propaganda than before.

Proposition 2. *The government either combines repression with heavy propaganda ($\beta^* = \beta^H$), or targets all people with light propaganda ($\beta^* = \beta^H$). The repression-heavy propaganda combination happens for a larger set of parameters whenever repressions are relatively efficient, i.e., the excluded share of skeptics μ is high and the associated cost c is low.*

Proposition 2 unpacks the mechanism that makes repression and propaganda complements, rather than substitutes as in the classic literature. Repressing the skeptics allows the regime to further manipulate information by switching to a higher level of slant, guaranteeing more support for the regime from non-skeptics. Thus, a regime that is more capable of repression is also able to use more information manipulation. In Subsection 5.2, we empirically confirm the complementarity between repression and information manipulation.

4. Data and Measurement

In this section, we briefly describe the key variables of interest. Tables A-4 and A-5 provide summary statistics. Table A-1 provides short operationalizations and data sources for each variable.

4.1. *Explanatory Variables*

Excess Deaths. Excess deaths is a measure that captures the difference between expected number of deaths over a five-year period for a given region in a given month and the actual number of deaths reported in official statistics. Excess mortality is computed relative to the baseline, using linear extrapolation of the 2015–2019 trend—an approach presented in Kobak (2021). Comparing the disparities between official reports of excess deaths in Russia, we found the former to be three times smaller than the latter.

Using excess deaths as a measure of the impact of the pandemic is preferable for the analysis of the response of regional elites to pandemic in Russia, because this data cannot be easily manipulated by the reporting officials.[9] In particular, the data on past deaths is available online so that any post hoc manipulations would be easily detectable.

Political institutions in Russian regions. Though Russia has been striving for centralization for the past 20 years, great differences persist in the quality of institutions at the regional level (Kynev, 2017). The author introduces a composite score of political institutions for regions in 2011, 2015, 2016, and 2017. The score is composed of a measure of political competition, institutional independence of the deputies in regional parliament, protection of the rights of opposition in the parliament, and local self-governance measures (see Kynev, 2017, for a full description).

The *measure of political competition* is defined by the effective number of parties, $N = \frac{1}{p_i^2}$, where p_i is the share of votes for each party in all types of elections on the regional level. The state of local self-governance is score-based: the highest score (5) is achieved if the head of the municipal government is elected by the citizens, and a score of 4 is attained if the municipality is governed by the elected head in tandem with the appointed city manager. A score of 3 reflects a situation in which there are no municipal elections, and the municipality is governed by an appointee of the deputies. A score of 2 reflects a

[9] Deaths are reported by the registry office as soon as the death occurs, setting off, among other things, the processing of inheritance claims and the cessation of social security payments.

situation in which deputies select the head of the municipality from a list prepared by the election committee. The lowest score (1) refers to St. Petersburg and Moscow.

Institutional independence refers to the share of professional deputies in regional parliament. Professional deputies are salaried and are barred from entrepreneurial activity. *Protection of the rights of opposition parties* captures the share of parties (apart from United Russia) holding the posts of the speaker, vice-speaker, and committee heads. The minimum score observed in the data is 0.6, the maximum is 23.0, with a mean of 7.3 and a standard deviation of 6 (see Table A-4).

The widely used index of regional democracy, the Petrov-Titkov score, offers another way to measure the quality of regional institutions, based on expert evaluations. It takes a holistic approach to assessing the level of democracy, including political pluralism, civil society, and the degree to which formally democratic institutions are subverted in practice by corruption and fraud. Yet the index is available only for 2001, and then for 2003 through 2010. Thus, it does not account for significant institutional changes that resulted from the protests of 2011, and subsequent reforms reinstating elections of the heads of the regions. By contrast, the Kynev index, while taking into account the multidimensional nature of regional institutions, reflects the major shocks that have affected Russia's institutional environment.

Civil society. The development of civil society can be operationalized through different variables. One option is to use membership in groups or employment in NGOs (Sobolev and Zakharov, 2018). In our dataset, the variable "civil" measures the share of population employed by NGOs from the economically active population in 2013 (Salamon, Skokova and Krasnopolskaya, 2020). The choice of the cut-off date is justified by the fact that starting in 2014, the Ministry of Justice was authorized to register independent groups as "foreign agents" with minimum justitication and without a court order. As a result, many NGOs "went to shadow" and stopped registering with the government.

4.2. *Outcomes of Interest*

Official COVID-related deaths. We consider a death to be officially attributed to COVID-19 if COVID-19 was marked as the main cause in the Rosstat database (ROSSTAT Russian Bureau of Statistics, 2021). In addition, we calculate excess mortality by looking at mortality trends over past five years, or by comparing the total number of deaths in the current month to the average number of deaths over the past five years in the same month. In the absence of information manipulation, excess mortality and COVID-related deaths should be almost identical. But, in fact, excess mortality is four to five times higher than officially reported deaths from COVID-19 or COVID-related conditions.

Repression. We proxy repression with the number of cases initiated under Article 6.3 of the Administrative Code of Russia. This article was created in April 2020 in response to the pandemic. Independent journalists (Mediazona) and human rights organizations (OVD-info) attribute the majority of cases initiated under it to political prosecutions.

Isolation index. Figure 4 illustrates the index of self-isolation created by Yandex, which is the major GPS service in Russia and the top search engine in the country.[10] This index is a reverse indicator to highway congestion in major cities that compares the daily activities of Yandex users in the city now with the activities of a typical workday before the pandemic. A higher index suggests greater self-isolation.

4.3. *Regional Anti-Pandemic Measures*

This paper illustrates the large variation in regional COVID-19-related strategies using several variables.

QR pass duration (number of days). At the start of the pandemic, 30 regions chose to require electronic permission (in the form of a QR pass) to leave the house. The length of

[10]The data are available at https://datalens.yandex/7o7is1q6ikh23.

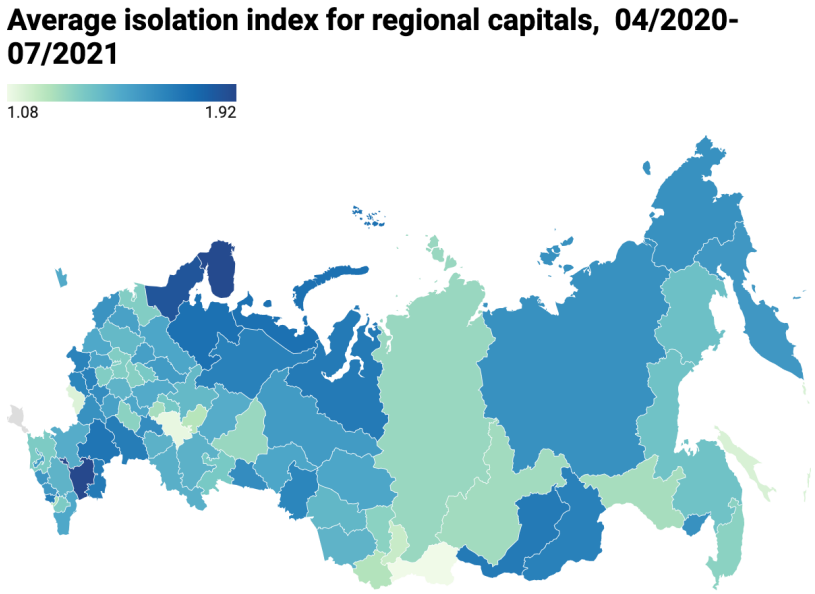

Figure 4: Self-Isolation Index in Regional Capitals, April 2020 to July 2021

this pass regime varied from around 40 days to more than 150 days. When obtaining a pass, citizens were required to state the reason they wished to leave the house, and only a fixed list of activities was permitted.

