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Lockdown and Voting Behaviour: A Natural Experiment on Postponed Elections during the COVID-19 Pandemic

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Abstract

The goal of this paper is to study the electoral impact of crisis management policies. With this aim, we exploit a natural experiment during the COVID-19 pandemic in France to evaluate the effect of the lockdown on voting behaviour. In particular, the country has been divided in two areas, red and green, subject to a "hard" and a "soft" lockdown, respectively. To measure voting behaviour, before and after the policy, we rely on the 2020 French municipal elections: the first round took place before the introduction of the restrictions, while the second round was delayed after the end of the lockdown. We estimate a Spatial Regression-Discontinuity-Design model comparing electoral outcomes around the border of red and green areas both in the second round and between the two electoral rounds. The main results suggest that lockdown regulations significantly affected voting outcomes. First, in localities under a harder lockdown, the incumbent's vote share is higher. Second, voter turnout is larger where more stringent restrictions are adopted. These results suggest that lockdown policy mobilizes citizens and leads them to rally around the incumbent politicians.

JEL codes: H12, I18, D72.

Keywords: crisis management, COVID-19, lockdown, electoral outcomes, French municipalities.

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1 Introduction

The COVID-19 pandemic represents an unprecedented global crisis and poses massive challenges to contemporary democracies. Governments are faced with a global health problem that threatens the life of millions of people in the world and seriously undermines economic development. A common reaction to the insurgence of the pandemic has been the implementation of a set of social containment measures, known as the "lockdown", with the goal of limiting the spread of the disease.[1] On the one hand, these measures represent an effective tool to contain the diffusion of the virus (Borri et al., 2020; Glaeser et al., 2020). On the other hand, they limit individual liberty and constrain economic activity (Fetzer et al., 2020).

The lockdown represents an extreme crisis management policy whose electoral consequences are largely unclear. While there is preliminary evidence, mostly relying on cross-country or survey analyses, that these unparalleled restrictions may affect political preferences (Amat et al., 2020; Bol et al., 2020; De Vries et al., 2020), very little is still known on their causal impact on voting behaviour, with a focus on electoral data. This is likely due to the difficulty of hosting electoral events during a pandemic. Therefore, studying the causal relation between lockdown restrictions and electoral outcomes is of vital importance in order to understand who will be in charge of managing the post-pandemic period. More broadly, this may improve our understanding of the electoral impact of crisis management policies, characterized by the limitation of individual liberties and wide social constraints.

This paper wants to fill this gap in the literature, as it is the first to study the effects of lockdown measures on voting behaviour, relying on electoral data. Moreover, the focus on a natural experiment allows to provide a clean and precise causal evaluation of the effects of this policy. We rely on a natural experiment taking place in France during the first wave of the COVID-19 outbreak. Similarly to the other European countries, France was severely affected by the pandemic with 1,250,705 confirmed COVID-19 cases and 47,637 total casualties, by October 30th 2020.[2] The French government introduced the lockdown before the surge of the pandemic, on March 17th. This consisted of a series of restrictions which include the closure of most public establishments, such as schools

[1] Lockdown measures have been implemented by many European countries at the beginning of the first wave of the COVID-19 pandemic (Spring 2020): Italy (March 9), Spain (March 15), Austria (March 17), France (March 17), Denmark (March 18), Germany (March 22), Greece (March 23), the Netherlands (March 24), and the United Kingdom (March 24). Moreover, the resurgence of the disease in autumn 2020, in many cases with an even higher intensity, has forced many governments to reintroduce lockdown measures.

[2] https://covid19.who.int/region/euro/country/fr

and universities, and the ban of non necessary movements. After the pandemic reached the contagion peak in April, the government decided to start loosening the restrictions but *the relaxation was not uniform across French departments*. In particular, the French territory was divided into two areas, a green one and a red one, depending on the local severity of the pandemic. Assignment to either areas was based on an arbitrary threshold defined by four local health criteria.[3] Departments in the green zone experienced a faster relaxation – "soft" lockdown – than those in the red one – "hard" lockdown. In the green zone, movements within 100km were allowed again and the economic activity restarted, while in the red zone, the stringent restrictions remained in force. This division remained effective from May 11th to June 2nd. Figure 1 shows the map of France with the border between the red area, North-Eastern France, and the green area, the rest of the country. By focusing on municipalities around the lockdown border, we are able to analyze the impact of restriction measures on electoral outcomes in comparable areas with a similar local health situation. This represents a unique opportunity to study the short-term effect of the lockdown, independently of the effects of this policy on the economy or on the health crisis.

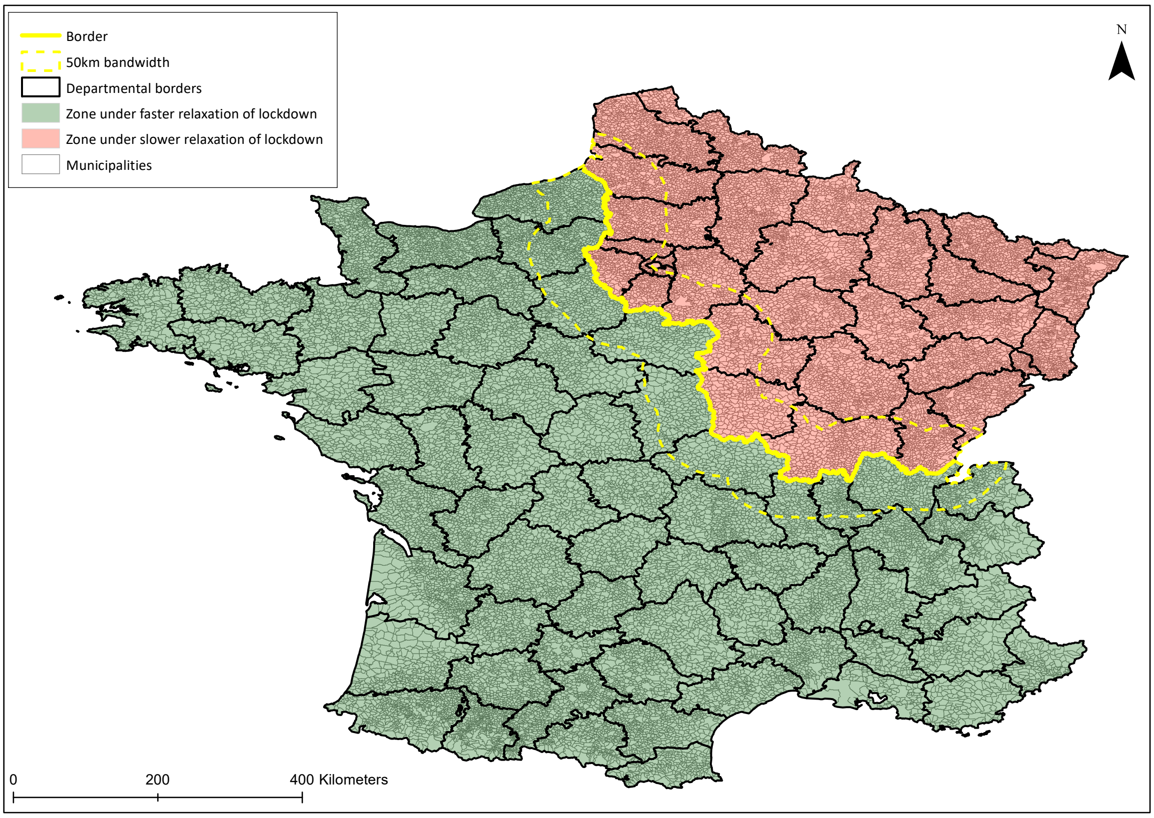
To measure voting behaviour of French citizens before and after the lockdown, we rely on the 2020 French municipal elections, whose implementation was interrupted by the pandemic. The first round of the polls took place on March 15th, while the introduction of the lockdown two days after the elections, on March 17th, impeded the conduct of the second round, that was delayed until the conclusion of the restrictions, on June 28th.[4] This unique setting allows us to evaluate the voting behaviour of French voters just before –first round– and just after –second round– the introduction of the lockdown. Furthermore, we naturally control for fixed local characteristics and, given the short time span between the two rounds and the limit on mobility, we deem implausible the presence of endogenous spatial sorting as a response to the lockdown.

Overall, this institutional setting gives rise to two sources of variation we can exploit in order to estimate the causal effect of lockdown restrictions on electoral outcomes. On the one hand, the spatial variation between the red and the green zone allows us to study the effect of the severity of lockdown measures in comparable areas with a similar local health situation. On the other hand, the time variation between the first and

[3]The four criteria are: (i) number of cases per 100,000 inhabitants, (ii) rate of positive virologic tests, (iii) reproduction number – R0, (iv) hospital bed occupancy rate.

[4]The first round of the municipal elections took place after a vivid debate. On the days before the first round, several parliament members publicly asked to postpone it due to contagion risks. However, on March 12th (i.e., three days before the elections), President Macron consulted the presidents of the main French political parties who all agreed to maintain the first round on March 15th as initially planned. The *Union of French Mayors* also publicly advocated in favor of maintaining the initial calendar.

Figure 1: Differential lockdown from May 11th to June 2nd, 2020



Notes: The yellow bold line represents the border between the red and the green area, subject to different lockdown policies. Black borders represent departments and grey ones indicate municipalities. Dotted yellow lines represent the 50km bandwidths from the border.

the second round can be used to assess the impact of the introduction of these restrictions, accounting for fixed local characteristics. Our identification strategy is structured as a spatial Regression-Discontinuity-Design (RDD), in which the distance to the border represents our forcing variable.[5] Importantly, we estimate two distinct models: first, we estimate a standard RDD model with the comparison of electoral outcomes in the second round only. In this case we provide the classic balance checks to show smooth variation of local characteristics, including first round electoral results. Second, we estimate a first-difference RDD model using as outcome variable the difference between the two electoral rounds. This approach offers the key advantage that all fixed municipal characteristics are accounted for as they are differenced out by design. In our main specification, we estimate the treatment effect at the discontinuity non-parametrically following Calonico et al. (2014). To insure the robustness of our results to specification choices and to improve the external validity of the analysis, we additionally adopt a para-

[5]See Hahn et al. (2001); Lee and Lemieux (2010); Turner et al. (2014) and Ehrlich and Seidel (2018).

metric RDD Away specification (Angrist and Rokkanen, 2015; Hainmueller et al., 2015), as well as a Coarsed Exact Matching (CEM) approach (Blackwell et al., 2010). Results are qualitatively and quantitatively similar across specifications.

The main results suggest that the severity of the lockdown significantly affects electoral outcomes and voting behaviour. First, we find that localities subject to "hard" restrictions support more the local incumbent, whose vote share, in the preferred specification, is 6.3 percentage points higher. In principle, many possible mechanisms may be at the basis of this result. First, *emergency management* could give to local politicians in the red area the opportunity to implement special policies or to manage additional resources with positive effects on their popularity (Healy and Malhotra 2009; Bechtel and Hainmueller 2011). However, this is implausible in our setting as i) the differential rules remained in force for a very short period and ii) the policy tools available to the mayors in the two areas were similar. Second, mayors in the red area could receive larger *media visibility* and this may contribute to their electoral success. We directly test for this channel: we measure media coverage of incumbents who re-run in the red and green areas, using text analysis methods, and we show that there is no discontinuity in mayors' visibility around the lockdown border estimating an RDD and an event-study analysis. Finally, the effect may depend on a *behavioural reaction* of voters. First, this may be driven by emotions such as fear or gratitude (Campante et al., 2020). Voters in areas with longer restrictions may either feel safer or be more aware of the health crisis, and therefore grateful for the policy to the local administration. Second, this effect may be due to voters' risk aversion as they may be more likely to support the incumbent, rather than a lesser-known challenger, given the uncertainty generated by the health crisis. These interpretations are in line with the "rally around the flag hypothesis" (Mueller 1970; Baum 2002), claiming that the trust in leaders tends to raise in the wake of disasters.[6]

Second, we find that the enforcement of the longer lockdown increases political participation, measured with voter turnout. Being subject to the strict lockdown seems to mobilize voters, motivated to choose the right leader, rather than discourage them to participate, in fear of the disease.[7] This renovated motivation toward political participation may be due to the perception that political institutions are crucial actors for the manage-

[6] Chanley (2002) shows an important example of the "rally around the flag hypothesis" documenting that in the days following the 11 September 2001 attacks, trust in the U.S. government rose to levels not seen since the 1960s. Moreover, a set of recent papers study this phenomenon in connection with natural disasters (*e.g.* Lazarev et al. 2014; Boittin et al. 2019; Ramos and Sanz 2020).

[7] In these regards, Zeitoun et al. (2020) show that there is no association between the level of participation to the first round of 2020 municipal elections in France and the subsequent spread of the disease at the local level.

ment of this health crisis but also to the desire to take part again to the decision process, after having suffered a temporary suspension of individual liberties. Importantly, the impact on turnout emerges independently on the presence of the incumbent, suggesting that the extra-mobilization is not only due to the desire to support the outgoing mayor. Overall, this result is consistent with the idea that voters want to rally around the ruling political class.

In principle, these effects may be due to the implementation of the two lockdown policies or to actual differences in the health situation in the two zones. We are able to rule out the latter hypothesis by looking at the municipal excess mortality rate and the departmental data on the number of cases of COVID-19 during the periods preceding the first and second round of elections: we do not observe large differences in the severity of the health crisis between the two zones for the areas close to the border. This is in line with the fact that the border has not been chosen exclusively looking at the local diffusion of the virus but also to retrace French health districts, *i.e.* regions. Therefore, in our sample of municipalities, the treatment mostly captures the difference in lockdown and we can interpret the main results as, primarily, due to the different containment measures.

To further explicit the mechanism at play, we study how voters attribute lockdown policies and, in particular, whether this is affected by the degree of spatial variation of these measures. This analysis provides evidence compatible with the fact that voters attribute a locally varying lockdown to the local incumbent – even though the decision on the policy was done centrally. Formally, we compare the electoral impact of the lockdown for local and national politicians. First, we concentrate on the national lockdown, implemented on March 17th, 2020. We employ survey evidence to show that, after its introduction, the support for national politicians (i.e., president and government) increased, whereas the one for local politicians (i.e., mayors) remained stable. Second, we concentrate on the differential lockdown, implemented on May 11th, 2020. We overcome the data limitation with the use of Google trend traffic to measure the evolution of the *interest* toward politicians over time, between the red and the green area. A spike in Google traffic emerges for local politicians in the red area, during the differential lockdown, while there is no difference for national politicians. These results provide some evidence of misattribution as voters seem to attribute the policy to the corresponding administrative level that managed it as they modify their support toward national (local) politicians when the policy is varying nationally (locally).

