# Supplementary Appendix

## **A: Institutional features of Russian politics and Russian mortality and COVID-19 statistics**

**A1: Risks of resignation for governors prior to the election**

According to Russian law, governors can lose their office prior to the end of their term. President has the right to fire governors (due to ‘loss of confidence’); more frequently, governors voluntarily resign (without waiting for the president to fire them officially). However, these cases are less frequent than cases when governors regularly stay in power until the end of their term.

We collected information on all gubernatorial elections that took place in the five years preceding our investigation (2015-2019). Only 35% of the regional elections were conducted prematurely because the governor was fired, resigned, or promoted to a higher federal office (We excluded cases when the governor resigned earlier in agreement with the federal administration to run for reelection earlier as well, to prevent any consolidation of the opposition, see Golosov and Tkacheva 2018). In the majority of cases, governors left their office by the end of their term.

Therefore, the governors, while facing a certain level of political risk during their entire tenure, should assign higher political risk closer to the election years. Most likely, election years constitute useful focal points in the eyes of the federal administration when the work of the governor can be routinely reassessed and in the eyes of interest groups competing for influence in the region and supporting or undermining the position of the current governor.

**A2: COVID-19 death cases in the Russian statistics**

The COVID-19 death statistics in Russia are generated in the following way.[[1]](#footnote-1) After the death of an individual is recorded, the hospital where the death occurred (or the physician determining that the individual is dead) has to issue a medical death certificate, which contains information on the cause of death. In case of deaths from infectious diseases, Russian law requires an autopsy to be conducted. The information on the causes of deaths is then submitted to the regional or municipal departments responsible for recording the so-called ‘civil status’ of citizens (birth, marriage, change of name, adoption, and death), named ZAGS. ZAGS departments, in turn, aggregate information and provide it to the federal statistical agency Rosstat, which includes the aggregate data in its regular publications.

In addition to this procedure, which existed prior to the pandemic, in 2020, two additional sources of COVID-19 mortality data were established. First, the Federal Medical-Biological Agency (FMBA), a specialized agency of the Russian government responsible for upholding medical standards in hospitals, created a confidential database, where hospital officials had to supply information on the COVID deaths and on the availability of medical resources (beds etc.) in hospitals. The dataset is generated directly through daily entries made by individual hospitals and contains very preliminary and uncertain data. Second, a Federal Register of Novel Coronavirus Infection was created, where hospital officials have to enter the entire information on individuals treated in conjunction with COVID-19. This dataset is used by the Federal Consumer Rights Protection Service (Rospotrebnadzor) to assemble information for the *stopcoronavirus.rf* website we use in our study. This last source is the main public source of information on COVID mortality regularly published by the Russian news agencies and newspapers (an example can be found here, at the website of the state-owned news agency RIA: <https://ria.ru/20220507/koronavirus-1787371506.html>). The reports submitted by the hospital officials are likely to be coordinated with the regional authorities, which have plenty of opportunities to encourage hospital officials to doctor their data (see Rosenberg et al. 2018 on relations between Russian regional governments and healthcare institutions).

The recording of COVID-19 deaths in Russia follows the guidelines set by the Ministry of Health of the Russian Federation. According to these guidelines, the recording should follow the recommendations of the WHO and, in particular, the International Classification of Diseases (ICD)-10. In the ICD-10, there are two codes of death because of COVID: U07.1 (virus identified) and U07.2 (virus not identified, i.e., there was no COVID test conducted). For the U07.2 deaths, further investigations should be conducted within 45 days. In this case, the medical death certificate issued immediately after death should be preliminary and re-issued after investigations. In addition to that, there is a further statistical distinction: COVID-19 can be treated as the main cause of death or as an additional cause of death (this classification is used if the patient was infected, but the primary death reasons, according to the examining physicians, were different pathological states, even if COVID-19 substantially contributed to the emergence of these states). Thus, Russian statistics differentiate between four types of COVID-19 deaths: (a) COVID-19 is most likely the main cause of death, the virus is not identified; (b) COVID-19 is the main cause of death, the virus is identified; (c) COVID-19 is not the main cause of death, but the individual was infected and (d) COVID-19 is not the main cause of death and individual was not infected.