State of emergency declared (dummy variable). The regions had to decide whether to declare the pandemic a *force majeure.* Such declarations helped businesses handle the lapses in contractual obligations that arose due the pandemic.

Meetings banned (categorical variable for type of restrictions). Regions regulated whether public gatherings were permitted, restricted to a maximum number of participants, or banned. Figure 3 illustrates the differences. The data are from September 2020.

4.4. Other Regional Covariates

The set of time-invariant covariates used for cross-region illustration comprises distance to Moscow, availability of public transportation (railroads, busses), region area, and population in 2019. Table A-1 describes the variables and provide the data sources.

Table A-4 presents summary statistics on regional responses, along with non-time-varying characteristics of the regions. Table A-5 presents summary statistics for time-varying characteristics of the regions.

5. Empirical Strategy and Results

In this section we investigate the strategies of authoritarian control: information manipulation and repression - that arise as a response to pandemic. First, we show that the degree of information manipulation chosen by political elites is reduced by the quality of political institutions in the region (Table 1), while the degree of repression is curbed by the strength of civil society (Table 2). Both results are consistent with Proposition 1 of the model discussed in Section 3.

While many scholars (Guriev and Treisman, 2019) see information manipulation and repression as substitutes, we theorize that they are more likely to serve as complements. Proposition 2 suggests that if skeptics are treated with repression, political elites have more leeway to engage in information manipulation. Our empirical analysis (Table 3) is consistent with this proposition: at a given level of excess death, political elites tend to underreport Covid-related deaths more the more they engage in repression.

5.1. Information Manipulation

We estimate the following model to test whether, at a given level of pandemic threat, high-quality regional institutions bring the official COVID-19 statistics closer to the actual level of casualties as captured by excess deaths:

$$\text{Official deaths}_{it} = \alpha + \beta_1 \text{explanatory}_i * \text{excess.deaths}_{it} + \beta_2 \text{excess.deaths}_{it} + r_i + m_t + e_{it},$$

where *Official deaths* is the number of deaths in region i in months t officially attributed to the COVID-19 pandemic. Explanatory variables include the share of United Russia in

the regional parliament, a measure of civil society, and a measure of the quality of regional political institutions. The inclusion of unit fixed effects accounts for unit-specific (but time-invariant) characteristics of the region. The inclusion of time fixed effects accounts for time-specific (but unit-invariant) unobserved confounders. One can regard unit and time fixed effects as unit-specific and time-specific unobserved confounders that are common causes of the outcome and treatment variables.

Table 1 presents the results. In general, strong positive correlation is expected between the official count of COVID-19 deaths and excess deaths, if official reports capture the progress of the disease. Furthermore, if no information manipulation is used, one should not expect those factors to exert any influence on COVID reporting. By contrast, Table 1 also suggests that, for a given threat level, higher-quality institutions lead to an increase in the official COVID-19 death tally. In addition, the larger the share of United Russia in regional parliaments, the lower the official COVID-19 death tally, at a given threat level.

One might expect that, in addition to levels of COVID-19 impact the growth of casualties might also play a role in the decision of the regional elites to report COVID-related deaths. Figure A-2 presents the model that that takes non-parametric effects of excess deaths on officially reported deaths. Marginal effects are illustrated in Figure A-2. Figure 5 presents the coefficients of the models of misinformation.

5.2. Repression

We explore the degree to which institutions and civil society have influenced prosecutions under Article 6.3 by estimating the following model:

$$\log(\text{article6.3})_{it} = \alpha + \beta_1 \text{explanatory}_i * \text{excess.deaths}_{it} + \beta_2 \text{excess.deaths}_{it} + r_i + m_t + e_{it},$$

where the explanatory variables include the share of United Russia in the regional parliament, the number of months until the next elections, a measure of civil society, and a

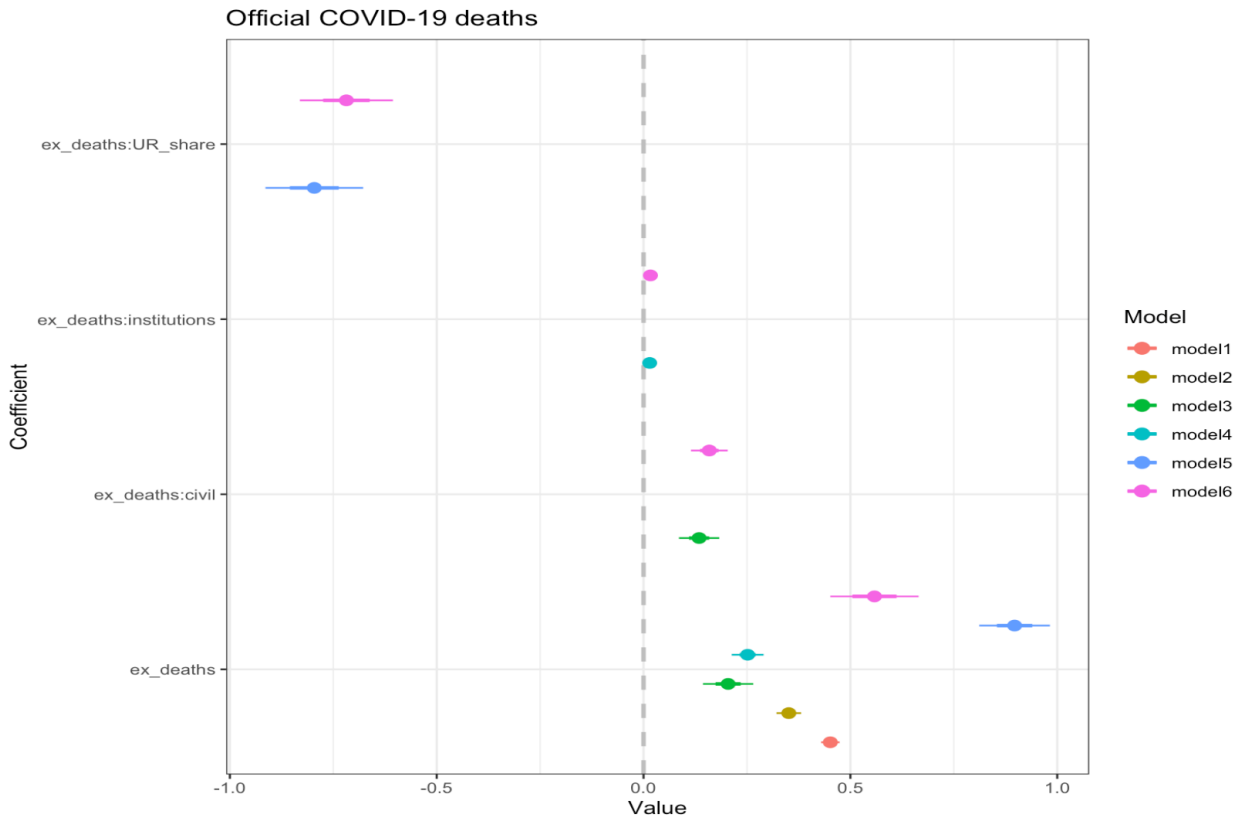

Figure 5: Coefficients of the model of misinformation

measure of the quality of regional political institutions.