The remainder of the paper is structured as follows. Section 2 discusses the contribution to the literature, Section 3 describes the institutional setting and the data. Section

4 presents the empirical strategy. Section 5 reports the main results. Section 6 discusses the mechanisms and Section 7 describes the robustness checks. Finally, Section 8 concludes.

2 Contribution to the literature

This paper relates to several strands of literature. Firstly, we contribute to the recent literature on the political effect of lockdown measures during the COVID-19 pandemic. Bol et al. (2020) rely on an online survey covering 15 Western European countries and show that the lockdown led to higher support –vote intention– for the national incumbent, trust in the government and satisfaction with democracy. De Vries et al. (2020) find similar conclusions looking at the introduction of restrictions abroad. Moreover, Sibley et al. (2020) show that restrictive measures increased trust in science, politicians and police as well as patriotism in New Zeland.

Secondly, our paper is related to the fast growing literature on the effect of the COVID-19 pandemic on political outcomes. Merkley et al. (2020) show that the pandemic led to an increase in consensus for the government in Canada (see also Harell 2020). Leininger and Schaub (2020) study the local elections of the German state of Bavaria at the beginning of the pandemic –before the introduction of the lockdown– and find that the incidence of the disease advantaged the incumbent party. Moreover, Adam-Troian et al. (2020) study the first round of 2020 French municipal elections and find that areas more afflicted by the pandemic showed higher support for conservative parties. At last, there is evidence that the health crisis positively affected social trust and confidence toward institutions and scientific experts (Esaiasson et al. 2020; Amat et al. 2020; Daniele et al. 2020).

Furthermore, we relate to the contributions studying the impact of –policies enacted to face– catastrophic events such as natural disasters or terrorist attacks on political outcomes. First, a set of studies analyzes the effect of recent epidemics on political preferences and electoral results, such as the Ebola outbreak (Beall et al. 2016; Maffioli 2018; Campante et al. 2020) or the HIV/AIDS epidemic (Mansour et al., 2020). Second, many papers focus on the impact of natural disasters such as earthquakes and hurricanes. This literature suggests that the policy response is vital in determining the impact on incumbent's support: if the reaction is considered to be inadequate, voters tend to punish the leaders (Akarca and Tansel, 2016; Eriksson, 2016), while a positive response leads to an increase in their consensus (Bechtel and Hainmueller, 2011; Healy and Malhotra, 2009). Thus, retrospective voting model seems to be a suitable framework to describe voters' response to post-disaster policies (Healy and Malhotra, 2013). Finally, few studies focus on terrorist attacks: there is evidence that these events may increase the support to conservative political forces (Getmansky and Zeitzoff, 2014) and that counter-terrorism policies are managed strategically by the incumbents (Aksoy, 2018; Nanes, 2017).

More generally, this paper is related to the broad literature on crisis management that explores the policies that usually limit individual liberties or impose new constraints to citizens in order to face emergency contingencies. Many studies explore the determinant and consequences of state of emergency: these are declared very frequently and, most of the times, as a consequence of natural disasters or political turmoil (Bjørnskov and Voigt, 2018).[8] Moreover, the declaration of state of emergency is less likely in election years as governments consider these interventions to be highly unpopular (Bjørnskov and Voigt, 2020). Crisis management also include austerity policies. The electoral impact of these measures is mixed (*e.g.* Arias and Stasavage, 2019; Hübscher et al., 2018), while there is evidence that austerity favoured populism (Fetzer, 2019) and fueled social unrest (Ponticelli and Voth, 2020). Finally, the literature has evaluated other types of crisis management interventions: there is evidence that anti-tax evasion programs increase the support to the incumbent (Casaburi and Troiano, 2016) and that policies aimed at alleviating prisons overcrowding may penalize the incumbent government (Drago et al., 2017).

To the best of our knowledge, we are the first to study *within-country differences* in lockdown measures and, thanks to this unique setting, we are able to evaluate the impact of the severity of these restrictions, independently on their effects on the economy or on the health situation. We advantage the literature as the sharp definition of the policy under analysis allows to provide a clean and precise causal evaluation of its impact on voting behavior. Further, we are among the first to study the causal impact of the COVID-19 lockdown on politics, making use of electoral –post lockdown– data rather than survey or experimental evidence. Finally, another element of novelty is the focus on local incumbents' performances after the introduction of containment measures, rather than on national politicians.

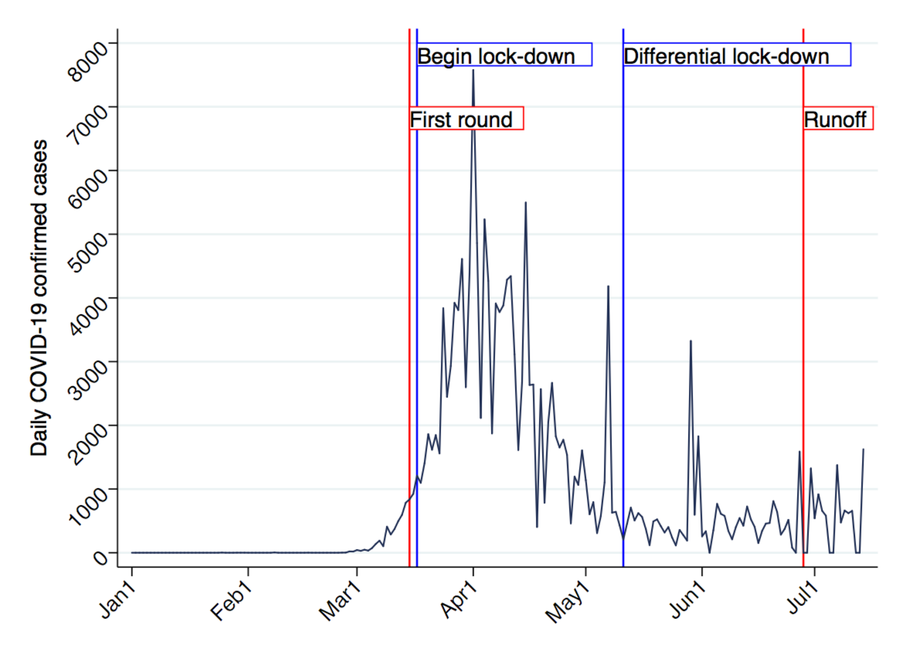
[8] Bjørnskov and Voigt (2018) show that between 1985 and 2014 at least 137 countries declared once a state of emergency.

3 Institutional background and data

3.1 COVID-19 pandemic in France and lockdown measures

In France, the daily number of confirmed COVID-19 cases started to increase significantly in the first days of March. Figure 2 displays the evolution of the COVID-19 in France from January 1st to July 15th, 2020. Following this increase, the French government announced, on March 16th (i.e., one day after the first round of the municipal elections), a strict lockdown starting on March 17th at 12am. Individuals were only allowed outside of their homes for specific reasons, (e.g., grocery shopping), most of public establishments have been closed, including schools and institutes of higher education, and most of religious gatherings have been forbidden. Police forces controlled the respect of the lockdown, and non-compliance was fined.[9]

Figure 2: Evolution of Covid-19 confirmed cases in France



Notes: The graph shows the total number of confirmed COVID-19 cases in France starting from January 1st 2020. The red lines indicate the dates of 2020 local elections (first round -March 15th-, runoff -June 28th-), the blue lines indicate the dates of the modification in the lockdown policy (introduction of the lockdown -March 17th-, first relaxation of the lockdown -May 11th-). The source is the French Government data portal (https://www.data.gouv.fr/fr/).

Thanks to the lockdown measures, the peak of the pandemic was reach in early April.

[9] In the standard case, amount of the fine was €135.

However, whereas the situation was mostly under control in the South-Western half of France, the number of cases was still high in the North-Eastern half of the country. Figure 1 displays the two zones. Consequently, the government decided to relax the lockdown deferentially as of May 11th. The zones were defined using four indicators at the department level (NUTS3 region): (i) number of cases per 100,000 inhabitants, (ii) rate of positive virologic tests, (iii) reproduction number, R0, and (iv) hospital bed occupancy rate. The blue vertical lines, in Figure 2, show the evolution of the lockdown policy over time.

In the green zone, movements were allowed within 100km of one's residential location and the economic activity started again. In the red zone, on the contrary, all the restrictions remained in force and, except for Paris, the lockdown was relaxed only on June 2nd. In Paris' region, the lockdown was lifted on June 22nd: between June 2nd and June 22nd, the lockdown in this region only slightly loosened relative to before, and the region was attributed a yellow color by the Health Ministry (Figure A1).

Over more recent lockdown policies related to the surge of the second wave of COVID-19 (e.g., in France, Italy, England, Spain, Belgium, etc.), the study of a "first wave lockdown" offers two key advantages. First, due to the requirement of a swift response when the virus first spread, many governments – including the French one – were forced to take broad containment measures which did not allow strategic fine tuning. Hence, endogeneity issues related to local economic conditions, political affiliation and political cycles are less likely to bias estimation results. Moreover, all voters shared the same absence of lockdown experience, which is not the case with "second wave lockdowns". This naturally allows for a more straightforward estimation of the pure lockdown effect on voting behavior.

3.2 Municipal election

French municipal elections allow local constituents to elect the city council, with the mayor chairing the council. Elections take place every six years. The voting procedure differs by municipality size. On the one hand, in municipalities with less than 1,000 inhabitants, a two rounds block vote with panachage (or majority-at-large voting) takes place. All candidates that received more than 50% of the votes are elected to the council. Those that did not reach this threshold compete in a second round for the remaining seats. In municipalities with more than 1,000 inhabitants, a proportional representation with a premium for the majority takes place. Voters choose between different lists and can neither add nor remove candidates from the lists. If a list obtains the absolute majority from the first round, no second round takes place. Otherwise, lists that have obtained at least 10% of the vote remain for a second round. The first half of the seats is attributed to the lists with the most vote, whereas the remaining one is attributed proportionally to all lists that received at least 5% of the votes. The mayor is then elected by the municipal council. Given the majority premium, the first name on the winning list is almost always elected as mayor. Due to the highly personalized nature of the elections in municipalities with less than 1,000 inhabitants (which leads to many candidates being elected in the first round) and to the substantial differences in the two electoral systems, we focus in this paper on municipalities with 1,000 inhabitants or more.

Based on the decision by the Ministry of the Interieur on July 16th, 2019, the 2020 French municipal elections had been scheduled on March 15th for the first round, and on March 22nd for the runoff. Regardless of the development of the pandemic in France, the first round was maintained and took place as planned on March 15th, one day before the lockdown was announced. However, given the COVID-19 outbreak, the second round was postponed after the lockdown on June 28th. All candidates elected during the first round took office immediately, whereas incumbents remained in power when runoffs were required. Overall, a runoff took place in 20% of all polling stations located in municipalities with 1,000 or more inhabitants. The red vertical lines, in Figure 2, show the timeline of the 2020 municipal elections.

3.3 Data

The sample in analysis consists of all municipalities that host a runoff in the 2020 French municipal elections, with 1,000 or more inhabitants. When studying the incumbent's vote share in the runoff, the sample is naturally further restricted to those municipalities in which the incumbent is present in the runoff. The data used in this paper comes from mostly three sources. All elections data is provided by the French centralized public data platform (https://www.data.gouv.fr/fr/). Election data is recorded at the polling station level. Information about the differential lockdown and health outcomes is obtained from the open data platform of the Health Ministry (https://www.santepubliquefrance.fr/). Finally, all economic and demographic municipal information is provided by the National Institute of Statistics and Economic Studies (https://www.insee.fr/en/accueil). Based on this data, we use the geographic information software ArcGIS to derive all spatial information.

Table A1 shows the descriptive statistics. Panel A shows the electoral outcomes for the first round, the second round and in difference between the two electoral rounds:

the average incumbent's vote share is 45.3% in the second round and 7.7% in difference between the two rounds. The average turnout is 37.8% in the second round and -1.8% in difference between the two rounds. Panel B and C show municipal-specific control variables.

4 Empirical approach

In this section, we detail the identification strategy used to identify the causal effect of the lockdown measures on voting outcomes. Given that, *by design*, we study similar units (i.e., on both side of the lockdown border) within a very short time span (i.e., 3 months between the first and second round of the elections), we favor an identification strategy imposing a minimal structure (i.e., spatial Regression Discontinuity Design).

4.1 Estimation strategy

Consider $p \in P$ polling stations within $i \in I$ municipalities. All polling stations within a municipality are assigned the same location relative to the border.[10] Location of polling stations within a municipality are defined by the infinite set of municipal border points, $\overline{\boldsymbol{L}}$. Further, consider $\overline{\boldsymbol{B}}$ as the infinite set of border points constituting the border between the differential lockdown zones. Let us then define the subsets $\boldsymbol{L} \in \overline{\boldsymbol{L}}$ and $\boldsymbol{B} \in \overline{\boldsymbol{B}}$ of border points $\boldsymbol{l}_{pi} = (l^x_{pi}, l^y_{pi})$ and $\boldsymbol{b}_i = (b^x, b^y)$, such that the euclidean distance to the lockdown border $d_{pi} = ||\boldsymbol{l}_{pi} - \boldsymbol{b}_i||$ is minimized. Hence, this distance will be equal to 0 for polling station in a municipality at the border. Finally, define two zones $\mathcal{A}^+$ and $\mathcal{A}^-$ as the treatment and the control areas, respectively.

Location relative to the border acts as the forcing variable. Assignment into treatment is then a function of a municipality's location relative to the border. Formally, treatment status T_{pi} of polling station p in municipality i is defined as $T_{pi} = \mathbb{1}\left[\boldsymbol{L}_{pi} \in \mathcal{A}^+\right]$. Denote the outcome vector by $\boldsymbol{Y}$. We then focus on the discontinuity of the expected outcomes at the geographical border:

$$\tau(\boldsymbol{d}) \equiv \mathbb{E}[\boldsymbol{Y}_1 - \boldsymbol{Y}_0 | d_p = 0] = \lim_{\boldsymbol{d} \to 0} [\boldsymbol{Y} | l_p \in \mathcal{A}^+] - \lim_{\boldsymbol{d} \to 0} [\boldsymbol{Y} | l_p \in \mathcal{A}^-]. \tag{1}$$

We approach the spatial RD design in three ways which we present sequentially below.

[10] Using the fact that polling stations are often located within public schools, we test for differences in the spatial distribution of schools within municipalities on both sides of the lockdown border in Table 1. No significant difference is observed (both for all schools and for each type of public schools).