In many cases, the attribution to each of these categories is very difficult (especially in terms of identifying COVID-19 as the main cause of death or as an additional cause of death – many COVID-19 deaths are observed among individuals suffering from other chronic diseases). On top of that, it depends on the availability of tests, the accuracy of medical personnel, etc. These factors explain differences in the COVID-19 mortality data across democracies as well (Danilova, 2020), and similar problems exist for many infectious diseases like influenza (Thompson, 2009). But – and this is the most important issue for our study – it provides ample opportunities for manipulation for the regional authorities, misreporting the cause of death they report to the databases.

Importantly, the rules for collecting COVID-19 data and recording deaths are the same in all regions of Russia and cannot explain the within-country differences we investigate in our paper.

**A3: Possible manipulation of excess mortality**

As discussed in A2, the information on excess mortality is collected by Rosstat based on the reports of the local registry offices (ZAGS). The functions of the ZAGS and registration procedures are regulated by the special Federal Law N143. According to the law, the death should be reported to the registry office no late than three days after the event to get the special state death certificate. Registry officesare responsible for certain territories and issue certificates for deceased residents of these territories. The death certificate of the ZAGS is issued based on the so-called ‘medical death certificate’, which is prepared by the physician or hospital identifying the fact of death. However, from the legal point of view, it is the death certificate of the ZAGS, which is decisive, for instance, for the following actions: receiving a cemetery plot; dissolving the marriage by the death of the spouse; receiving the bequest; transferring legal guardianship over a child; receiving public subsidies associated with the death of a relative etc.; even church funerals typically require the death certificate to be presented to the priest (for details of the procedure, see the description at Gosuslugi, the official portal of the Russian government: <https://www.gosuslugi.ru/situation/bereavement/death_registration>). Therefore, in most cases, relatives are interested in receiving the death certificate as soon as possible (https://www.eduklgd.ru/zhaloby/oformlenie-svidetelstva-o-smerti.html); this death certificate is automatically registered in the ZAGS database and later transferred to Rosstat.

This setting reduces the options for manipulation. ZAGSs cannot simply refuse to issue a death certificate because it precludes a number of acts (including burial or cremation). As soon as the certificate is issued, it is registered in the database, with the information later to be sent to Rosstat. At the same time, the cause of death (as indicated in the medical death certificate) has no impact on these acts – an individual can be buried, transfer of bequest can occur, etc., regardless of the cause of death. The information on the cause of death is frequently provided in a complex medical language in line with ICD-10 (see an example here: <https://www.infomed39.ru/upload/iblock/2ef/2efb51ce27f7f0238a56084a935ac03a.pdf>). Thus, relatives, who definitively need the death certificate to be issued, are not always interested in the specific cause of death or can even understand the reasons physicians had to indicate a particular cause of death.

The ZAGS statistics suffer from a different problem: delays in issuing death certificates and transferring information from the ZAGSs to Rosstat. These delays in May and June 2020 could have occurred because of social distancing measures when many ZAGS offices were closed.[[2]](#footnote-2) There are individual reports of burials taking place with hand-written death certificates in the media. However, even in this case, the death certificate had to be issued ex-post after the ZAGS resumed their work. Thus, the information published after the referendum should be free from possible issues associated with delays.

The existing literature typically treats the death statistics from the ZAGS as reliable; at the same time, the literature frequently acknowledges that ill-defined causes of death were frequent in Russia even prior to the pandemic (when data manipulation was driven by other factors, e.g., willingness to fulfill the goals set by federal priority programs on specific diseases) (Gavrilova et al., 2008; Rozenberg et al., 2018; Kobak, 2021).