Figure 6 presents the coefficients of the models of registered cases of "violation of sanitary rules".

The F-statistic provided for Model 1 suggests that the strength of the pandemic threat is an important factor in determining the number of prosecutions, and the direction of the effect is consistent with the hypothesis that under the threat of a pandemic it becomes easier for the state to resort to such tactics. Model 5 suggests that a greater share of United Russia in the regional parliament leads to a higher number of prosecutions at a given pandemic threat level. In contrast, a stronger civil society at a given threat level reduces the number of prosecutions.

These conclusions hold as we account for the speed of COVID-related deaths accumulation (see Table A-7 and Figure A-3 in the Appendix).

Table 1: Excess Deaths and Information Manipulation

	Dependent variable:					
	Official Deaths From COVID-19					
	(1)	(2)	(3)	(4)	(5)	(6)
Excess deaths	0.452***	0.351***	0.204	0.252**	0.897***	0.558**
	(0.096)	(0.112)	(0.183)	(0.123)	(0.347)	(0.279)
Excess deaths*civil			0.134			0.159
			(0.198)			(0.114)
Excess deaths*institutions				0.015**		0.017***
				(0.006)		(0.006)
Excess deaths**UR share					−0.796*	−0.718**
					(0.417)	(0.303)
Constant	−49.307	43.664	108.732	16.208	142.190***	178.734**
	(33.375)	(80.432)	(84.218)	(75.681)	(48.184)	(87.319)
Month FE	-	+	+	+	+	+
Region FE	-	+	+	+	+	+
Observations	980	980	980	980	980	980
R^2	0.626	0.820	0.826	0.831	0.851	0.868
Adjusted R^2	0.626	0.802	0.808	0.814	0.835	0.853
F Statistic	1,638.037	44.470	45.768	47.571	54.902	61.662
Note:						*p<0.1; **p<0.05; ***p<0.01

Interestingly, while the strength of the civil society helps to reduce instances of prosecution for the violation of COVID precautions, political institutions have no effect. Conversely, regions with higher quality of political institutions tend to report COVID-related deaths more truthfully, but the strengths of civil society has no impact on truthfulness of the reports. Greater share of United Russia is correlated with more information manipulation and prosecutions. Table 3 shows that, after accounting for excess deaths, institutional and societal factors, as well as for region-specific and time-specific effects, lower reports of COVID-19 mortality correspond to higher number of prosecutions for violation of COVID-19 sanitary regime.

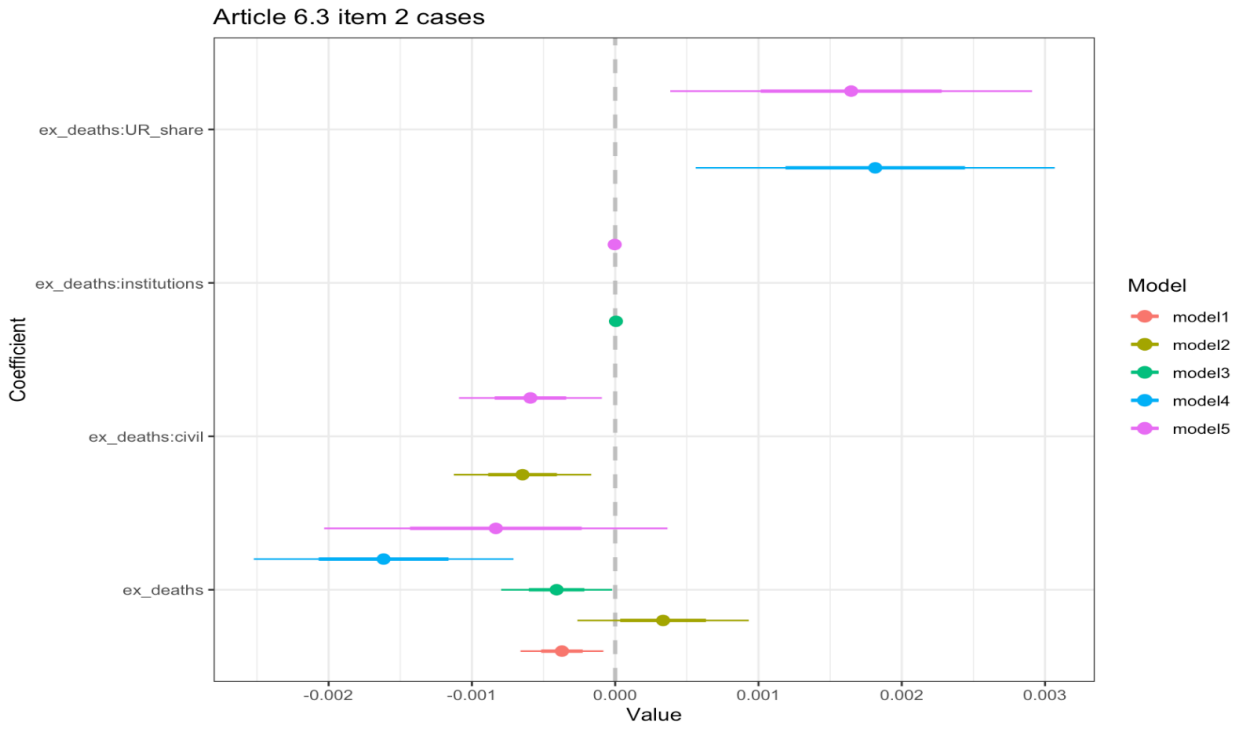

Figure 6: Coefficients of the model of Article 6.3, Item 2 cases

5.3. Robustness

The decreased number of prosecutions in regions with stronger civil society could be driven by the fact that strong civil societies can promote better compliance with anti-pandemic measures. To test whether such a link exists, we estimate the effect of the pandemic threat on the willingness of citizens to stay at home. To this end, we utilize the Yandex self-isolation index for all regional capitals over the period of the pandemic. It is a reverse indicator to highway congestion in major cities that compares the daily activities of Yandex users in the city now with a the activities of typical workday before the pandemic. A higher index suggests greater self-isolation. Table A-9 presents the model, estimating whether citizens' willingness depends on the level of threat and the quality of institutions and civil society. It suggests that none of these factors had an impact.