Non-parametric specification

Following the state-of-the-art in estimating spatial discontinuities, we first approach (1) non-parametrically. We estimate local-polynomial regression-discontinuities with robust confidence intervals and optimal bandwidth selection following Calonico et al. (2014). The performance of standard local polynomial estimators may be seriously limited by their sensitivity to the specific bandwidth employed. Hence, we employ mean squared error optimal bandwidths, which are valid given the robust approach in Calonico et al. (2014).

Parametric specification

We also adopt a parametric approach allowing for a wider bandwidth to retrieve less 'local' results. To do so, we first define the conditional expectations in (1) as $\mathbb{E}[\boldsymbol{Y}_0|\boldsymbol{d}] = \alpha + f(\boldsymbol{d})$ and $\mathbb{E}[\boldsymbol{Y}_1|\boldsymbol{d}] = \alpha + \tau + f(\boldsymbol{d})$, where $f(\boldsymbol{d})$ refers to flexible polynomials of shortest distance to the border. Allowing for asymmetric control distance functions insures that a kink is not misinterpreted as a discontinuity (Lee and Lemieux, 2010). The regression model is then:

$$\boldsymbol{Y} = \alpha + \boldsymbol{T}\tau + f(\boldsymbol{d}) + \boldsymbol{\epsilon} \tag{2}$$

To derive more externally robust results, we allow for a wider bandwidth than used in the non-parametric approach. To credibly get away from the local threshold, Angrist and Rokkanen (2015) and Hainmueller et al. (2015) impose a Conditional Independence Assumption (CIA) which rely on a set of covariates, $\boldsymbol{X}$:

$$\mathbb{E}[\boldsymbol{Y}|\boldsymbol{d},\boldsymbol{X}] = \mathbb{E}[\boldsymbol{Y}|\boldsymbol{X}] \tag{3}$$

A key advantage of this approach in a RD context is that it offers a natural test for (3). We can estimate OLS equations of the form:

$$Y_i = \beta_0 + \beta_1 d_i + \boldsymbol{X'\beta} + \varepsilon_i, \tag{4}$$

on each side of the threshold (in separate regressions) and testing for $\beta_1 = 0$.

Matching specification

Finally, we adopt a Coarsed Exact Matching (CEM) following Blackwell et al. (2010). This method improves the estimation of causal effects by reducing imbalance in covariates between treated and control groups. Relative to the non-parametric and parametric approaches presented above, and conditional on a suitable set of covariates, this approach is valid far away from the threshold. Thus, we may study the effects of a 'harsher' lockdown using much larger areas than simply locations within a (small) distance of the lockdown border.

4.2 Validity of the approach

Causal identification in Regression Discontinuity Designs rests on two key assumptions: (i) no selective sorting takes place, (ii) all underlying variables – besides treatment – vary smoothly at the border. The spatial RD design is a special case as assignment to treatment is very difficult to manipulate for municipalities as regional borders are very stable over time. This is particularly true in the present case. The sudden and unpredictable spread of the COVID-19 made it very unlikely for individuals and municipalities to anticipate and strategically react to the pandemic. We approach the second assumption in several ways.

Two rounds election and fixed municipal characteristics

When estimating the causal effect of the lockdown, this paper proceeds sequentially. First, we adopt a standard RD approach comparing the results of the second round around the lockdown border. The appeal of this first approach comes from its simplicity and the minimal framework applied to the data. However, this approach is suited to retrieve causal effects conditional on the smooth variation of the underlying variables. To assess this assumption, balance test based on observables are commonly offered. As we will discuss in the next section, we do so in Table 3 and we provide graphical outcomes in Figures 4 (Panels e-f), A4 and A5.

However, the two electoral rounds of the French municipal elections offer a unique set up to control more systematically for local characteristics. In a second approach consisting of a modified RD design, we consider the first difference between the first and the second round of 2020 French municipal elections across the lockdown border as outcome of interest. Given this set up, all fixed municipal characteristics are *differenced out by design*. Over extensive exploratory balance tests, this approach offers the key advantage that all fixed characteristics are accounted for, as opposed to all *observed* fixed characteristics. Furthermore, note that as we look at similar municipalities around the border (Table 3), interaction effects between municipal characteristics and the COVID-19 pandemic are unlikely to drive our results.

Local incidence of COVID-19

To attribute any estimated effect to the differential lockdown as opposed to difference in local COVID-19 incidence, the local diffusion of COVID-19 is required to vary smoothly across the lockdown border. On this point, it is important to highlight that COVID-19 spreads from person-to-person by close contact and this implies that there is an inherent smooth spatial component in how the virus spreads (Chinazzi et al., 2020; Soucy et al., 2020; Wilson, 2020). To assess this hypothesis formally, municipal level data on COVID-19 incidence and mortality would be required. However, such data is not (yet) available at such a fine-grained geographical level. Given this data availability limitation, we make use of the two next best data sources available (i.e., municipal excess mortality and COVID-19 incidence at the departmental level) to show that a discontinuity in the local incidence of COVID-19 at the border is unlikely.

Figure 3 compares the evolution of the municipal weekly excess mortality in the red zone as opposed to the green one.[11] Excess mortality is measured as the difference between the 2020 and 2019 number of deaths for every calendar weeks. The bandwidth around the border is chosen using the optimal bandwidth selector proposed by Calonico et al. (2014). The first week of the year constitutes the omitted category. Overall, no significant difference is observed between the two zones on the period January 1st - August 31st.[12]

In line with Figure 3, at the time of the first round, the COVID-19 situation was very similar across the future differential lockdown border. Figure A2 shows the monthly evolution of the number of COVID-19 cases between mid-March and the end of June. At the end of March, except clusters around Paris and in Alsace, the number of cases was relatively small (i.e., below 100 cases per 100,000 inhabitants). Hence, even if voters could possibly expect the pandemic to develop across the country, they could not reasonably anticipate that France would be divided in differential lockdown zones.

Panels b to d of Figure A2 reveal that the virus has spread beyond these initial clusters from early April onwards. The departments between the initial clusters, as well as

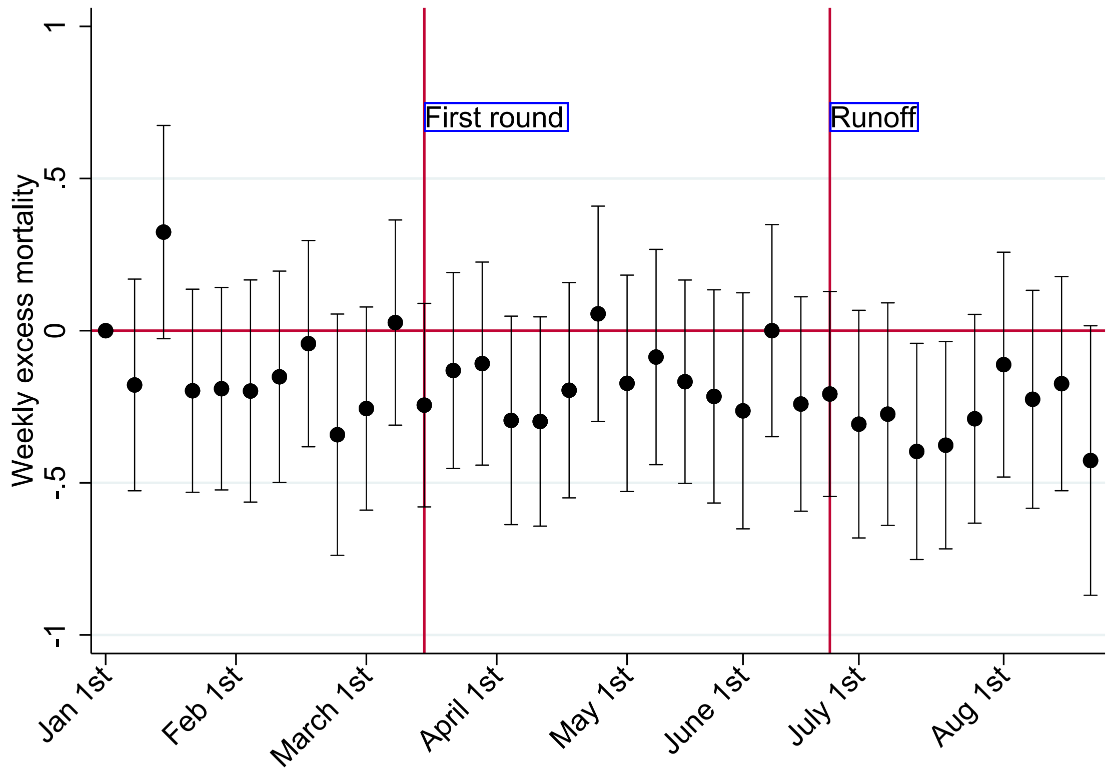
[11]The model that we estimate is as follows:

$$y_{mw} = \beta_0 + \beta_1 Red_m + \beta_2 \delta_w + \beta_3 Red_m * \delta_w + X_m + \epsilon_{m,w} \tag{5}$$

where y_{mw} is the excess mortality for municipality m, in week w. Red_m is a dummy variable that indicates the municipalities in the red area, δ_w captures week fixed effects and X_m includes municipal characteristics. Moreover, robust standard errors are clustered at the municipal level. The interaction term $Red_m * \delta_w$ shows how excess mortality evolves in the red zone over time, compared to the one in the green zone.

[12]Similar results emerge from the analysis conducted with municipal daily excess mortality, which is shown in Figure A6.

Figure 3: Weekly excess mortality around the lockdown border



Notes: The plot shows the municipal excess mortality in the red area, compared to the green one over time. Each point represents the estimator, along with the relevant 95% confidence intervals. Optimal bandwidth selected using Calonico et al. (2014). *Source:* French Ministry of Health.

along the Rhone river towards Lyon and Marseille in the South and towards the Loire valley in the West, saw a significant increase in the number of cases. The spread of the virus in these areas follows the large mobility axes in France.[13] Hence, these observations show that the virus has spread in space independently of the lockdown border. Both high and low incidence departments are present on either sides of the border and this suggests that, at least for those municipalities close to the border, there are no remarkable differences in COVID-19 incidence.

Furthermore, some institutional features make a local discontinuity in COVID-19 diffusion at the lockdown border implausible. The arrival and quick spread of the virus in April surprised the French government (as many other governments worldwide). Given

[13]Given the size of the fixed costs per kilometer involved when constructing high-speed rail lines, the placement of such lines is a good proxy for large mobility axes. As revealed in Figure A7, the spread of the virus did indeed follow almost one to one the direction high-speed rail lines.

the importance of a quick response, the government used the institutions already in place to define the differential lockdown zones. In France, all health policies are planned and decided in Paris, but regional authorities are in charge of their application within their jurisdictions. Note that little leeway (if at all) is left to the local entities on how to implement these policies. Figure A3 maps these regional jurisdictions (thick black lines), as well as the number of cases per 100,000 inhabitants the day before the differential lockdown was implemented. Given the two initial COVID-19 clusters in Alsace and Paris, and the requirement to use regional borders to delineate lockdown zones, the *chosen lockdown border appears like the natural candidate*. It is not too conservative in that it does not separate the two clusters, and it is not too generous in that it does not include zones with small local incidence levels. Therefore, if the red area is indeed more impacted by COVID-19 than the green area, the precise placement of the lockdown border can be seen as random when looking at the very local level around the border.

Location of polling stations and distance to the lockdown border

The analyses presented in this paper rely on polling station data, which allows for greater estimation power. One caveat of polling station as unit of observation is that we do not observe the location of polling station within each municipality. Hence, to measure distance to the lockdown border (*i.e.*, the running variable of the analysis), we take the municipal centroid for each polling station within that municipality. Such assignment rule may be source of bias if polling station are located – within municipalities – differently on both sides of the lockdown border. Fortunately, we also know that polling booths are very likely to be located within a public school (either elementary, secondary or a high school) whose location is known. Hence, in Table 1, we test for the distribution of schools (jointly and by type) within municipalities on both sides of the border. As spatial moments, we use both distance to the border and distance to the centroid.[14] No significant difference is observed. From this, we conclude that the mis-measurement of the distance to the lockdown border is unlikely to be a source of important bias. Finally, note that in all specifications using polling station data presented below, standard errors are clustered at the municipal level.

[14]Given that municipalities are rarely perfect circles, both measures carry relevant information. Nearest border point is used to measure distance to the border.

Table 1: School location as proxy for polling station location within municipalities

Schools in sample:	All	High	Secondary	Elementary
	(a) Distance to municipal centroid			
Treatment	0.012	0.502	0.011	0.005
	(0.061)	(0.448)	(0.251)	(0.065)
Obs.	11,767	510	1,094	9,724
	(b) Distance to municipal border			
Treatment	-0.042	-0.574	0.050	-0.027
	(0.039)	(0.379)	(0.142)	(0.043)
Obs.	11,767	510	1,094	9,724

Notes: Optimal bandwidth is used following Calonico et al. (2014). Sample is restricted to public schools.

5 Results

This Section presents the main results. We start by displaying the results from the cross-sectional spatial regression discontinuity design using solely second round variation. Balance tests required for the validity of this approach are also presented. We then present the results from the first difference spatial regression discontinuity design where the outcomes are defined as the difference between the two electoral rounds. Finally, we look at the variation around the lockdown border graphically with regression discontinuity plots.

5.1 Spatial regression discontinuity design

We study the effect of the lockdown on the incumbent's vote share and voter turnout using two approaches.[15] First, following the identification strategy presented in Section 4.1, we compare incumbent's vote share and turnout at the polling station level on both sides of the lockdown border. We label this approach *cross-sectional spatial RD design* as it estimates the lockdown effects using second round variation only. Second, the French municipal elections provides a unique set up around the development of COVID-19 pandemic to control more systematically for municipal characteristics within a regression discontinuity framework. We follow the identification strategy presented in Section 4.1, but we use the difference between the two electoral rounds on both sides of the lockdown border as outcome variables (i.e., $Y \rightarrow \Delta Y$). Given the short time span around the two

[15] We also studied the local margin of victory and the share of white votes. The lockdown appears to have had no significant effects on these outcomes. The analysis of these outcomes is available upon request.

electoral rounds, endogenous policy reactions are infeasible. Moreover, given the smooth spatial variation of the COVID-19 and of observed covariates around the border, interactions effects are implausible. Thus, this approach allows us to capture the lockdown effect on voting outcomes free of municipal confounders. We label this approach *first difference spatial RD design*.