## **B: Data and summary statistics**

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| Table B1: Summary statistics of the main variables |
| **Variables** | **Obs** | **Mean** | **St. dev** | **Min** | **Max** |
| **Cross-sectional data** |
| Elections approaching, dummy | 680 | 0.51 | 0.5 | 0 | 1 |
| Elections proximity, full years | 680 | 2.15 | 1.48 | 0 | 4 |
| Official COVID-19 mortality, % (April-June) | 85 | 1.48 | 2.7 | 0 | 18.55 |
| Official COVID-19 mortality, % (July-September) | 85 | 2.39 | 2.27 | 0 | 12.47 |
| Excess mortality, % (April-June) | 85 | 7.49 | 8.04 | 0 | 38.18 |
| COVID-19 mortality among the medical staff (April-June) | 85 | 0.11 | 0.24 | 0 | 1.61 |
| Number of anti-COVID policies (February-June) | 85 | 124.45 | 84.63 | 0 | 494 |
| Self-isolation index (April-June) | 84 | 2.26 | 0.24 | 1.59 | 2.94 |
| **Panel data** |
| Official COVID-19 mortality, % | 680 | 3.07 | 4.79 | 0 | 52.58 |
| Excess mortality, % | 680 | 19.26 | 20.48 | 0 | 102.88 |
| Self-isolation index | 672 | 1.81 | 0.55 | 0.8 | 3.43 |
| **Variables from the balance test: economic and political characteristics (Table C1)** |
| Population, log | 85 | 13.96 | 0.96 | 10.69 | 16.36 |
| Urbanization, % | 85 | 70.75 | 12.97 | 29.22 | 100 |
| Life expectancy at birth, years | 85 | 72.69 | 2.37 | 67.57 | 83.41 |
| Income, log rubles | 85 | 10.31 | 0.34 | 9.72 | 11.33 |
| Gini index | 85 | 0.37 | 0.02 | 0.33 | 0.44 |
| Professional education, % of pop | 85 | 77.48 | 6.15 | 54.4 | 93.5 |
| Votes for Putin in 2018 election | 85 | 76.51 | 6.53 | 64.4 | 93.4 |
| **Variables from the balance test: institutional characteristics (Table C2)** |
| Press freedom | 83 | 2.89 | 0.94 | 1 | 5 |
| Election quality | 83 | 3.04 | 0.94 | 1 | 5 |
| Political system | 83 | 3.10 | 0.69 | 1 | 5 |
| Pluralism | 83 | 3.13 | 0.79 | 1 | 5 |
| Local elites | 83 | 2.96 | 0.69 | 2 | 4 |
| Control of corruption | 83 | 2.82 | 0.65 | 1 | 5 |
| Civil society | 83 | 3.23 | 0.9 | 1 | 5 |
| Openness | 83 | 3.36 | 0.82 | 1 | 5 |
| Economic liberalization | 83 | 3.19 | 0.77 | 1 | 5 |

## **C: Balancing tests**

We consider the time to elections as an exogenous variable orthogonal to possible confounders. In addition to the logical considerations presented above, here we perform a number of balancing tests comparing regions with governors with proximate and distant reelections and checking whether they systematically differ in terms of any (relevant) observable characteristics. While this analysis does not rule out that there are differences between regions in terms of unobservables, it still reassures us that our interpretation is correct.

Table C1 compares regions with distant and proximate reelections (using both metrics we introduced in section 3.2) in terms of a number of regional baseline characteristics:

* monthly income per capita, in logs
* Gini coefficient,
* education level (In the Russian context, given the universal coverage of the population by secondary schooling, the literature typically looks at the share of the regional population with a professional degree to capture educational differences. We follow this approach),
* the share of the urban population,
* population size,
* life expectancy at birth.

The data are from Rosstat; we use the most recent data for the year 2019. Furthermore, we compare regions in terms of the share of votes received by Vladimir Putin in the most recent elections. In each column, we report the results of estimating a regression, where a regional characteristic is a dependent variable, and the time remaining to elections (or dummy for regions that will have gubernatorial elections in 2020-2022) is the explanatory variable. In terms of each of these variables, no significant differences between regions with more proximate and more distant elections are detected.