Excess mortality data are not distributed by the state media, nor are they promptly calculated—there is a significant delay. What citizens *can* easily find are the official COVID-

Table 2: Article 6.3, Item 2 Cases

	Dependent variable:				
	log(article 6.3 item 2 cases)				
	(1)	(2)	(3)	(4)	(5)
Excess deaths	−0.0004	0.0003	−0.0004	−0.002***	−0.001**
	(0.0002)	(0.0002)	(0.0003)	(0.001)	(0.0004)
Excess deaths*civil		−0.001***			−0.001***
		(0.0002)			(0.00003)
Excess deaths*institutions			0.00001		−0.00000
			(0.00001)		(0.00002)
Excess deaths*UR share				0.002**	0.002***
				(0.001)	(0.0003)
Constant	4.587***	4.273***	4.576***	4.362***	4.102***
	(0.148)	(0.093)	(0.156)	(0.147)	(0.082)
Observations	980	980	980	980	980
R^2	0.695	0.697	0.695	0.698	0.700
Adjusted R^2	0.664	0.666	0.663	0.667	0.668
F Statistic	22.234	22.227	21.971	22.267	21.950
Region FE	-	+	+	+	+
Months FE	-	+	+	+	+
Note:					*p<0.1; **p<0.05; ***p<0.01

19 statistics. Table A-8 shows that self-isolation improves when the official COVID statistics go up, underscoring the cost of information manipulation in a region. However, neither the quality of institutions nor the strength of civil society influences the decision to stay at home. This suggests that the results presented in Table 2 are not driven by the differential citizen compliance with the anti-COVID measures.

The decision of the regional elites to report COVID-related deaths can depend not only on the level of COVID impact, but also on the speed of accumulation of its casualties. To

Table 3: Information Manipulation and Repression

	Dependent variable:				
	log(article 6.3 item 2 cases)				
	(1)	(2)	(3)	(4)	(5)
Official Deaths From COVID-19	-0.001^{**}	-0.001^{**}	-0.001^{**}	-0.001^{*}	-0.001^{*}
	(0.001)	(0.0005)	(0.0005)	(0.001)	(0.0005)
Excess deaths	0.00003	0.001^{***}	-0.0001	-0.001^{*}	-0.0003
	(0.0002)	(0.0002)	(0.0002)	(0.0004)	(0.0003)
Excess deaths*civil		-0.001^{***}			-0.0005^{***}
		(0.0001)			(0.0001)
Excess deaths*institutions			0.00002^{*}		0.00001
			(0.00001)		(0.00002)
Excess deaths*UR share				0.001^{**}	0.001^{***}
				(0.001)	(0.0004)
Constant	4.637^{***}	4.385^{***}	4.597^{***}	4.493^{***}	4.257^{***}
	(0.119)	(0.106)	(0.113)	(0.167)	(0.070)
Observations	980	980	980	980	980
R^2	0.699	0.701	0.700	0.700	0.702
Adjusted R^2	0.668	0.669	0.668	0.669	0.670
F Statistic	22.417	22.308	22.205	22.241	21.880
Region FE	+	+	+	+	+
Months FE	+	+	+	+	+
Note:					*p<0.1; **p<0.05; ***p<0.01

capture this effect we estimate the following model:

$$\text{Official deaths}_{it} = \alpha + \beta_1 \text{explanatory}_i * \text{excess.deaths}_{it} +$$

$$+\beta_2 \text{excess.deaths}_{it} + \beta_3 \text{excess.deaths}_{it}^2 + r_i + m_t + e_{it}$$

Table A-6 of the Appendix presents the results. The negative correlations observed in the model 2 —which does not account for the strength of civil society or the quality of institutions—suggests that regions try to hide the extent of the problem, but regions, are indeed more likely to report COVID-related deaths if their rate is growing faster. Figure

A-2 presents the marginal effects of excess deaths on the official deaths for models 1 and 6, as well as the marginal effects of excess deaths at low (mean – 1 standard deviation), average (mean), and high (mean + 1 standard deviation) levels of the strength of civil society and shares of United Russia in regional parliaments. Model 2 relates the official statistics to the excess deaths, accounting for the region and time fixed effects. It shows that, while the speed of growth in excess deaths is reflected in official COVID deaths statistics, the levels of excess deaths are not accurately represented by official reports. Models 3-5 show to which extent the strength of civil society, quality of political institutions and share of United Russia in regional parliament modify the reporting of deaths, depending on the level of pandemic threat. Model 6 includes all of these interactions. Table A-7 presents similar models for the number of Article 6.3 item 2 cases. Figure A-3 presents the marginal effects of excess deaths on the number of cases for models 1 and 5, as well as the marginal effects of excess deaths at low (mean – 1 standard deviation), average (mean), and high (mean + 1 standard deviation) levels of institutional development and shares of United Russia in regional parliaments.

6. Conclusion

In this paper, we focus on an environment, in which an authoritarian government uses a public health crisis to tighten its grip over the society. Utilizing the fact that Russian regions had full authority over COVID-related policies, we found that the quality of political institutions, the strength of the civil society, and the strength of political monopoly all influence the extent to which the incumbent can engage in information manipulation and repression. In addition, we found evidence that information manipulation is complementary to repression. Our findings are consistent with the cross-country findings that democratic backsliding related to the COVID-19 pandemic has been more prominent in countries with weaker institutions.

REFERENCES

Ahinkorah, Bright Opoku, Edward Kwabena Ameyaw, John Hagan Jr, Abdul-Aziz Seidu and Thomas Schack. 2020. "Rising Above Misinformation or Fake News in Africa: Another Strategy to Control COVID-19 Spread." *Frontiers in Communication* 5:1–4.

Borodikhin, Alexander. 2021. "Korona dokazatel'stv. Kak ustroeno "sanitarnoe delo" (Corona of evidence. How "Sanitary Case" works)." *mimeo* .

Dragu, Tiberiu and Adam Przeworski. 2019. "Preventive repression: Two types of moral hazard." *American Political Science Review* 113(1):77–87.

Esteban, Joan, Massimo Morelli and Dominic Rohner. 2015. "Strategic Mass Killings." *Journal of Political Economy* 123(5):1087–1132.

Fong, Brian CH. 2021. "Exporting autocracy: how China's extra-jurisdictional autocratic influence caused democratic backsliding in Hong Kong." *Democratization* 28(1):198–218.

Glaessel, Christian and Katrin Paula. 2020. "Sometimes Less Is More: Censorship, News Falsification, and Disapproval in 1989 East Germany." *American Journal of Political Science* 64(3):682–698.

Guasti, Petra. 2020. "The Impact of the COVID-19 Pandemic in Central and Eastern Europe: The Rise of Autocracy and Democratic Resilience." *Democratic Theory* 7(2):47–60.

Guriev, Sergei and Daniel Treisman. 2019. "Informational Autocrats." *Journal of Economic Perspectives* 33(4):100–127.

Guriev, Sergei and Daniel Treisman. 2022. *Spin Dictators: The Changing Face of Tyranny in the 21st Century*. Princeton University Press.

Kamenica, Emir and Matthew Gentzkow. 2011. "Bayesian Persuasion." *American Economic Review* 101(6):2590–2615.

Karlinsky, Ariel and Dmitry Kobak. 2021. "Tracking excess mortality across countries during the COVID-19 pandemic with the World Mortality Dataset." *Elife* 10:e69336.

Kavaklı, Kerim Can. 2020. "Populist Governments and Democratic Backsliding during the COVID-19 Pandemic." *mimeo* .