Table 2: Spatial RD design analysis

	(1)	(2)	(3)	(4)	(5)	(6)
Approach	Non-Parametric		RDD Away		CEM	
Strategy	Cross-sec.	First dif.	Cross-sec.	First dif.	Cross-sec.	First dif.
Pol. order.	Opt.	Opt.	2	2	-	-
Mun. cluster	Yes	Yes	Yes	Yes	Yes	Yes
	(a) Incumbent's vote share					
Treatment	24.507***	6.352*	1.051	2.604*	3.420**	3.077***
	(4.667)	(3.668)	(2.382)	(1.466)	(1.708)	(1.014)
Obs.	181	567	2,562	2,532	570	558
Bandwidth	Opt.: 14.33	Opt.: 33.01	90	90	-	-
Dep. var. mean	43.24	7.74	45.15	7.80	45.95	8.66
	(b) Voter turnout					
Treatment	6.673***	4.822***	2.831**	1.461*	3.957***	1.152**
	(2.459)	(1.660)	(1.346)	(0.800)	(1.405)	(0.512)
Obs.	1,166	268	4,766	4,766	514	514
Bandwidth	Opt.: 36.51	Opt.: 13.26	90	90	-	-
Dep. var. mean	36.37	-1.30	37.24	-1.10	44.24	-1.06

Notes: Non-parametric estimates follow Calonico et al. (2014) under optimal bandwidth and polynomial order selection. RDD Away refers to a RD design away from the cutoff following Angrist and Rokkanen (2015) and Hainmueller et al. (2015). Outcome-specific tests for Conditional Independance Assumption (CIA) are reported in Table A2. Second order polynomials are used. CEM stands for Coarsed Exact Matching (Blackwell et al., 2010). Within each column pair, the first column displays results using the runoff results as dependent variable, whereas the second column displays results using the difference between the first and the second round. Panel (a) focuses on incumbent's vote share, and Panel (b) on voter turnout. *Covariates* include the following list of variables: population, female population, share of people above 60 years, wages, coordinates and public facilities count (overall and educational). Coordinates are excluded when matching under CEM. The unit of analysis is the polling station. "Dep. var. mean" indicates the average value of the dependent variable for the control group. Standard error – clustered at the municipal level – are included.

Table 2 presents results from both approaches. Panel (a) presents results for incumbents' vote share, whereas Panel b, focuses on voter turnout. The Table is organized in three pairs of Columns.[16] Columns (1) and (2) present respectively results from the

[16]The following covariates are included: population, female population, share of people above 60 years,

cross-section and first difference approaches using a non-parametric specification following Calonico et al. (2014). The optimal bandwidth and polynomial order is used in both cases.

Columns (3) and (4) present results from a "RDD away from the threshold" approach following recent developments in Angrist and Rokkanen (2015) and Hainmueller et al. (2015). Based on (4), tests validating for the Conditional Independence Assumption (CIA) – allowing to move away from the border's close vicinity – are presented in Table A2. Across outcomes and strategies, the CIA appears to be satisfied when using a symmetric bandwidth of 90km.

Finally, Columns (5) and (6) present results from a Coarsed Exact Matching approach following Blackwell et al. (2010). As matching moments, we use the following set of covariates: population, share of female, share of people above 60 years, wages, public facilities count (overall and educational), and excess mortality in the first 6 months of 2020. The share of female, of people above 60 years and the number of public facilities is matched by quintile. In all specifications, standard errors are clustered at the municipal level.

Under the cross-sectional regression discontinuity specification, incumbent's vote share appears larger under a harder lockdown. These findings argue in favor of the "rally around the flag hypothesis" (Mueller 1970; Baum 2002), as trusts in the local incumbent appears to increase in the wake of the pandemic. In this setting, voters subject to longer restrictions could either feel safer or be more aware of the health crisis, and therefore grateful to the administration for the policy.

Voter turnout also increases significantly in the red area. This result further confirms the "rally around the flag hypothesis", suggesting that the longer lockdown seems to mobilize voters, motivated to choose the right leader, rather than discourage them to participate, in fear of the disease. This stronger motivation to vote in the red areas may be explained by the perception that political institutions are crucial actors for the management of this health crisis but also by the desire to take part again to the decision process, after having suffered a temporary suspension of individual liberties during the months of the lockdown.

Overall, the cross-sectional results in Table 2 are confirmed using the first difference approach as incumbent's vote share and voter turnout appear higher in the zone with the stronger lockdown. Finally, we discuss the possible mechanisms underlying these results in Section 7.

wages, coordinates and public facilities count (overall and educational).

Testing the smooth variation of the covariates around the lockdown border

Identification in a cross-sectional regression discontinuity design relies on the smooth variation of local covariates. One key advantage of the design is that this assumption can be tested empirically. Formally, in Table 3, we use a non-parametric approach – with optimal bandwidth size and polynomial order – to test whether significant differences in key observed covariates are present around the border. Importantly, this analysis relies on municipal level covariates as polling station information – aside from voting variables – are not available.

As covariates, we focus on municipal population, share of individuals above 60,[17] share of female, municipal population growth between 2011 and 2016, local median income, characteristics of the mayor of the previous term (*i.e.* age, gender, whether she/he has a white collar job, whether she/he is retired) and local public facilities (*i.e.* number of elementary schools, number of secondary and high schools and total number of public facilities). We also consider the variables presence of a runoff, incumbent runs in first round, presence of the incumbent in the runoff and the first round variables: share of white vote in the first round, turnout in the first round and incumbent's vote share in the first round. Finally, we also check whether the support for the non-differential lockdown (implemented on March 17th) varies around the border between red and green areas.[18] Overall, little significant difference is observed across the covariates.

Finally, graphical outcomes confirm the results of Table 3: Figure A4 presents the graphical outcomes for the analysis on the most important controls variables, *i.e.* demographic characteristics, Figure 4 (Panels e-f) shows the outcomes for the first round results and Figure A5 reports the outcomes in Panels (q-s). These graphical analyses adopt the optimal bandwidth size and polynomial order two.

[17]Threshold at 60 has been chosen as more senior individuals are facing more serious consequences in case they get infected.

[18]To measure popular support for lockdown we rely on the survey "Citizens'Attitudes Under COVID-19 Pandemic" by the CEVIPOF conducted on March 24-25th, during the first week of the national –non differential– lockdown (Brouard, 2020). This attitude has been captured by the following question in the survey: "Against the spread of the coronavirus, are you in favor of a lockdown?" (in French, "Contre la propagation du coronavirus, favorable ou non: Le confinement").

Table 3: Covariates around the lockdown border

	(1)	(2)	(3)	(4)
Approach	Non-parametric RD Design (Calonico et al., 2014)			
Pol. order.	Opt.	Opt.	Opt.	Opt.
Outcome	(a) Local population count	(b) Share of seniors ($>$ 60yo)	(c) Share of female	(d) Pop. growth (2011-2016)
Treatment	991.809	0.016	0.002	1.740
	(2448.586)	(0.036)	(0.011)	(3.729)
Obs.	54	139	138	121
Opt. bw.	13.76	31.75	31.25	29.19
Outcome	(e) Local median income	(f) Prev. mayor female (2014)	(g) Age prev. mayor (2014)	(h) Prev. mayor white collar (2014)
Treatment	-2392.640*	-0.017	-9.333***	-0.170
	(1257.969)	(0.125)	(2.569)	(0.255)
Obs.	61	142	134	120
Opt. bw.	16.19	32.50	30.45	28.84
Outcome	(i) Prev. mayor retired (2014)	(j) Elementary schools	(k) Secondary and high schools	(l) All public facilities
Treatment	-0.055	0.100	2.319	3.185
	(0.231)	(0.087)	(2.452)	(10.858)
Obs.	149	45	62	60
Opt. bw.	33.96	11.45	16.30	15.66
Outcome	(m) Support for lockdown (*Survey based*, 03/20)	(n) White vote (first round)	(o) Turnout (first round)	(p) Incumbent's vote (first round)
Treatment	4.398	1.336	-0.276	0.820
	(4.912)	(1.218)	(2.938)	(9.298)
Obs.	50	2,275	2,610	2,349
Opt. bw.	-	9.84	11.21	17.91
Outcome	(q) Presence of runoff	(r) Incumbent runs (first round)	(s) Incumbent in runoff	
Treatment	0.060*	0.020	-0.001	
	(0.033)	(0.060)	(0.030)	
Obs.	1,274	1,296	1,036	
Opt. bw.	35.06	35.77	29.64	

Notes on all panels: Optimal bandwidth and polynomial order selection following Calonico et al. (2014). Size of optimal bandwidth is reported for each outcome under the label 'Opt. bw.'.

Notes on panels (a)-(l): The unit of analysis is the municipality. The dependent variables are municipal level covariates as well as characteristics of the mayors in the previous municipal term (2014-2020). The variable *Age previous mayor (2014)* is expressed in years, the variable *Previous mayor female (2014)* is binary indicating female mayors. Robust standard errors are reported.

Notes on panel (m): Support for lockdown was measured in the survey "Citizens' Attitudes Under COVID-19 Pandemic" by the CEVIPOF on March 25, 2020. Support close to the border is too weak to run our non-parametric approach. Results using a parametric approach and a bandwidth of 90km are displayed. Robust standard errors are reported.

Notes on panels (n)-(p): The unit of observation is the polling station. Panels (o) and (p) are the first round counterparts to the dependent variables in Table 2. All municipalities are included. Standard errors are clustered at the municipal level.

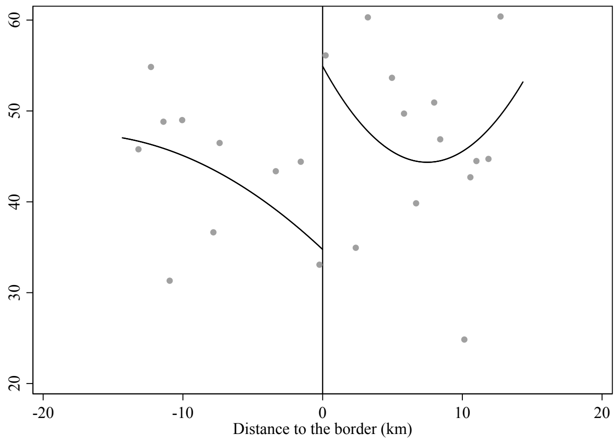
Notes on panels (q)-(s): The unit of analysis is the municipality. All municipalities are included. Robust standard errors are reported.

5.2 Regression discontinuity plots

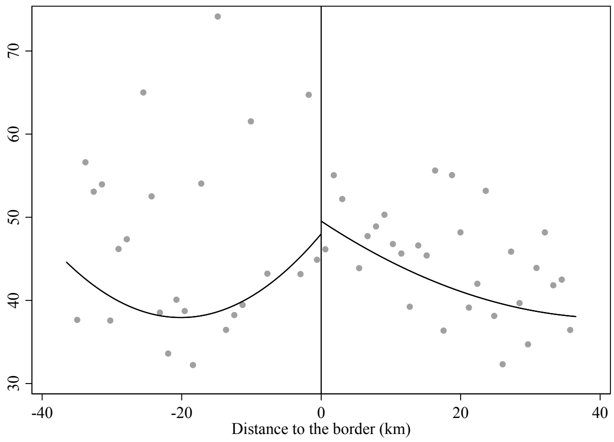
Figure 4 presents non-parametric discontinuity plots à la Calonico et al. (2014) of incumbent's vote share (Panels a and c) and voter turnout (Panels b and d). Panels (a and b) focus on cross-sectional variation from the second electoral round, whereas Panels (c and d) look at first difference variation. A second order polynomial specification with an optimal bandwidth is used. Confirming the results in Table 2, a positive jump at the lockdown border is observed in both outcomes and both approaches.

Figure 4: Non-parametric discontinuity plots

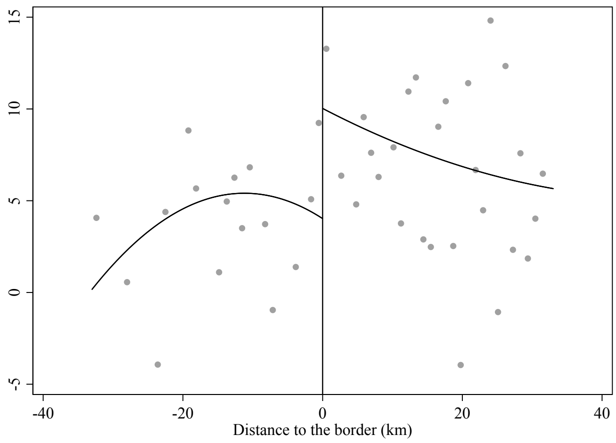
(a) Incumbent's vote share
(Second round)



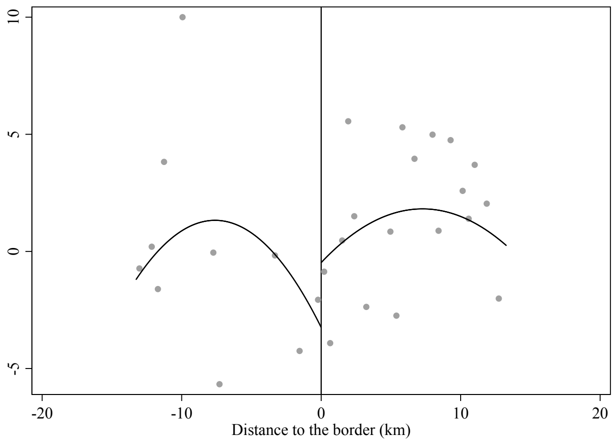
(b) Voter turnout
(Second round)



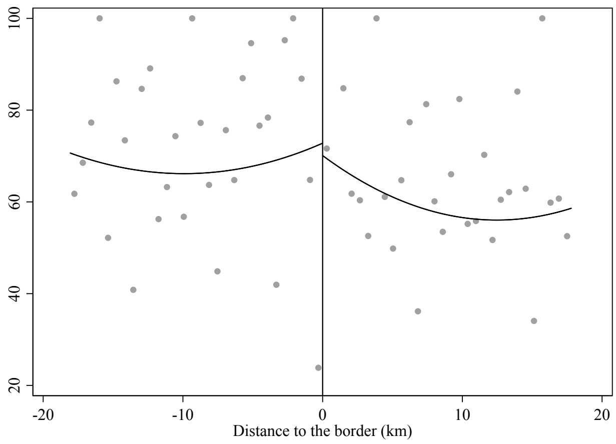
(c) Incumbent's vote share
(First difference)



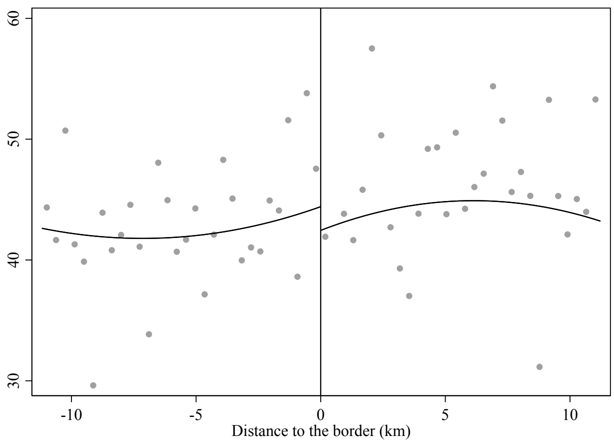
(d) Voter turnout
(First difference)



(e) Incumbent's vote share
(First round)



(f) Voter turnout
(First round)



Notes: Non-parametric estimates following Calonico et al. (2014). Second order polynomial with optimal bandwidth used.