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| Table C1: Natural randomization of the approaching elections: economic and political factors |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| Dependent variable: | Income | Gini | Education | Urbanization | Population | Life expectancy | Putin votes |
| Elections approaching dummy | -0.08 |  | -0.01 |  | 0.39 |  | -0.14 |  | -0.23 |  | -0.10 |  | 1.03 |  |
|  | (0.07) |  | (0.01) |  | (1.35) |  | (2.85) |  | (0.21) |  | (0.52) |  | (1.43) |  |
| Election proximity, years |  | -0.01 |  | 0.00 |  | -0.28 |  | -0.73 |  | 0.06 |  | 0.11 |  | -0.17 |
|  |  | (0.02) |  | (0.00) |  | (0.43) |  | (0.97) |  | (0.08) |  | (0.18) |  | (0.48) |
| Observations | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 |
| R2 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
| Notes: Standard errors in parentheses, \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01. Robust SE. |

Table C2 compares Russian regions in terms of the characteristics of the political environment. In spite of two decades of Putin’s centralization drive, Russian regions are very heterogeneous in terms of political pluralism and competitiveness, integration of elites, media freedom, and corruption levels (Obydenkova and Libman 2015; Libman and Rochlitz 2018). These differences might be associated with the proximity to elections and, at the same time, influence the response to the pandemic (both in terms of actual disease management and in terms of data manipulation). This could bias our results.

In Table C2, we use various components of the so-called Petrov/Titkov index for the latest available period (2010-2014) to check whether there are systematic political differences between regions with proximate and distant elections. The expert opinion index evaluates each region of Russia according to a large number of criteria (for each, a five-point scale is used) of political pluralism and organization of regional political life. The index (originally developed under the auspices of the Moscow Carnegie Center, a reputable think tank and a branch of the Carnegie Endowment for International Peace) has been widely used in the literature and became a standard proxy for the quality of sub-national political institutions in Russia (e.g., Akhmedov and Zhuravskaya 2004; Freinkman and Plekhanov 2009; Beazer 2015; Lankina et al. 2016; Buckley and Reuter 2019). We compare regions with proximate and distant elections in terms of the value of each of these component indices and find no significant differences.

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| Table C2: Natural randomization of the approaching elections: institutional measures from Petrov and Titkov (2013) |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) |
| Dependent variable: | Freepress | Election quality | Political system | Pluralism | Local elites | Corruption control | Civil society | Openness | Economic liberalization |
| Elections approaching dummy | -0.07 |  | 0.17 |  | -0.05 |  | -0.12 |  | -0.12 |  | -0.02 |  | 0.07 |  | -0.06 |  | -0.00 |  |
|  | (0.21) |  | (0.21) |  | (0.15) |  | (0.17) |  | (0.15) |  | (0.14) |  | (0.20) |  | (0.18) |  | (0.17) |  |
| Election proximity, years |  | 0.04 |  | -0.05 |  | 0.01 |  | 0.04 |  | 0.01 |  | -0.02 |  | -0.03 |  | 0.00 |  | -0.04 |
|  |  | (0.07) |  | (0.07) |  | (0.05) |  | (0.06) |  | (0.05) |  | (0.05) |  | (0.06) |  | (0.06) |  | (0.06) |
| Observations | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| R2 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Notes: Standard errors in parentheses, \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01. Robust SE. The regions with missing observations compared to Table C1 are Crimea and Sevastopol. |
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The analysis confirms our interpretation of the proximity to elections as a natural experiment and reassures us of the causal interpretation of our findings.

**Note: Components of the Petrov/Titkov index**

* Free press: independence of the media
* Election quality: the extent to which elections in the region can be characterized as free and fair;
* Political system: checks and balances, independence of the judiciary;
* Pluralism: stable party system, the multiplicity of political parties in the regional parliament;
* Local elites: multiplicity of elites, rotation of elite groups at power;
* Control of corruption: the spread of bribery, informal connections between economic and political actors;
* Civil society: the strength of the civil society in the region;
* Openness: transparency of the regional politics, isolation of the region from the national politics;
* Economic liberalization: protection of property rights in the region.

The earlier Petrov/Titkov index contained one additional sub-component: local self-governance, but it was no longer available for later years that we use in our analysis (5-year average for 2010-2014, data has been provided to us by the authors of the original index).