Kilani, Ahmad. 2021. "Authoritarian regimes' propensity to manipulate Covid-19 data: a statistical analysis using Benford's Law." *Commonwealth & Comparative Politics* 59(3):319–333.

King, Gary, Jennifer Pan and Margaret E Roberts. 2013. "How censorship in China allows government criticism but silences collective expression." *American Political Science Review* 107(2):326–343.

King, Gary, Jennifer Pan and Margaret E Roberts. 2014. "Reverse-engineering Censorship in China: Randomized Experimentation and Participant Observation." *Science* 345(6199).

Knight, Brian and Ana Tribin. 2018. "The Limits of Propaganda: Evidence from Chavezâs Venezuela." *Journal of the European Economic Association* 17(2):567–605.

Kobak, Dmitry. 2021. "Excess mortality reveals Covid's true toll in Russia." *Significance* 18(1):16–19.

Kynev, Aleksandr Vladimirovich. 2017. "Kachestvo regional'nyh politicheskih institutov: popytka izmerenija (Attempt at measuring the quality of the regional political institutions)." *Politicheskaja nauka* (4):259–283.

Lifshits, Marina L., Neklyudova Natalia P. 2020. "COVID-19 mortality rate in Russian regions: forecasts and reality." *R-Economy* 6(3):171â182.

Luhrmann, Anna, Jean Lachapelle, Sandra Grahn and Amanda B Edgell. 2020. "Pandemic Backsliding: Democracy and Disinformation Seven Months into the Covid-19 Pandemic." *V-Dem Institute* (25).

Montagnes, Pablo and Stephane Wolton. 2019. "Mass Purges: Top-Down Accountability in Autocracy." *American Political Science Review* 113(4):1045â1059.

Nusratullin, Ilmir, Igor Drozdov, Alexei Ermakov, Elena Koksharova and Elena Mashchenko. 2021. "Natural population movement and COVID-19: data from Russia." *Cuestiones PolÃticas* 39(71):986–1007.

Ostrom, E., R. Calvert and T. Eggertsson. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Political Economy of Institutions and Decisions Cambridge University Press.

Petrov, Nikolay and Eugenia Nazrullaeva. 2018. Regional Elites and Moscow. In *The New Autocracy*, ed. Daniel Treisman. Information, Politics, and Policy in Putin's Russia Brookings Institution Press pp. 109–136.

Pomeranz, Jennifer L and Aaron R Schwid. 2021. "Governmental actions to address COVID-19 misinformation." *Journal of Public Health Policy* 42(2):201–210.

Repucci, Sarah and Amy Slipowitz. 2020. "Democracy under Lockdown: The Impact of COVID-19 on the Global Struggle for Freedom." *Freedom House* .

Ricard, Julie and Juliano Medeiros. 2020. "Using misinformation as a political weapon: COVID-19 and Bolsonaro in Brazil." *Harvard Kennedy School Misinformation Review* 1(2).

Roozenbeek, Jon, Claudia R Schneider, Sarah Dryhurst, John Kerr, Alexandra LJ Freeman, Gabriel Recchia, Anne Marthe Van Der Bles and Sander Van Der Linden. 2020. "Susceptibility to misinformation about COVID-19 around the world." *Royal Society Open Science* 7(10):201199.

ROSSTAT Russian Bureau of Statistics. 2021. "Mortality by region.". data retrieved from World Development Indicators, rosstat.gov.ru.

Rozenas, Arturas. 2020. "A Theory of Demographically Targeted Repression." *Journal of Conflict Resolution* 64(7-8):1254–1278.

Rozenas, Arturas and Denis Stukal. 2019. "How Autocrats Manipulate Economic News: Evidence from Russiaâs State-Controlled Television." *Journal of Politics* 81(3):982–96.

Salamon, Lester M, Yulia Skokova and Irina Krasnopolskaya. 2020. "Subnational Variations in Civil Society Development: The Surprising Case of Russia." *Nonprofit and Voluntary Sector Quarterly* 49(5):1058–1081.

Smirnova, Natalia, Anna Chertova, Denis Shedov and Alexei Polikhovich. 2020. "Freedom of Assembly in Russia During the Pandemic: Summary." *OVD-info* .

Sobolev, Anton and Alexei Zakharov. 2018. Civic and political activism in Russia. In *The New Autocracy: Information, Politics, and Policy in Putin's Russia*, ed. Treisman Daniel. Brookings Institution Press pp. 249–276.

Svolik, Milan W. 2012. *The Politics of Authoritarian Rule*. Cambridge University Press.

Tyson, Scott A. 2018. "The Agency Problem Underlying Repression." *The Journal of Politics* 80(4):1297–1310.

Wintrobe, Ronald. 1990. "The Tinpot and the Totalitarian: An Economic Theory of Dictatorship." *American Political Science Review* 84(3):849–872.

Yakovlev, Evgeny and Ekaterina Zhuravskaya. 2013. "The unequal enforcement of liberalization: evidence from Russiaâs reform of business regulation." *Journal of the European Economic Association* 11(4):808–838.

Zemtsov, Stepan and Vyacheslav Baburin. 2020. "Coronavirus in the Regions of Russia: Features and Consequences of the Spread ." *Public Service* 22(2).

APPENDIX

Table A-1: Data and Sources

Variable	Description	Source
UR share	The share of seats held by United Russia in regional parliaments (region-month)	Websites of regional parliaments
Population in 2019	Population on Jan 1, 2019 (1000 people)	Russian Bureau of Statistics (Rosstat): https://rosstat.gov.ru
Distance to Moscow	Distance from regional capital to Moscow, sq km	ICSID database on economic and political indicators for the Russian regions: https://iims.hse.ru/data/2016/01/11/1134755487 / ICSID%20economic%20database%20Codebook%20v1.2.1en.pdf
Auto road density	Paved automobile roads density, per 1000 m	
Railroad density	Railroads density per 10,000 sq km	
Busses	Number of busses per 100,000 people	
Area, 100 sq km	Geographic area of the region	
Civil society	Share of population employed by NGOs from economically active population in 2013	*Nonprofit and Voluntary Sector Quarterly*. 2020, Vol. 49(5) 1058–1081. *Subnational Variations in Civil Society Development: The Surprising Case of Russia*. L.M. Salamon, Y. Skokova, and I. Krasnopolskaya
Institutions	Quality of institutions in 2017, as a measure	A.V. Kynev. 2017."Kachestvo regional'nyh politicheskih institutov:popytka izmerenija (Attempt at measuring the quality of the regional political institutions)."*Politicheskaja nauka*"(4):259–283
QR code duration	Number of days citizens were required to obtain an electronic pass to leave home	http://www.consultant.ru /law/ podborki/ theme-koronavirus/
State of emergency	1 if SoE was ever declared during pandemic, 0 otherwise	
Meetings banned	1 if public gatherings were ever banned during pandemic, 0 otherwise	OVD-info: https://ovdinfo.org/
Variable	Description	Source
Isolation index	1-10 index of self-isolation (higher means more self-isolation)	Yandex index of self-isolation: https://datalens.yandex/7o7is1q6ikh23
COVID-attributed deaths	Number of deaths caused by COVID-19	Russian Bureau of Statistics (Rosstat): https://rosstat.gov.ru/storage /mediabank/edn06-2021.htm
Excess deaths	Excess mortality is computed relative to the baseline obtained using linear extrapolation of the 2015–2019 trend.	Excess Deaths: COVID-attributed deaths; authors' calculations. Article 6.32 cases: Number of cases opened under Article 6.32. OVD-info: https://ovdinfo.org/