6 Mechanism

The evidence in Section 5 suggests that local incumbents benefit from the implementation of containment measures when facing a pandemic crisis. To rationalize these results, we proceed in two steps. First, we answer the question: to whom do voters attribute the local lockdown policy? We provide evidence compatible with the fact that voters attribute a locally varying policy to the local incumbent – even though the decision on the policy was done centrally. Second, we answer the question: why do lockdown measures benefit the incumbent? To do so, we test three different explanations: emergency management, media visibility, behavioral response. The later appears most likely to explain the voting benefits experienced by incumbents.

6.1 Policy (mis)-attribution: Local versus national incumbents

The results presented above have highlighted the impact of a *local* policy variation, i.e., locally differential lockdown, on the success of *local* incumbents. Yet, even though the policy was locally varying, it was decided centrally. Hence, in what follows, we aim at going a step further and studying whether the level where the policy is managed (i.e., locally or nationally) affects political outcomes at the same administrative level. If not, this would be compatible with policy misattribution by voters: voters reward local incumbents for locally varying policies, *even if such policy was decided centrally*.

To answer this question, a high-frequency series of survey following support for both levels of government around the lockdown border – starting in early 2020 and ending after the June 28$^{\text{th}}$ municipal elections – would be ideal. Such data is unfortunately not available. With this in mind, we offer a two steps answer to the question based on the best data currently available. First, we study support for national versus local politicians when the national lockdown was implemented on March 17$^{\text{th}}$, 2020. Second, we investigate the interest for national versus local politicians when the differential lockdown was implemented on May 11$^{\text{th}}$, 2020.

National lockdown

We start by studying how support towards national and local politicians has evolved when the national lockdown was implemented on March 17$^{\text{th}}$, 2020. We make use of a series of surveys conducted by the CEVIPOF on "Citizens' Attitudes Under COVID-19 Pandemic" (Brouard, 2020). These surveys aimed at documenting attitudes towards policies on a number of issues – health, the economy, civil liberties – as well as attitudes towards governments and institutions. For the present purpose, we exploit the first two waves of the surveys conducted on March 16-17$^{\text{th}}$ and on March 24-25$^{\text{th}}$, respectively.[19] The first wave was concomitant with the start of the lockdown, whereas the second wave took place a week later. In each waves, individuals were asked about their level of support for the mayor, the president and the government, successively, on a scale from 1 to 5. In total, 1,552 individuals, located in metropolitan France, are present in both waves.

With this data, we are able to compare the difference in support for national incumbents (president and government) relative to the difference in support for the local mayor before and after the start of the national lockdown. Formally, we adopt a probit difference-in-differences strategy to study the probability that the difference in support for national incumbents increases, remains constant or decreases, relative to the difference in support for the local mayor.[20] Results are displayed in Figure 7. Each bar represents the absolute number of interviewees that have reduced, kept constant or increased their support for the local mayor (light blue), and for the national incumbent (black contour). Above each bar is displayed the coefficient estimated using our probit difference-in-differences strategy showing how support for national incumbents has evolved relative to support for the local mayor. A full presentation of the estimation results is displayed in Table A3. Overall, the likelihood of an increase in support for national politicians following a national lockdown is significantly larger than for the local mayor. In line with this result, it appears that support for the mayor is more likely to stay constant following a national lockdown. These evidence suggest that the national lockdown benefited national politicians, while leaving support for local politicians relatively unaffected.

[19] The first two waves are the only ones currently publicly available.

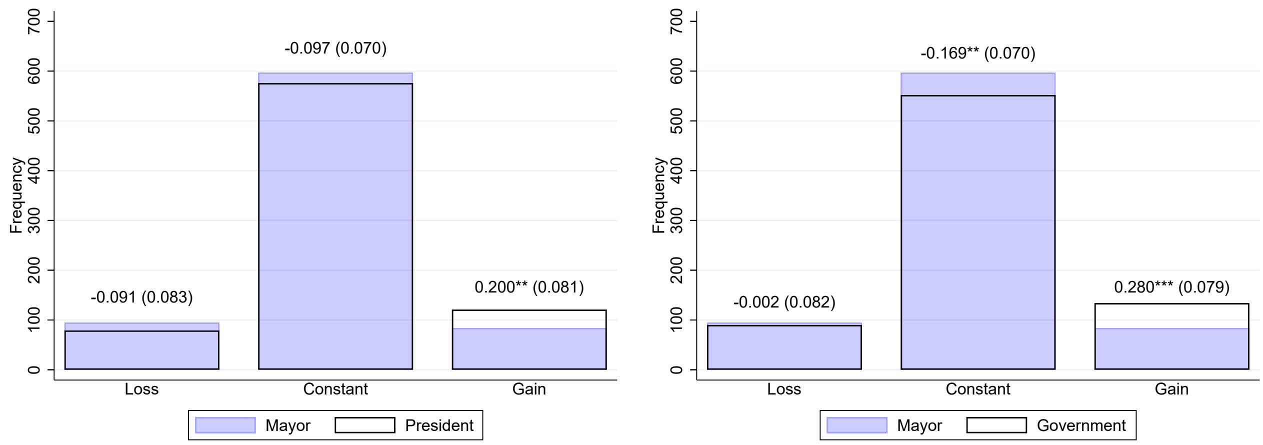
[20] We estimate the following model:

$$\Delta y_{ni} = \beta_0 + \beta_1 I_n + \boldsymbol{X}'\boldsymbol{\beta} + \epsilon_{ni} \tag{6}$$

where Δy_{ni} is the evolution of support for incumbent n by individual i between the two waves. For instance, when looking at the probability to have increased support, Δy_{ni} is equal to 1 if support for incumbent n by individual i has increased between the two waves, and 0 otherwise. I_n is an indicator variable equal to 1 for national incumbents (i.e., president and government). Consequently, β_1 is the coefficient of interest representing how support for national incumbents have evolved relative to support for the local mayor. $\boldsymbol{X}$ is a matrix of individual characteristics, such as age and gender. ϵ_{ni} is the error term.

Figure 5: Support for institutions,
before and after the start of the national lockdown

(a) President vs mayor (b) Government vs mayor



Notes: Data from waves 1 and 2 of the survey "Citizens' Attitudes Under COVID-19 Pandemic" by the CEVIPOF (Brouard, 2020). Panel (a) focuses on the comparison of the support for the president and the local mayor, whereas Panel (b) compares the evolution of support for the government relative to the local mayor. A full presentation of the probit difference-in-difference estimation results is displayed in Table A3.

Local lockdown

As a second test, we try to measure the attention of French individuals towards politicians at the different administrative levels with the use of Google trend data.[21] The use of web traffic may help us overcome the data limitations and the impossibility to compare the support toward local and national politicians during the period of the differential lockdown.

To conduct this analysis, we collect the data on Google traffic for the keywords "mayor", "president" and "government" (in french: *Maire*, *Président* and *Gouvernement*): we make use of weekly data for the period November 2019-October 2020, aggregated at the regional level.[22] These data capture the search activity from the general public and permit us to measure the genuine *interest* towards local and national politicians. To interpret this information, we leverage on a scant but recent literature suggesting that Google

[21] Google trend data displays a measure of search activity, measuring the fraction of queries that include the selected keyword in the chosen geographical unit/moment in time, relative to the total number of queries (Stephens-Davidowitz and Varian, 2014).

[22] Importantly, we exclude from the sample the broad region of Paris, Ile-de-France, as there is evidence that the usage of internet in this area is much higher than in the rest of the country and the Google traffic may capture different things then elsewhere (Le Figaro).

traffic is a useful tool to measure and predict political attitude of individuals: there is evidence that Google search traffic is able to predict voter turnout locally (Stephens-Davidowitz, 2013), candidates fundraising margins (Ellis et al., 2017; Swearingen, 2019) as well as candidates electoral performance (Chen et al., 2012; DiGrazia, 2017). Therefore, even if web traffic cannot directly measure the approval rate of politicians, we can interpret it at least as an indicator of interest and maybe, in certain circumstances, of support for a candidate.

Therefore, with these data we want to compare the interest toward local and national politicians, during the differential lockdown, between the red and the green area. To explore this, we conduct an event-study analysis.[23] Figure 6 shows the main results graphically: the dependent variable is the difference in Google traffic between the keywords mayor and president (Panel a) and between the keywords mayor and government (Panel b). The analysis uses November 2019 as the benchmark month.

First, if we consider the difference between the keywords mayor and president (Panel a), this variable does not differ between the red and the green area in the period under analysis with the exception of May 2020, the month of the differential lockdown, in which a positive and significant spike emerges. Second, similar results emerge if we consider as dependent variable the difference between the keywords mayor and government (Panel b).[24] In terms of magnitude, the spike of May is large in both analyses: it represents, respectively, the 23.1% and the 19.7% of the dependent variable standard variation, in Panels a and b. These findings suggest that French citizens in the area subject to the hard lockdown directed their interest toward the mayors, rather than to the government or the president, in the month of the differential lockdown. On the one hand this finding is coherent with the results from the RDD analysis that the voters in the red area tend to support more the local administration, on the other hand it suggests that the support toward the national administrative bodies does not differ around the border. Therefore, it seems that the "local" nature of the differential lockdown has induced individuals to modify their interest toward local politicians only, and not toward national ones. From

[23]The model that we estimate is as follows:

$$y_{rwm} = \beta_0 + \beta_1 Red_r + \beta_2 \delta_m + \beta_3 Red_r * \delta_m + \gamma_r + \epsilon_{r,wm} \tag{7}$$

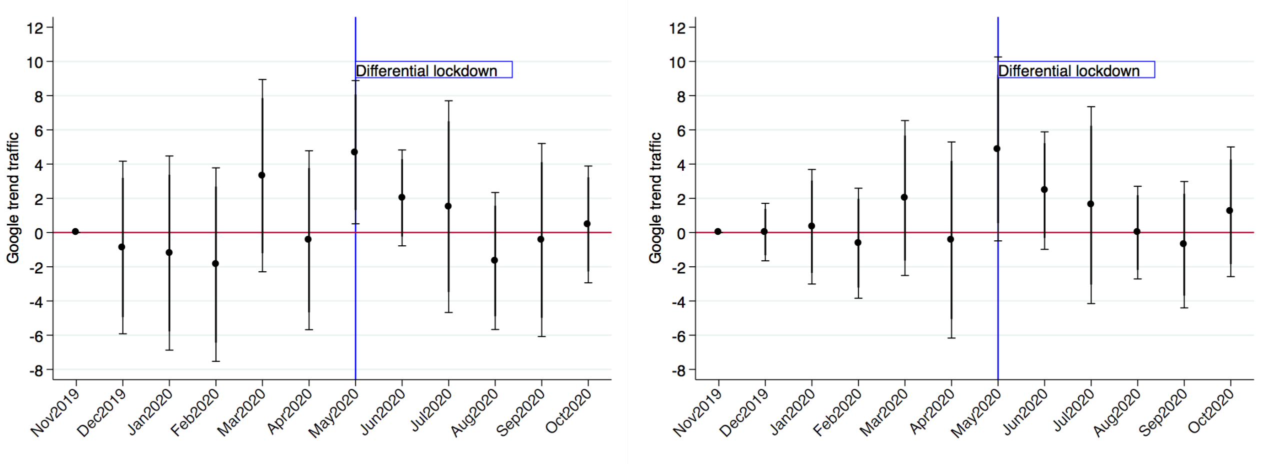
where y_{rwm} is the Google traffic for the selected keyword in region r, in week w, in month m. Red_r is a dummy variable that indicates the regions in the red area, δ_m captures months fixed effects and γ_r capture region fixed effects. Moreover, robust standard errors are clustered at the region level. The interaction term $Red_r * \delta_m$ captures the evolution of Google traffic in the red zone over time, compared to the one in the green zone.

[24]Moreover, Figure A8 shows the outputs when we use as dependent variables the absolute value of the Google traffic for the keywords "mayor", "president" and "government". Similar results emerge.

Figure 6: Google trend traffic for mayor, president and government

(a) Mayor versus president

(b) Mayor versus government



Notes: The plots display Google traffic data for French regions with monthly aggregation in the red area, compared to the green area. Panel (a) shows the difference between the traffic for the keyword "mayor" and the keyword "president", Panel (b) shows the difference between the traffic for the keyword "mayor" and the keyword "government". Each point represents the estimator, along with the relevant 95% and 90% confidence intervals.

these results we cannot immediately infer that the citizens in the red zone support more their local politicians without changing opinion on national ones, but these results surely provide suggestive evidence in this direction.

6.2 Why containment measures benefit the incumbent?

The main results of the paper suggest that the introduction of severe containment measures benefit the incumbent mayor. At least three mechanisms could explain these findings: emergency management, media visibility of mayors and behavioural reaction of voters. In this section, we test these three potential mechanisms.

Emergency management

The occurrence of disasters, such as medical emergencies, often requires large policy interventions. This type of emergency management gives to the politicians in charge the opportunity to implement special policies and to manage additional resources. In turn, this may be positive for their popularity. Previous studies, for instance, highlight that financial transfers in the wake of a disaster increase the support for the incumbent party in national elections (Healy and Malhotra 2009; Bechtel and Hainmueller 2011; Gasper and Reeves 2011).

This mechanism is unlikely to be relevant in our setting for several reasons. First, the differential rules remained in force for a very short period and this makes implausible that the incumbent mayors in the red zone implemented special policy to face the crisis, compared to those in the green one. Second, the policy tools available to the mayors in the two areas were similar. In this period, indeed, there have been no special national programs for municipalities under the hard lockdown, such as special intergovernmental transfers or fiscal exemption for affected areas, as it is often the case for the occurrence of earthquakes (Barone and Mocetti, 2014). Therefore, is is implausible that the emergency management was the key of the electoral success of the mayors on the red zone.