## **D: Regional response to an independent media request**

We augment our baseline analysis by a further test reflecting a specific episode of the COVID-19 pandemic in Russia when the regional authorities were given one additional opportunity to misinform the public about the real COVID-19 mortality. In June, Mediazona, one of very few Russian independent media, submitted a request to all regional administrations to report the all-cause mortality for the month of May. The reason for the request was the growing concerns about data manipulation and the safety of the referendum discussed among the more regime-critical parts of Russian society. Some regions responded to the request; others refused to provide any additional data or ignored the request. On the 30th of June, a day before the referendum’s end, Mediazona published the results of the data inquiry. We use its information to construct two additional dependent variables: the ‘responsiveness’ dummy (whether a region responded to the request or not) and the under-reporting indicator (the percentage differences between preliminary estimates of excess mortality in May reported in the Mediazona article and the excess mortality in May that we assembled using final official mortality data published by Rosstat after the referendum), which shows the extent to which Russian regional governors hid excess mortality in their responses prior to the referendum.[[3]](#footnote-3)

In the case of this media request, regions had a much larger ability to falsify data than in the case of official publications of Rosstat we referred to in the previous section. This is because the information provided to the media from the point of view of the bureaucracy is, essentially, cheap talk, while Rosstat information is derived from aggregating data from death certificates, and issuing a death certificate is a legal act with important bureaucratic consequences. The report of Mediazona ultimately attracted little public attention, probably because regions indeed managed to successfully manipulate the information they provided to the independent media outlet.

We estimate a simple linear regression in a cross-section of regions with the proximity to elections as the main explanatory variable, and we use the log of the population as the control for the capacity and experience in dealing with journalists’ requests since they are common in larger regions. We observe two results (Table D1). First, regions with more proximate elections were more likely to respond to the Mediazona requests. The results are even stronger if we exclude regions with zero excess mortality in May 2020, according to the ex-post Rosstat data. These regions could have been under higher suspicion of under-reporting and, hence, were motivated to dispel this suspicion even more in case of approaching elections. Second, regions, which reported data to Mediazona, hid the actual extent of the crisis by under-reporting the excess mortality as opposed to the later reports of Rosstat. While under-reporting of the preliminary data can be driven by the inaccuracies in technical difficulties of the process (rather than manipulations), it is hardly reasonable to expect these inaccuracies to cluster in regions with more proximate elections. The population control predicts a higher rate of responsiveness in larger regions as we expected but does not explain the under-reporting, therefore, rejecting an argument that under-reporting might be driven by the regional capacity.

The results indicate a complex game of information manipulation Russian governors had to play prior to the referendum. Because non-responding to the journalist inquiry could have undermined the trust in the official COVID-19 statistics, the regions with approaching elections should have been more likely to respond. Otherwise, full opaqueness and rejection to provide any information would most likely result in a complete loss of public trust (especially given the Russian history of hiding information on major natural and technological disasters in the last century, see, for example, Shlyakhter and Wilson 1992; Barany 2004). Mediazona could have publicized the fact that many regions refused to provide information, and it would have made the Russian population more suspicious and reduced its willingness to participate in the referendum, thus causing harm to the informal objectives of the central government. At the same time, providing false information to the media in Russia imposed no additional costs on local officials, and this enabled under-reporting of the preliminary all-cause mortality for the media request, more so in regions with proximate elections.

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| Table D1: Disclosing preliminary all-cause mortality to an independent media outlet |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| Dependent variable: | Responsiveness | Responsiveness | Under-reporting |
| Sample: | All regions | Region with non-zero excess mortality in May | All regions |
| Elections approaching | 0.21\*\* |  | 0.50\*\*\* |  | 5.70\*\*\* |  |
|  | (0.10) |  | (0.13) |  | (1.89) |  |
| Election proximity |  | -0.06\* |  | -0.17\*\*\* |  | -1.46\*\* |
|  |  | (0.03) |  | (0.04) |  | (0.59) |
| Population, log | 0.18\*\*\* | 0.17\*\*\* | 0.15\*\* | 0.13\*\* | -1.77 | -2.45 |
|  | (0.04) | (0.05) | (0.06) | (0.06) | (1.46) | (1.61) |
| Observations | 85 | 85 | 45 | 45 | 52 | 52 |
| R2 | 0.15 | 0.14 | 0.29 | 0.29 | 0.15 | 0.11 |
| Note: Robust standard errors in parentheses, \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01. Excess mortality estimates are for the month of May. All regressions are performed using linear probability models and OLS. |