Table A-2: Regional Measures: Ban on Public Gatherings and Declaration of State of Emergency

	Dependent Variable:	
	Meetings Banned	State of Emergency
	(1)	(2)
United Russia majority	0.098*	−0.013
	(0.050)	(0.032)
Civil	1.977	0.241
	(1.376)	(0.706)
Institutions	−0.087*	0.064*
	(0.050)	(0.038)
Excess mortality	−0.005	0.008**
	(0.007)	(0.004)
Population 2019	0.002	−0.002**
	(0.002)	(0.001)
Constant	−0.347	−0.456
	(1.139)	(0.707)
Observations	82	81
Log Likelihood	−28.611	−51.365
Akaike Inf. Crit.	69.222	114.730
Note:		*p<0.1; **p<0.05; ***p<0.01

Table A-3: Excess Mortality, COVID-Related Deaths, and COVID-Attributed Deaths

	Dependent Variable: Deaths		
	Excess	COVID-related	COVID-attributed
	(1)	(2)	(3)
Population in 2019	0.260***	0.189***	0.136***
	(0.009)	(0.016)	(0.012)
Distance to Moscow	−0.010	0.001	−0.001
	(0.007)	(0.012)	(0.010)
Road density	−0.219*	0.009	0.119
	(0.116)	(0.196)	(0.152)
Railroad density	0.519***	0.570*	0.343
	(0.172)	(0.290)	(0.224)
Busses per 1000 p	0.970	2.736***	1.954**
	(0.599)	(1.010)	(0.780)
Area	−0.037	0.009	0.006
	(0.042)	(0.070)	(0.054)
Months until elections	−0.268	−0.882	−1.741
	(1.136)	(1.915)	(1.479)
United Russia share	−89.652	−466.794***	−380.076***
	(103.028)	(173.770)	(134.209)
Civil	−88.785**	−0.073	−40.339
	(38.152)	(64.348)	(49.699)
Institutions	−0.536	0.636	4.626
	(2.343)	(3.952)	(3.052)
Constant	107.757	49.649	72.518
	(108.531)	(183.052)	(141.379)
Observations	75	75	75
R^2	0.961	0.858	0.840
Adjusted R^2	0.955	0.836	0.815
Residual Std. Error (df = 64)	110.817	186.907	144.356
F Statistic (df = 10; 64)	157.306***	38.635***	33.624***

Note: *p<0.1; **p<0.05; ***p<0.01

Table A-4: Summary Statistics for Non-Time-Varying Variables

Statistic	N	Mean	St. Dev.	Min.	Pctl(25)	Pctl(75)	Max.
UR share	75	0.714	0.153	0.056	0.662	0.815	0.938
Population in 2019	75	1,836.756	1,811.745	141.200	812.850	2,419.250	12,615.300
Distance to Moscow	75	2,245.280	2,603.863	0	624	2,360.5	11,876
Auto road density	75	160.799	138.964	3	38.5	232	672
Railroad density	71	161.113	111.245	2.000	83.000	218.500	577.000
Buses per capita (1000)	75	39.415	23.855	2.077	21.412	53.247	130.885
Area, 100 sq km	75	193.969	408.184	1.400	34.700	162.450	3,083.500
Civil society	82	0.839	0.409	0.000	0.560	1.015	2.170
Institutions	82	7.324	6.008	0.600	2.900	9.100	23.000
QR code duration	82	19.747	33.788	0	0	42.5	153
State of emergency	81	0.459	0.502	0.000	0.000	1.000	1.000
Meetings banned	82	0.841	0.367	0	1	1	1

Table A-5: Summary Statistics for Time-Varying Variables

Statistic	N	Mean	St. Dev.	Min.	Pctl(25)	Pctl(75)	Max.
Isolation index	920	1.685	0.488	0.690	1.341	1.898	3.427
COVID-attributed deaths	920	159.357	378.524	0	13	164.2	5,251
Excess deaths	920	475.537	685.793	−864	87.8	586.5	6,150
Article 6.32 cases	920	73.715	205.619	0	10	86	3,863