Media visibility of mayors

Another important mechanism may be the boost in media exposure received by the mayors in the red area. In case cities subject to the strict lockdown received larger media coverage, this could have increased the publicity for the incumbents with positive effects on their popularity. Visibility of disaster in the media, indeed, plays a key rule in the aftermath of these events: this is an important determinant, for instance, of the financial aids that are sent to the struck areas (Eisensee and Strömberg, 2007).

In order to test the mechanism of visibility, we use text analysis methods to check whether French media outlets cover more mayors whose cities are subject to the hard lockdown than the others. First, we collected a novel dataset on visibility of French mayors in the media. We used the web portal Factiva and we relied on a automatic web search procedure: namely, we searched how many times French newspapers mention the names of the incumbent every month in time window November 2019-October 2020, and in the days between the beginning of the lockdown and the second electoral round (March 17th-June 27th). We built two municipal-specific indices: i) general visibility of the mayor (*i.e.* the number of mentions in the news), ii) visibility of the mayor associated to the pandemic (*i.e.* the number of mentions in a piece discussing topics related to the pandemic).[25] Moreover, we re-scaled these measures with the total number of articles (per-thousands) about French mayors in the corresponding time period, in order to take

[25] To conduct this exercise, we considered all French media outlets that are supported by the portal Factiva. Overall, we have 540 media sources, 262 are printed papers, including all most important French newspaper (*i.e. Le Monde*, *Le Figaro*, *Liberation*, *La Croix*, *Les Echo*, *L'Equipe*, *Le Figaro*, *L'Humanite*, *L'Opinion*), while the other sources are online media outlets. In terms of keywords, for the index of general visibility, we used the name and the surname of the mayor, while for the index of visibility associated to the pandemic we used the name and the surname as well as the keyword *covid*, in order to include only the articles dealing with the health crisis.

into account the general supply of news on local politics. This dataset covers the cities in which the incumbent re-runs in the 2020 municipal elections –first and second round– and we include cities within a bandwidth of 90 km. The average monthly number of mentions is 10.6 while the average number of mentions associated to the pandemic is 2.0.

Table 4: Spatial RD design analysis of mayor visibility

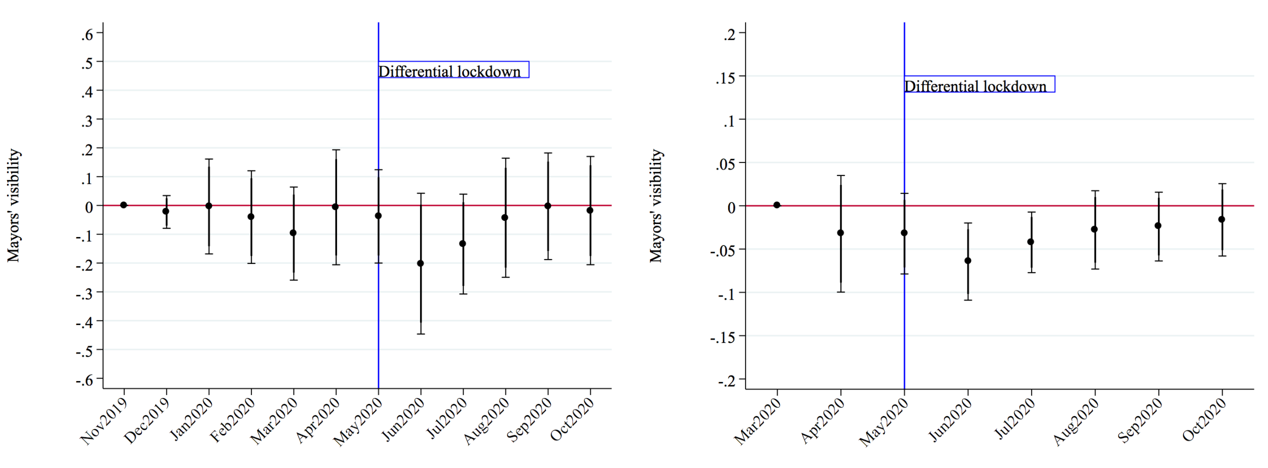
	(1)	(2)	(3)
Approach	Non-parametric	RDD away	CEM
Polynomial order	Opt.	2	-
Covariates	Yes	Yes	-
	(a) Number of mayor mentions		
Treatment	-1.363	-0.256	-0.059*
	(0.877)	(0.213)	(0.032)
Obs.	66	225	70
Bandwidth	Opt.: 27.76	90	-
Dep. var. mean	.52	.37	.39
	(b) Number of mayor + COVID mentions		
Treatment	-0.215	-0.017	-0.011
	(0.177)	(0.054)	(0.009)
Obs.	62	225	70
Bandwidth	Opt.: 26.15	90	-
Dep. var. mean	.11	.09	.09

Notes: Non-parametric estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection. RDD Away refers to a RD design away from the cutoff following Angrist and Rokkanen (2015) and Hainmueller et al. (2015). Test for Conditional Independance Assumption (CIA) is reported in Table 4. CEM stands for Coarsed Exact Matching Blackwell et al. (2010). *Number of mayor mentions* and *Number of mayor + COVID mentions* capture the number of mention in the French media for the period March 17th-June 27th of, respectively, name + surname of the mayor and name + surname of the mayor + keyword *covid*, expressed on the total number of articles (per thousands) dealing with French mayors. *Covariates* include the following list of variables: population, female population, share of people above 60 years, wages, coordinates and public facilities count (overall and educational). Coordinates are excluded when matching under CEM. The unit of analysis is the municipality. "Dep. var. mean" indicates the average value of the dependent variable for the control group. Robust standard error are included.

We then conduct two analyses with the goal of studying whether mayors of cities located in the red area received larger media coverage than those in the green area. First, we estimate the standard RDD model using as outcome variables the two visibility indices focusing on the time window between the beginning of the lockdown and the second electoral round (March 17th-June 27th). Table 4 shows the results. What emerges is that the visibility of mayors located in the two areas are similar in the three estimated models and this is true if we consider the index of general visibility (panel a) and the index of visibility associated to the pandemic (panel b). Second, we conduct a dynamic test. In particular, we study how the media coverage of mayors in two areas evolve over time, with the estimation of an event-study analysis.[26] Figure 7 shows the main results: the dependent variable is the index of general visibility in panel a (benchmark month November 2019) and the index of visibility associated to the pandemic in panel b (benchmark month March 2020). Both analyses suggest that the media coverage between mayors in the two areas is similar before and in correspondence of the differential lockdown, confirming the results from the RDD model.

Figure 7: Mayors' visibility over time

(a) Mayor mentions (b) Mayor mentions + COVID



Notes: The plots show the number of mentions of the French mayors in the media over time in the red area, compared to those in the green area. Panel (a) focuses on the mention of the name of the mayors, and panel (b) focuses on the mention of the names and the keyword *COVID*. Each point represents the estimator, along with the relevant 95% and 90% confidence intervals.

This test suggests that the media coverage of mayors in the red zone has not been larger than in the green one and this rules out visibility as a potential mechanism to explain the results on incumbents' vote share.[27]

[26]The model that we estimate is as follows:

$$y_{mt} = \beta_0 + \beta_1 Red_m + \beta_2 \delta_t + \beta_3 Red_m * \delta_t + X_{tm} + \epsilon_{m,t} \tag{8}$$

where y_{mt} is the mayors' visibility in French media for municipality m, in month t. Red_m is a dummy variable that indicates the municipalities in the red area, δ_t captures months fixed effects and X_{mt} includes a series of fixed effects and time trends (municipality fixed effects, municipal time trend, year/department fixed effects). Moreover, standard errors are clustered at the municipal level. The interaction term $Red_m * \delta_t$ shows how mayors' visibility evolves in the red zone over time, compared to the one in the green zone.

[27]Importantly, the absence of any difference in visibility between mayors in the two zones makes implausible the presence of spillover effects around the border. Namely, in case mayors in the red area stand out in the media, this could influence voting behaviour of citizens in the green area, leading to subtle interaction effects. Therefore, since we rule out the visibility channel, this risk is less tangible.

Behavioural reaction of voters

Finally, mayors in the red zone may be more popular simply thanks to a behavioural response of voters. First, emotional mechanisms could be in place, such as *fear* and *gratitude*. Voters in the red zone could be more scared by the pandemic and this may induce them to lean toward the candidate who ensures more political stability, *i.e.* the incumbent. Moreover, citizens subject to the hard lockdown may feel safer and therefore grateful to the (local) administration. This could motivate them to reward the incumbent at the polls. In French municipalities, indeed, the mayor is a point of reference for citizens and its role was very important in the local enforcement of the lockdown.[28] Second, this effect may also be the result of voters' risk aversion. The adversity due to the occurrence of the health crisis, indeed, may lead to a higher uncertainty associated with electing a challenger and this may induce risk adverse voters to prefer the outgoing mayor. Therefore, this clearly reinforces the electoral support of the incumbents in the red area.

Previous studies highlight how behavioural responses may be important determinants of political behaviour: Campante et al. (2020) show that the Ebola scare significantly affected voters' behaviour in 2014 midterm elections. Moreover, as already mentioned, this interpretation is in line with the literature on the "rally around the flag" hypothesis (Mueller 1970; Baum 2002). Chanley (2002), for instance, finds that the terrorist threat leads citizens to further support the government in charge. This mechanism seems to be the most plausible at the basis of our main results.

7 Additional analysis and robustness checks

Municipal-specific analysis

As a first additional test, we conduct the main analysis of Table 2 at the municipal level, instead of using polling station variation. The dependent variables are the municipal share of votes of the incumbent and the municipal turnout. Table A4 reports the results: first, the share of vote of the incumbent is larger in the treatment group, compared to the municipalities in the control group. The effect is robust for the non-parametric and the CEM specifications (columns 1-2 and 5-6) while it is weak for the RDD parametric model (columns 3-4). Second, municipalities in the red area are marked by higher turnout lev-

[28]There are many anecdotes, reported in the French press, that highlight the important roles of French mayors during the COVID-19 outbreak and their closeness to the citizens. This exposes mayors and their staff members to large health risks that, in some cases, led to their direct contagion (Le Monde).

els, but the effect is weak and it is statistically significant only for the CEM specification (columns 5-6). Overall, this analysis suggests that the main results emerge also with a municipal-specific analysis, despite being a bit weaker. This is likely due to the small size of the sample used to conduct this analysis.

Evolution in vote share by political groups

In our analysis, we have set party considerations aside so far. We now investigate whether the lockdown has affected parties' performance heterogeneously. As our estimation strategy relies on polling stations close to the lockdown border, we can only rigorously analyze parties with a good spatial coverage in both the first and second round.[29] Hence, we focus here on three political groups: (i) left-wing parties; (ii) right-wing parties, (iii) other main parties.[30] All three groups have proposed candidates in most municipalities studied and have often been able to qualify for the second round. In Table A5, results are displayed for each political force using the same organization as in Table 2. Overall, we do not observe any significant heterogeneous effects by political affiliation.

Heterogeneous analysis on voter turnout

An important aspect to evaluate is whether the impact on voter turnout is higher in places where the incumbent runs or whether there is no relation between these two variables. This may explain whether the higher support to the incumbents in the red area is also a results of voters' extra mobilization. To clarify this point, we study the heterogeneous impact on voter turnout with respect to the fact that the incumbent runs or not in a certain municipality. Table A6 shows the results of this test.[31] While the effect of the main treatment is always positive and significant, the interaction term is never statisti-

[29] Extreme left and extreme right parties in France are highly concentrated in specific locations. The communist party is, for example, present in former blue collar municipalities at the periphery of the Paris metropolitan areas. Similarly, the "Rassemblement National", i.e., the main extreme right nationalist party, is mostly present in the North and South East of the country. President Macron's party "La République en Marche" (center right) is also characterized by a weak spatial coverage in the 2020 municipal elections for mostly two reasons. First, the party is very new as it was created for the 2017 presidential elections. Second, it performed badly in the first round of the 2020 municipal elections and in many cases was not present in the second round.

[30] "Left-wing" and "right-wing" parties refer to all parties categorized as "Socialiste", "Liste Union de la Gauche" or "diverse left" and "Les Républicains" or "diverse right", respectively, by the French Ministry of the Interieur. "Other main parties" refers to all other national parties. It includes the extreme right (e.g., "Rassemblement National") and extreme left (e.g., "Communtist Party") parties, as well as "La France Insoumise" (left) and "Europe-Ecologie Les Verts" (green).

[31] Since we are enriching the model with an interaction term, in this test we do not estimate the non-parametric RDD model.

cally significant suggesting that there is no extra mobilization of voters induced by the presence of the incumbent in these local elections.

Analysis of the yellow zone

To complete our analysis of the lockdown effects on voting outcomes, we restrict our attention to the yellow zone, as indicated in Figure A1, and we study the impact on electoral outcomes in the yellow zone relative to the red one. To do so, we consider as treated all municipalities in the yellow zone, and as control all municipalities in the green zone within 50km of the yellow zone. The results are shown in Tables A7. On the one hand, the lockdown effect in the yellow zone on incumbent's vote share is similar in sign and magnitude to the effect on the red zone, on the other hand, the results for the variable voter turnout are weaker than the main findings.

Main analysis controlling for first round results

To provide an additional test that the results of the first electoral round do not differ around the threshold and that any potential difference does not affect the main findings of our analysis, we estimate the main models controlling for the first round results. Importantly, to do this test we only focus on the cross-sectional analysis as, using the outcomes in difference, would lead to collinearity issues. In particular, we include in the control set the following polling station-specific variables: voter turnout in the first round, vote share of the incumbent in the first round and number of votes to the incumbent over registered citizens in the first round. Table A8 reports the results. Overall, these findings are similar in magnitude and precision with those of the main analysis, further confirming that these outcomes are not distorted by first round results.

Impact on the probability of victory

An important, complementary, aspect to explore is whether the increase in the incumbent's vote share leads to a significant rise in its chances of being re-elected as mayor. To do this, we focus on two analyses: first, we conduct a polling station-specific analysis to study whether the hard lockdown increases the probability of victory in each polling station, second, we study the effect on the probability that the incumbent wins in its municipality. These analyses are reported in Table A9. On the one hand, Panel (a) contains the analysis conducted at the polling station level and it shows that the incumbents in cities located in the red area face a higher probability of victory at the polling station level. On the other hand, Panel (b) reports the municipal-specific analysis and it shows that the effect is positive most of the times, but it is not statistically significant. Nevertheless, the power of this municipal-specific analysis is highly limited by the small sample under consideration, that ranges between fifty and two hundreds observations. Overall, this analysis provides weak evidence that the electoral advantage obtained by the incumbents in the red area increases their chances of re-election.