## **E: Social costs of data manipulation**

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| Table E1: Exposed under-reporting for May and trust in COVID-19 statistics, linear probability model |
|  | (1) | (2) | (3) |
| Dependent variable: | Trust in official COVID-19 statistics:dummy that equals 1 if the answer is “fully yes” or “rather yes”, 0 otherwise |
| Sample | Full sample |
| Under-reporting, ratio | -0.001\*\* | 0.000 | 0.001 |
|  | (0.000) | (0.001) | (0.001) |
| Under-reporting \* University degree |  | -0.003\*\*\* | -0.003\*\*\* |
|  |  | (0.001) | (0.001) |
| University degree, dummy |  | -0.023 | -0.119 |
|  |  | (0.028) | (0.072) |
| Zero-excess mortality, dummy | 0.069\*\* | 0.067\*\* | 0.088\*\*\* |
|  | (0.027) | (0.028) | (0.026) |
| Controls  | No | No | Yes |
| Observations | 1570 | 1570 | 1570 |
| R2 | 0.01 | 0.01 | 0.09 |
| Notes: SE values in parentheses, \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01. SE are clustered at the regional level. Controls include education levels, income groups, dummies for occupations, gender, and the size of the city. The Levada survey was carried out two weeks after the official regional all-cause mortality data was published online and over three weeks after the referendum. |

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| Table E2: Elasticity between self-isolation and mortality by month and the effect of the exposed under-reporting in May |
|  | (1) | (2) |
| Dependent variable: | Self-isolation index |
| Apr \* COVID-19 | 0.0600\*\* | 0.0612\*\* |
|  | (0.0253) | (0.0254) |
| May \* COVID-19 | 0.0534\*\*\* | 0.0537\*\*\* |
|  | (0.0079) | (0.0077) |
| Jun \* COVID-19 | 0.0183\*\*\* | 0.0151\*\* |
|  | (0.0057) | (0.0069) |
| Jul \* COVID-19 | 0.0094\* | 0.0187\*\*\* |
|  | (0.0049) | (0.0048) |
| Aug \* COVID-19 | 0.0063 | 0.0151\*\* |
|  | (0.0079) | (0.0059) |
| Sep \* COVID-19 | 0.0088 | 0.0182\*\*\* |
|  | (0.0069) | (0.0064) |
| Oct \* COVID-19 | 0.0051 | 0.0162\*\*\* |
|  | (0.0045) | (0.0051) |
| Nov \* COVID-19 | 0.0039\* | 0.0101\*\*\* |
|  | (0.0022) | (0.0030) |
| Jul \* COVID-19 \* Under-reporting |  | -0.0016\*\* |
|  |  | (0.0007) |
| Aug \* COVID-19 \* Under-reporting |  | -0.0039\*\*\* |
|  |  | (0.0009) |
| Sep \* COVID-19 \* Under-reporting |  | -0.0027\*\*\* |
|  |  | (0.0008) |
| Oct \* COVID-19 \* Under-reporting |  | -0.0026\*\*\* |
|  |  | (0.0006) |
| Nov \* COVID-19 \* Under-reporting |  | -0.0016\*\*\* |
|  |  | (0.0004) |
| Observations | 672 | 672 |
| R2 | 0.93 | 0.93 |
| Notes: SE in parentheses, \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01. All estimations include region and month FE; SE are clustered at the regional level. |

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1. The section is heavily influenced by reports published by Meduza, an independent Russian media outlet: <https://meduza.io/feature/2020/11/30/vo-mnogih-regionah-rossii-dannye-o-smertyah-ot-koronavirusa-sistematicheski-zanizhayutsya-i-vot-kak-eto-proishodit>; https://meduza.io/feature/2020/05/14/prosto-zapreschayut-umirat-ot-koronavirusa [↑](#footnote-ref-1)
2. This was indicated in the publications of Meduza cited in Fn. 1 [↑](#footnote-ref-2)
3. We followed the Mediazona calculations and used the 5-year averages to calculate the excess mortality in May based on the final official mortality data for comparison with their estimates based on preliminary data disclosed by the local authorities. We also allowed excess mortality to be negative for consistency. [↑](#footnote-ref-3)