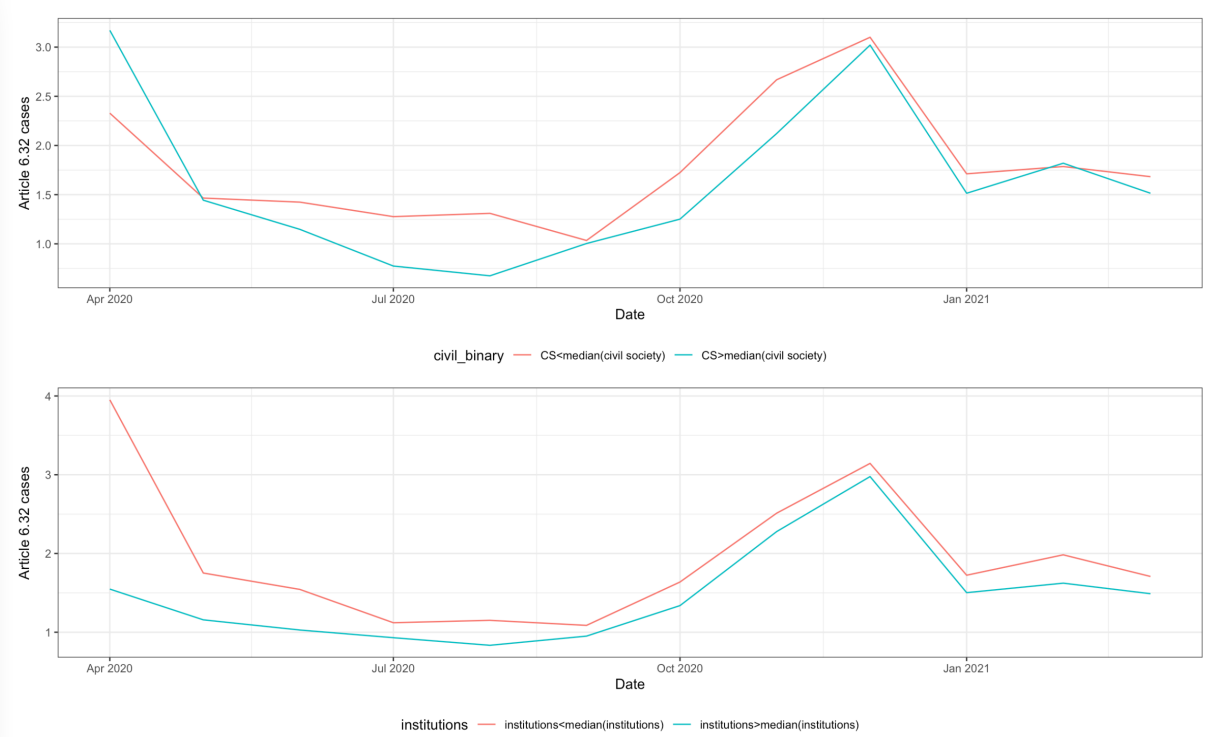

Figure A-1: Article 6.32 Cases by Strength of Civil Society and Institutions

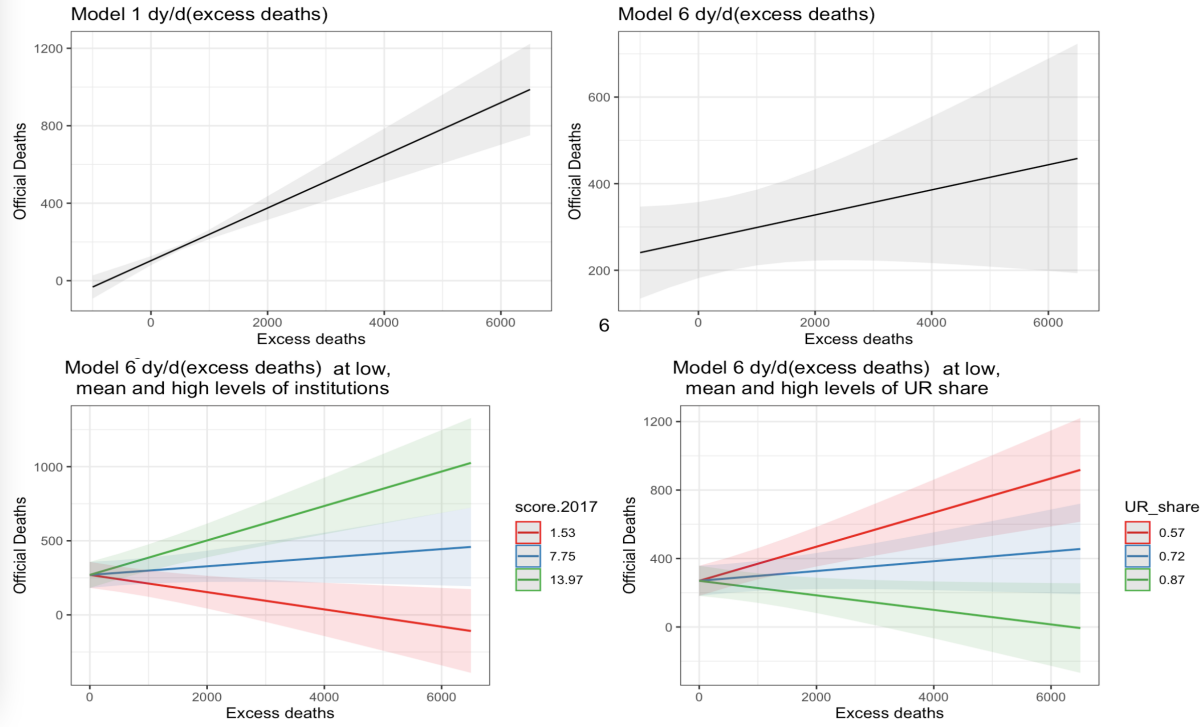

Figure A-2: Marginal Effects of Select Variables on Official Deaths Attributed to COVID-19

Table A-6: Excess Deaths and information manipulation in Russian Regions

	Dependent Variable:					
	Official Deaths From COVID-19					
	(1)	(2)	(3)	(4)	(5)	(6)
Excess deaths	0.136*	−0.029	−0.011	−0.121**	0.372	0.234
	(0.074)	(0.049)	(0.092)	(0.052)	(0.240)	(0.197)
Excess deaths^2	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
	(0.00001)	(0.00002)	(0.00001)	(0.00002)	(0.00001)	(0.00001)
Excess deaths*civil			−0.024			0.034
			(0.081)			(0.058)
Excess deaths*institutions				0.014***		0.014***
				(0.003)		(0.004)
Excess deaths**UR share					−0.501*	−0.474**
					(0.288)	(0.219)
Mean (Excess deaths)	483	483	483	483	483	
Observations	980	980	980	980	980	980
R^2	0.720	0.876	0.876	0.886	0.887	0.896
Adjusted R^2	0.719	0.863	0.863	0.874	0.875	0.885
F stat	1253	67.9	67.2	74.2	74.5	80.2
Region FE	-	+	+	+	+	+
Months FE	-	+	+	+	+	+

Note: *p<0.1; **p<0.05; ***p<0.01

Table A-7: Article 6.3, Item 2 Cases, non-parametric

	Dependent Variable:				
	log(article 6.3 item 2 cases)				
	(1)	(2)	(3)	(4)	(5)
Excess deaths	0.0004	0.001**	0.0004	−0.001	−0.0003
	(0.0003)	(0.0003)	(0.0004)	(0.0005)	(0.0004)
Excess deaths^2	−0.00000***	−0.00000***	−0.00000***	−0.00000***	−0.00000***
	(0.00000)	(0.00000)	(0.00000)	(0.000)	(0.00000)
Excess deaths*civil		−0.0004***			−0.0004***
		(0.0001)			(0.0001)
Excess deaths*Institutions			0.00001		0.00000
			(0.00001)		(0.00001)
Excess deaths**UR share				0.001**	0.001***
				(0.001)	(0.0004)
Mean (Excess deaths)	483	483	483	483	483
Observations	980	980	980	980	980
R^2	0.699	0.700	0.699	0.700	0.701
Adjusted R^2	0.668	0.668	0.668	0.669	0.669
F stat	22.4	22.2	22.2	22.3	22.8
Note:					*p<0.1; **p<0.05; ***p<0.01