Rolling regressions

To assess the robustness of our results to the exclusion of regional units around the differential lockdown border, we run non-parametric rolling regressions. We use the non-parametric model, estimated with the optimal bandwidth and optimal polynomial, while alternatively excluding all departments around the border. Results are displayed in Appendice B (Tables A10 and A11). Overall, results appear robust to the exclusion of any department.

8 Concluding remarks

The COVID-19 outbreak represents an unprecedented global crisis which deeply affected economic, social and political outcomes. Most governments faced the first wave of the pandemic imposing a set of social containment measures, the lockdown. Moreover, in many countries the second outbreak has forced the government to reintroduce new forms of lockdown measures to face the upsurge of the sanitary crisis, and we may expect these precautionary measures to be used extensively in the near future in many areas.[32] Nonetheless, despite the relevance of these policies, very little is still known on their impact on voting behaviour.

This paper is among the first to provide a causal evidence of the impact of the introduction of lockdown measures on voting and electoral outcomes. We focus on France which introduced a differential lockdown, dividing the country between a red area, subject to a "hard" lockdown, and a green area, subject to a "soft" one. Moreover, the occurrence of 2020 French municipal elections allows us to measure voting behaviour before and after the implementation of the restriction measures. Therefore, we can exploit this unique setting to estimate a spatial RDD model exploiting the border between the two areas.

[32]A set of new lockdown policies have been introduced in many countries (e.g. France, Italy, England, Spain, Belgium) following the deterioration of the COVID-19 crisis in autumn 2020: these restrictions are usually lighter and more geographically constrained, compared to those of the first wave.

Our findings suggest that the severity of the lockdown significantly affects electoral outcomes and voting behaviour. First, we find that areas subject to the longer lockdown display higher support for the local incumbent. Second, it emerges that municipalities in the red area have a higher level of voter turnout. These results are coherent with a behavioural response of voters to the pandemic and seem to support the "rally around the flag" hypothesis: voters subject to the "hard" lockdown, indeed, either feel safer or are more aware of the health crisis, and therefore grateful for the policy. This reinforces local incumbents and mobilizes voters at the polls.

The results of this paper improve our understanding of the effects of crisis management policies as we show that voters experiencing containment measures increase their loyalties for political institutions. This legitimates the imposition of such limitations and may have important consequences in terms of political stability in the aftermath of the crisis. In terms of external validity, lockdown policies have been imposed to millions of individuals in the world but the impact of these restrictions on the approval for governments clearly depends on many local factors such as the success in the management of the crisis as well as the specific policies implemented.

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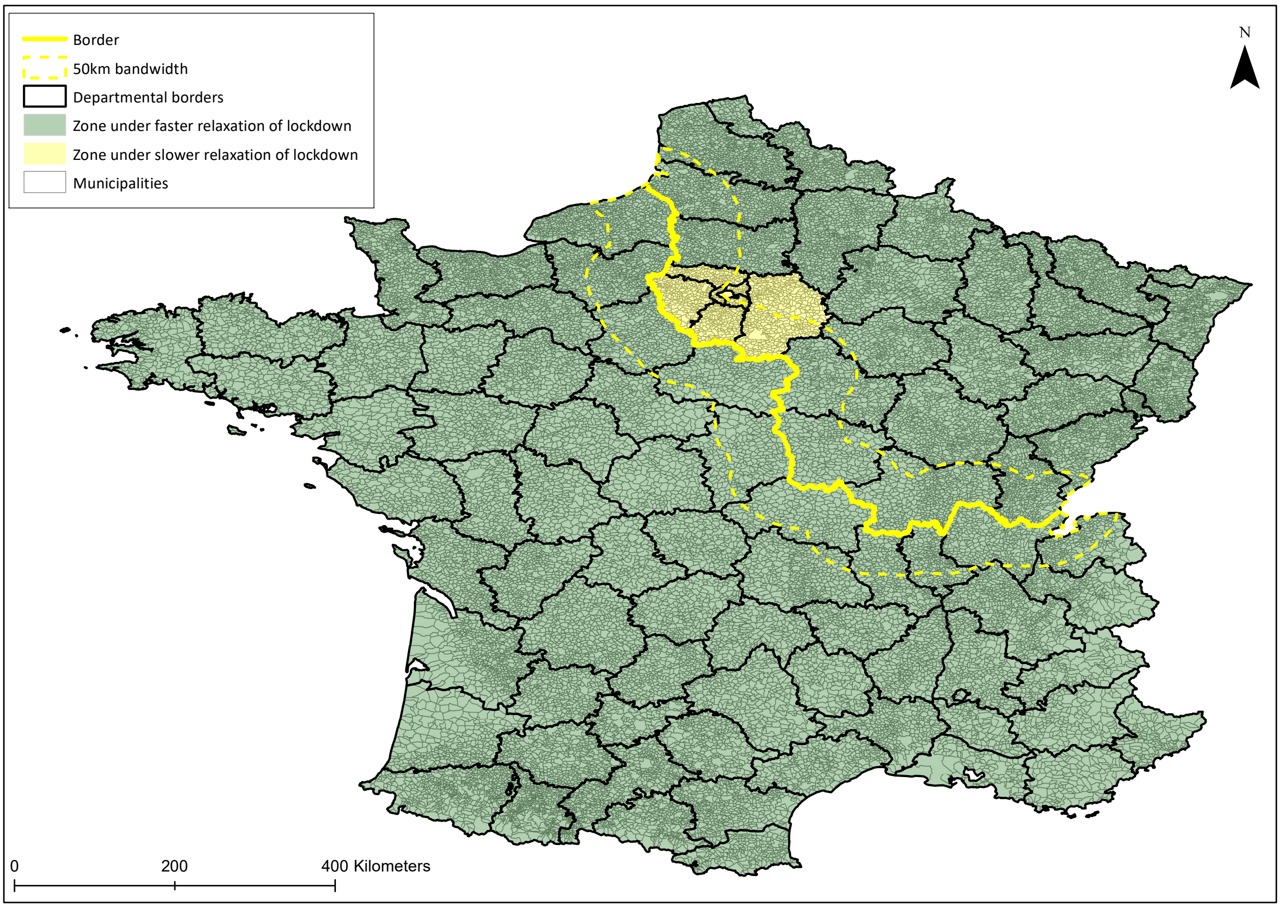
A Appendix: Supporting material

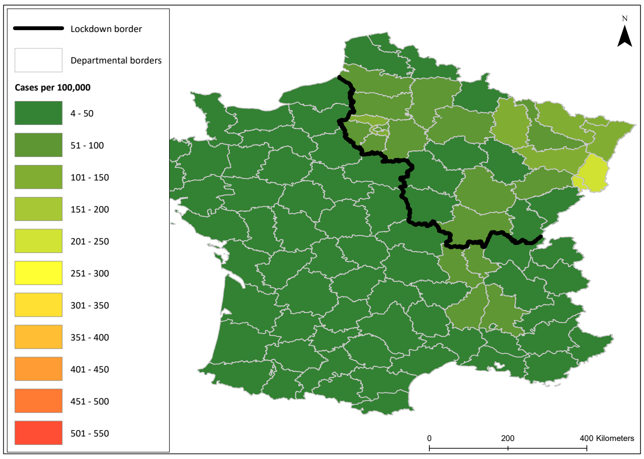
Figure A1: Differential lockdown from June 2^{nd} to June 22^{nd}, 2020



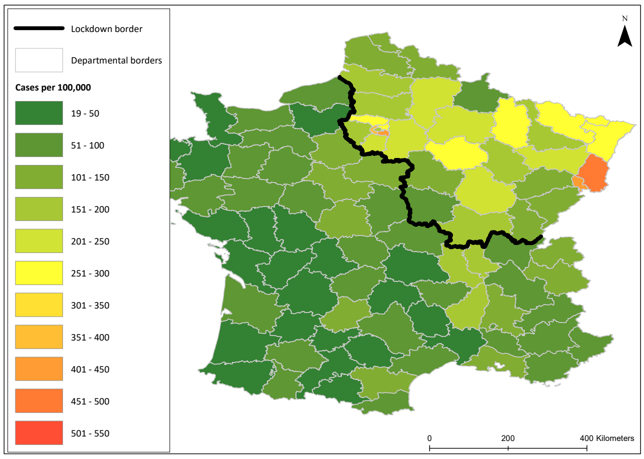
Notes: The yellow area is the zone where the lockdown has been extended until June 22nd. Black borders represent departments and grey ones indicate municipalities. Dotted yellow lines represent the 50km bandwidths from the border.

Figure A2: Development of COVID-19 cases (mid-March to end of June)