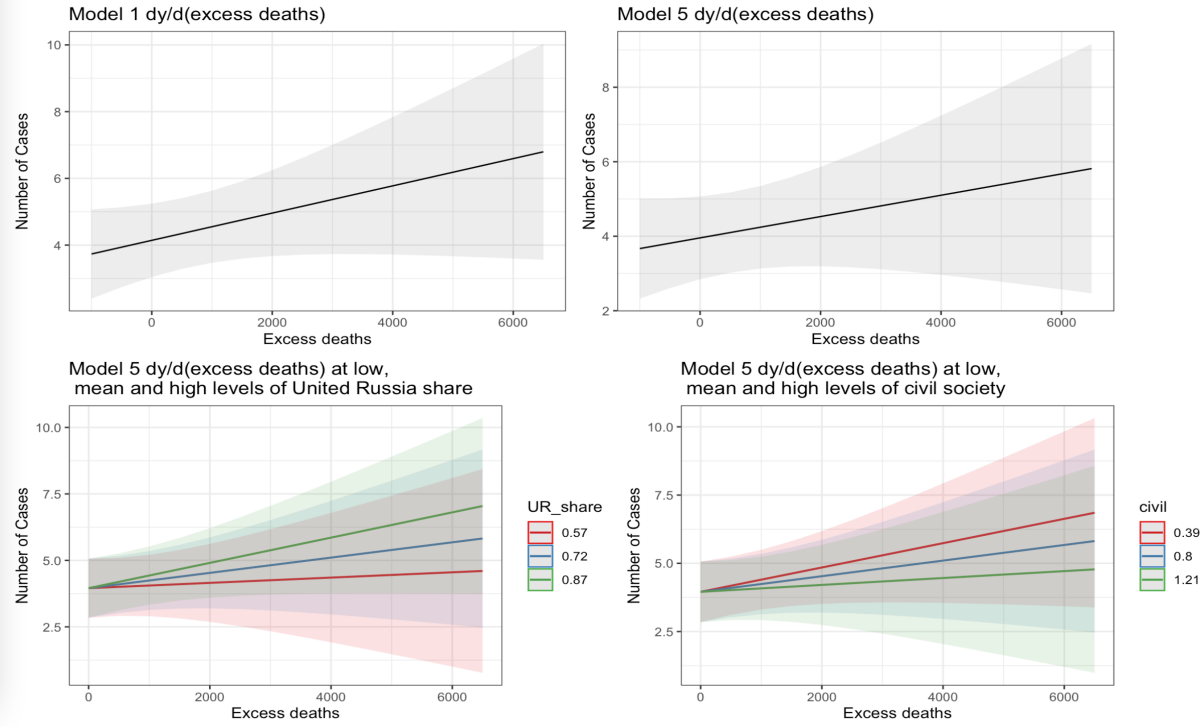

Figure A-3: Marginal Effects of Select Variables on the Number of Cases Brought Under Article 6.3.2

Table A-8: Citizen Behavior and Institutions

	Dependent Variable:					
	Isolation Index					
	(1)	(2)	(3)	(4)	(5)	(6)
COVID deaths	0.0002*	0.0002*	0.0002*	0.0002	0.001***	0.001*
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0003)
COVID deaths^2	−0.00000*	−0.00000*	−0.00000	−0.00000	−0.00000**	−0.00000**
	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)
COVID deaths*civil			0.00004			−0.00000
			(0.0001)			(0.0001)
COVID deaths*Institutions				0.000		0.00000
				(0.00001)		(0.00001)
COVID deaths*UR share					−0.0004**	−0.0004*
					(0.0002)	(0.0002)
Constant	2.799***	2.799***	2.805***	2.799***	2.823***	2.824***
	(0.043)	(0.043)	(0.034)	(0.046)	(0.048)	(0.049)
Observations	920	920	920	920	920	920
R^2	0.917	0.917	0.917	0.917	0.918	0.918
Adjusted R^2	0.909	0.909	0.909	0.909	0.909	0.909

Note: *p<0.1; **p<0.05; ***p<0.01

Table A-9: Citizen Behavior and Institutions

	Dependent Variable:			
	Isolation Index			
	(1)	(2)	(3)	(4)
Excess deaths	0.0001	0.0001**	0.0001	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Excess deaths^2	−0.000	−0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Excess deaths*civil		−0.00004		−0.00003
		(0.0001)		(0.0001)
Excess deaths*Institutions			0.00000	0.00000
			(0.00000)	(0.00000)
Constant	2.813***	2.799***	2.805***	2.795***
	(0.038)	(0.027)	(0.032)	(0.027)
Observations	920	920	920	920
R^2	0.917	0.917	0.918	0.918
Adjusted R^2	0.909	0.909	0.909	0.909
Note:				*p<0.1; **p<0.05; ***p<0.01

Figure A-4: Transparency in 2002 and Kynev 2017

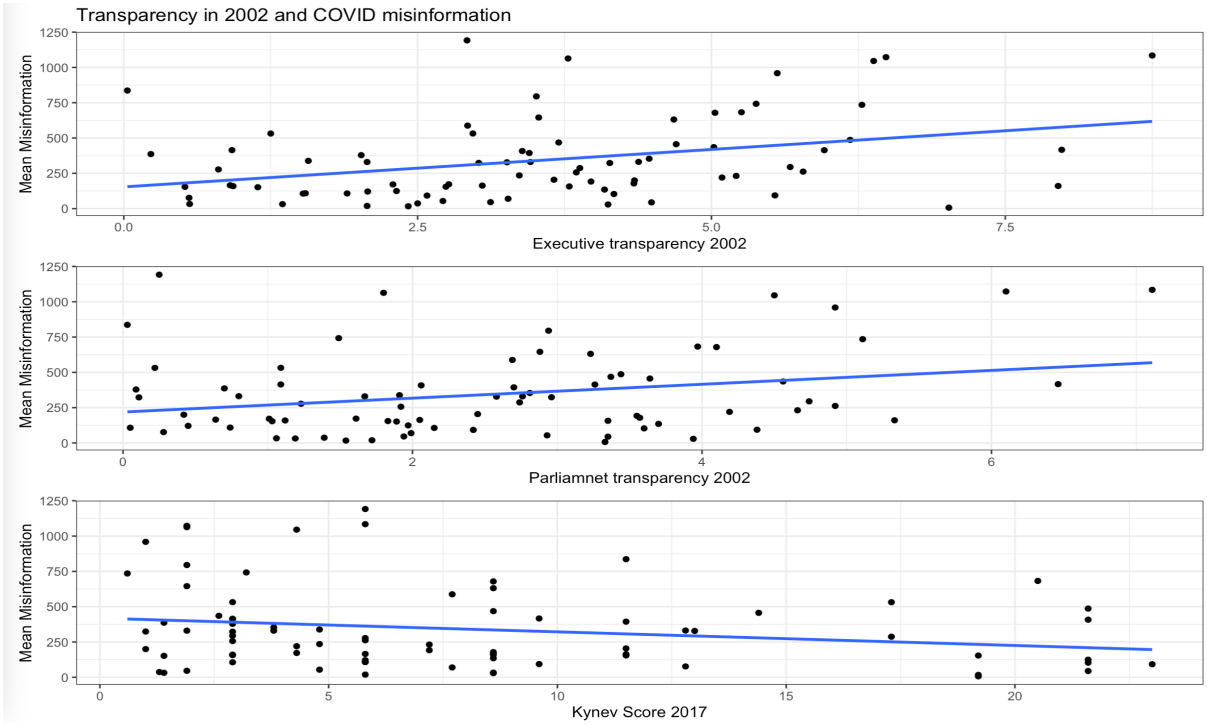

Table A-10: Transparency in 2002, misinformation and prosecution

	Dependent variable:					
	Log(official COVID-19 deaths)			Log(article 6.32 cases)		
	(1)	(2)	(3)	(4)	(5)	(6)
Excess Deaths	0.148	0.144	0.214	0.0003	0.0002	0.0003
	(0.235)	(0.170)	(0.216)	(0.0002)	(0.0002)	(0.0003)
Excess Deaths:transparency executive	0.041		−0.054	−0.0001***		−0.0001
	(0.043)		(0.062)	(0.00004)		(0.0001)
Excess Deaths:transparency parliament		0.057	0.112**		−0.0001***	−0.00003
		(0.041)	(0.057)		(0.0001)	(0.0001)
Constant	43.192	52.380	61.573	4.605***	4.607***	4.625***
	(71.586)	(66.945)	(56.274)	(0.138)	(0.129)	(0.125)
Observations	968	957	957	968	957	957
R^2	0.835	0.844	0.847	0.698	0.699	0.699
Adjusted R^2	0.817	0.828	0.831	0.666	0.667	0.667
Note:						*p<0.1; **p<0.05; ***p<0.01