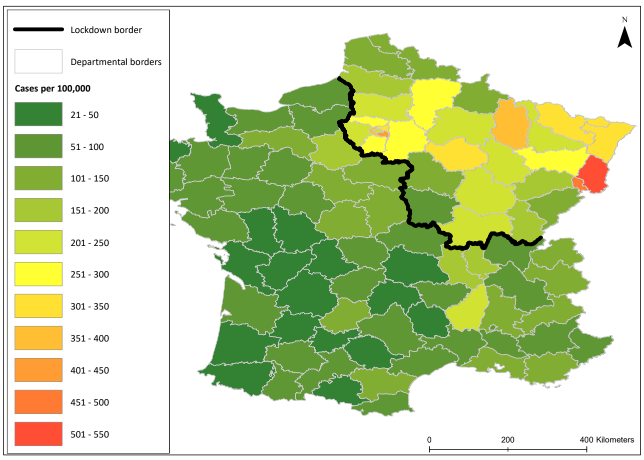
(a) March



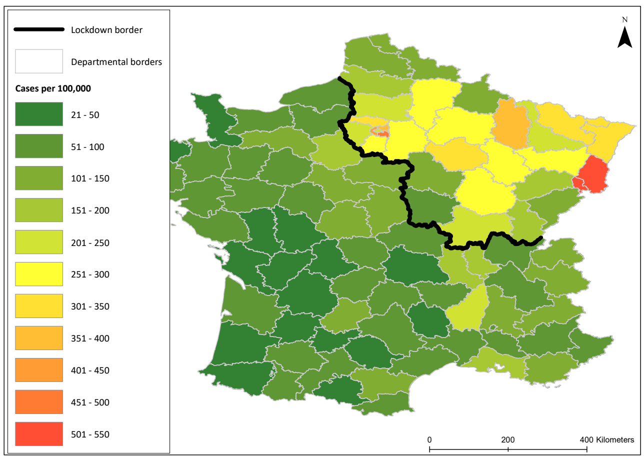
(b) April



(c) May

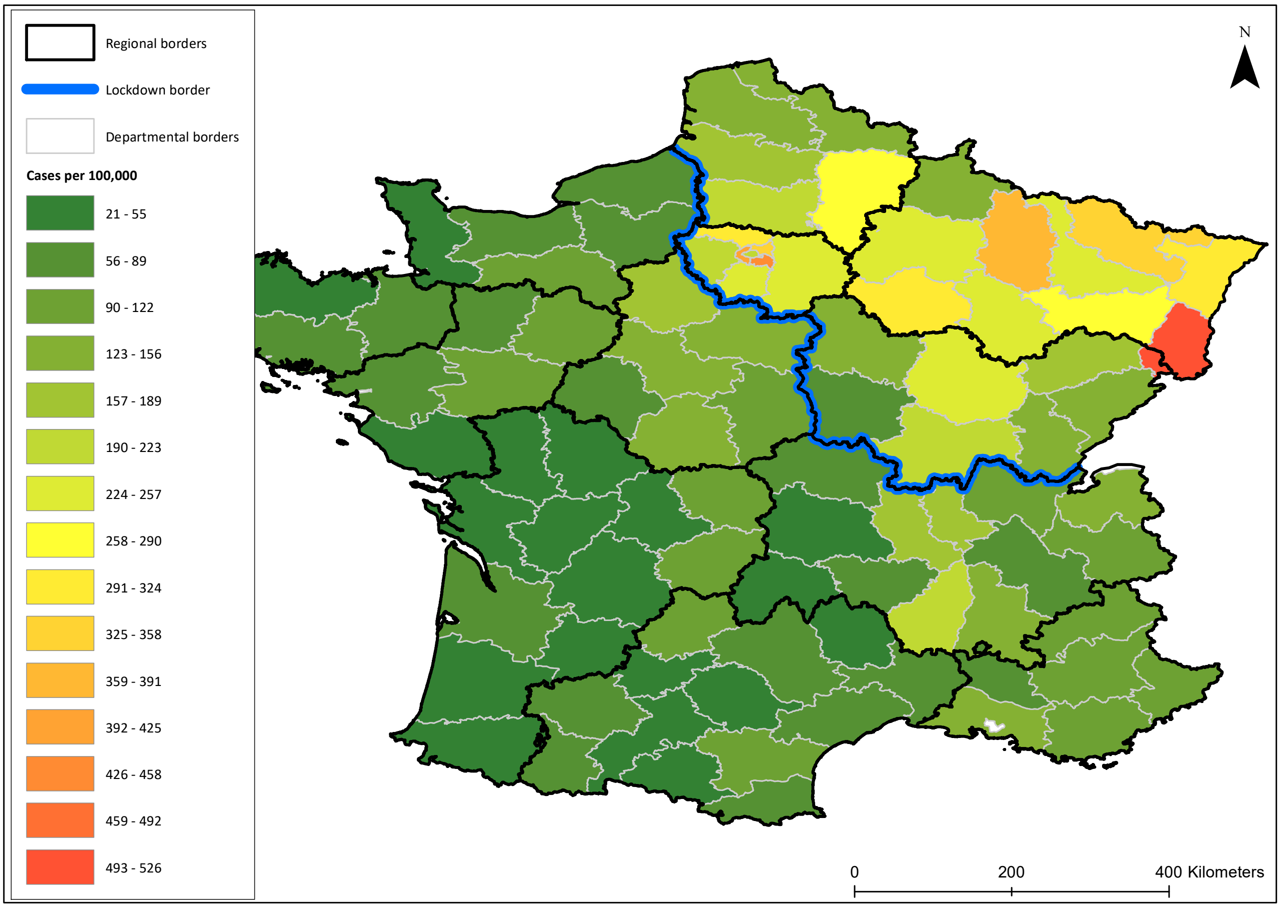


(d) June



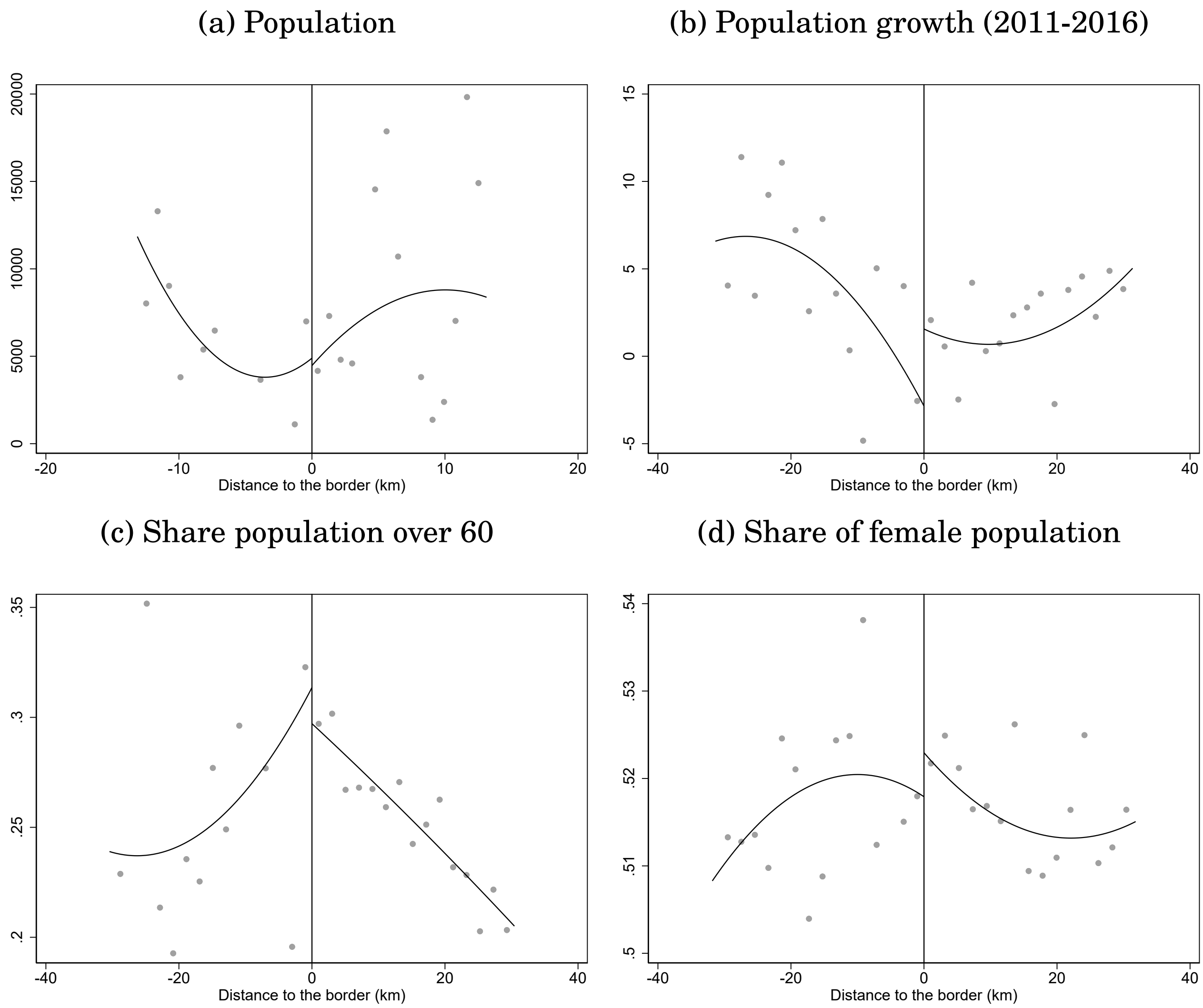
Notes: Recording of confirmed COVID-19 cases available from March 19th onwards. Counts are reported per 100,000 inhabitants. The black bold line represents the border between the red and the green area, subject to different lockdown policies. Grey borders represent departments. *Source:* French Ministry of Health.

Figure A3: The choice of the lockdown border



Notes: Counts are reported per 100,000 inhabitants. Period studied spans from March 19th to May 10th, 2020 (i.e., a day before the differential lockdown was implemented.). The blue bold line represents the border between the red and the green area, subject to different lockdown policies. Black borders represent departments and grey ones indicate municipalities. *Source:* French Ministry of Health.

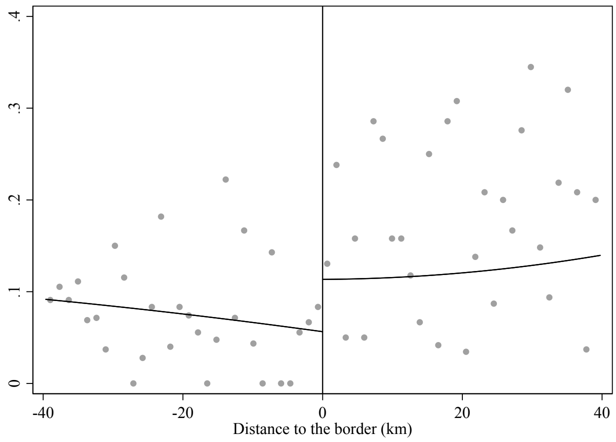
Figure A4: Covariates around the lockdown border: graphs



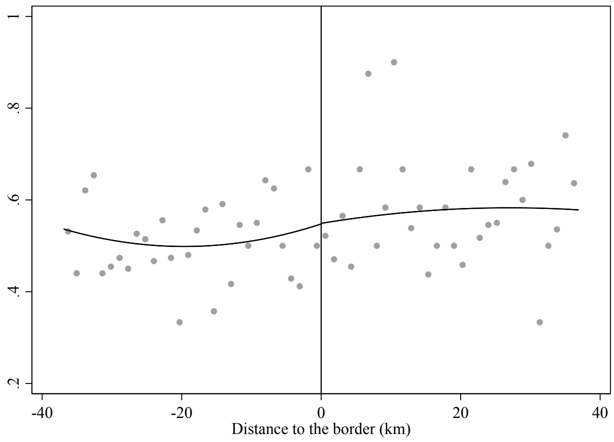
Notes: Non-parametric estimates following Calonico et al. (2014). Second order polynomial with optimal bandwidth used.

Figure A5: Covariates around the lockdown border: graphs

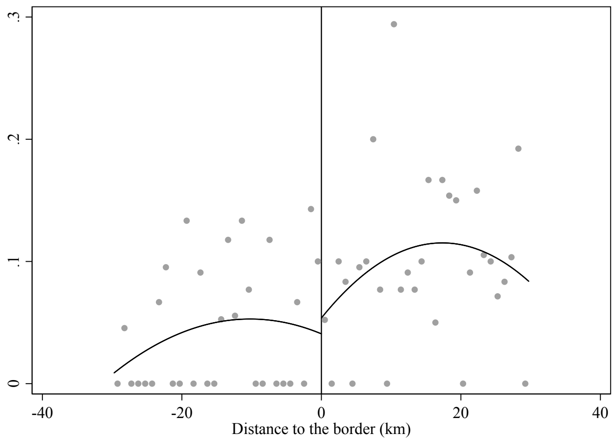
(a) Presence of runoff



(b) Incumbent runs (first round)

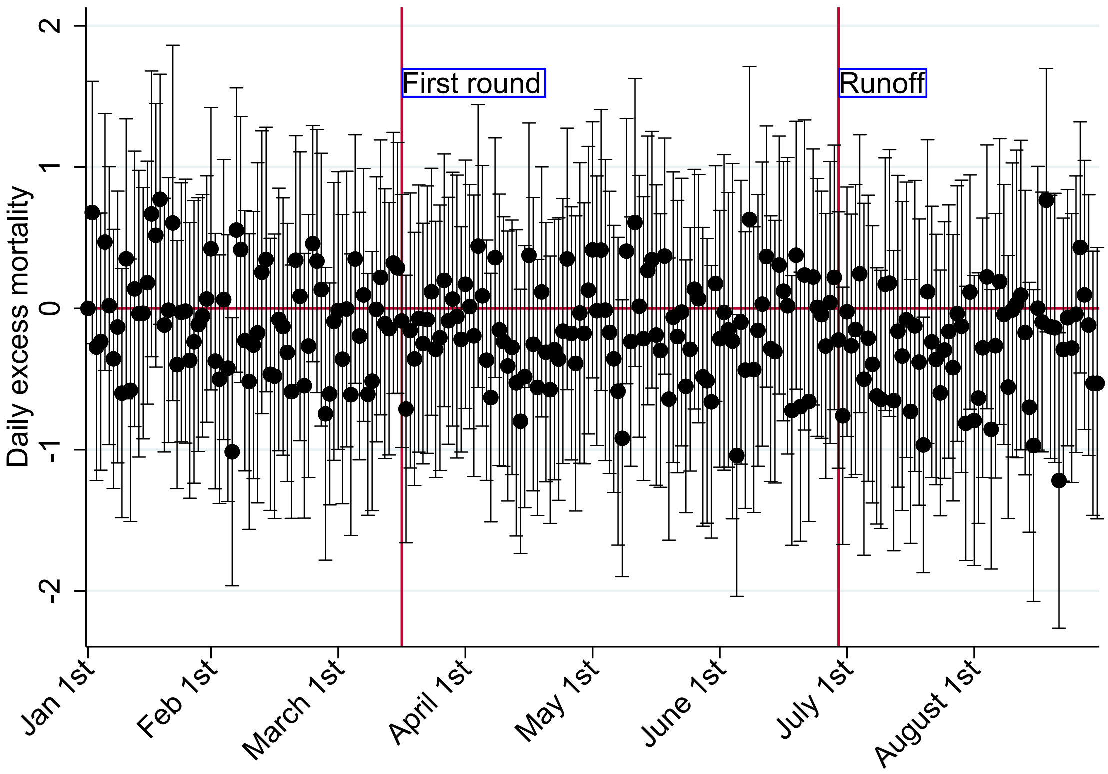


(c) Incumbent in runoff



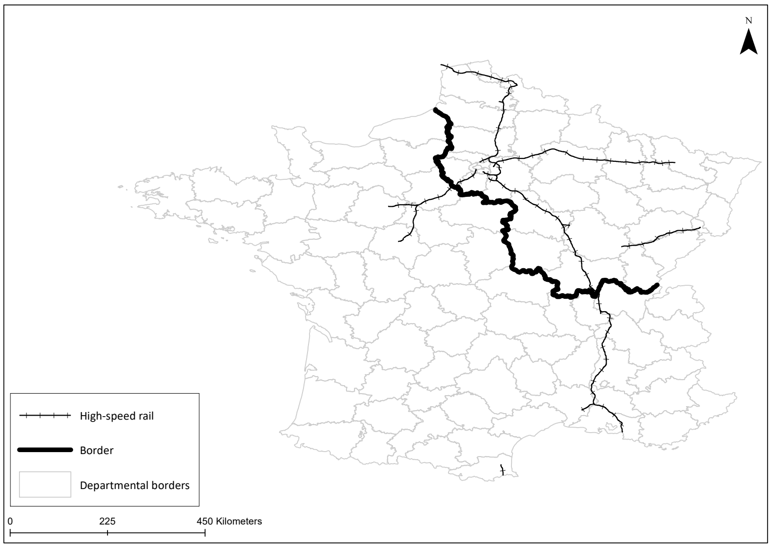
Notes: Non-parametric estimates following Calonico et al. (2014). Second order polynomial with optimal bandwidth used.

Figure A6: Daily excess mortality around the lockdown border



Notes: The plot shows the excess mortality in the red area, compared to the green one over time. Each point represents the estimator, along with the relevant 95% confidence intervals. Optimal bandwidth selected using Calonico et al. (2014). *Source:* French Ministry of Health.

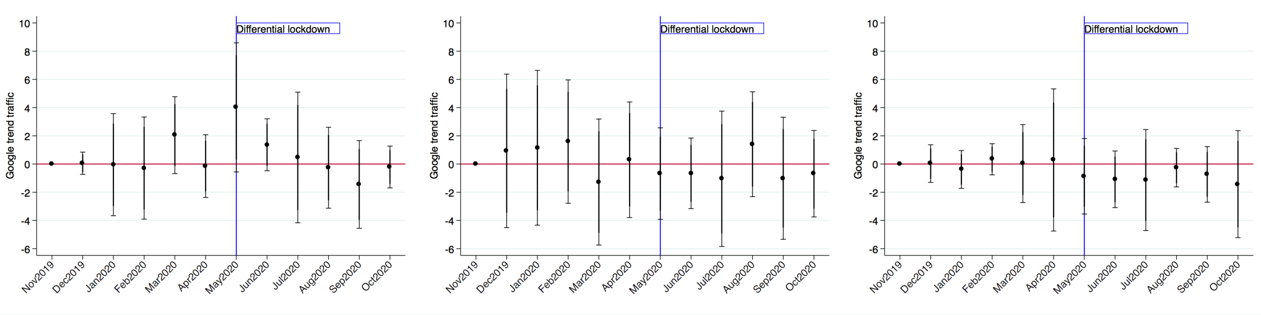
Figure A7: High-speed rail as a proxy for mobility axes



Notes: High-speed rail network in 2015. The black bold line represents the border between the red and the green area, subject to different lockdown policies. Grey borders represent departments. *Source:* National Institute of Geographic and Forest Information.

Figure A8: Google trend traffic for mayor, president and government

(a) Mayor (b) President (c) Government



Notes: The plots display Google traffic data for French regions with monthly aggregation in the red area, compared to the green area. Panel (a) shows the traffic for the keyword "mayor", Panel (b) shows the traffic for the keyword "president" and Panel (c) shows the traffic for the keyword "government". Each point represents the estimator, along with the relevant 95% and 90% confidence intervals.

Table A1: Descriptive statistics

	Average value	Standard deviation	N
Panel A: Electoral outcomes [polling station]			
Incumbent's vote share (second round)	45.361	12.138	1,675
Incumbent's vote share (first round)	36.963	10.825	1,722
Incumbent's vote share (diff)	7.755	7.159	1,645
Turnout (second round)	37.842	8.842	4,009
Turnout (first round)	39.642	7.700	4,009
Turnout (diff)	-1.801	4.195	4,009
White votes (second round)	6.684	6.420	4,009
White votes (first round)	4.168	3.170	4,009
White votes (diff)	2.516	6.412	4,009
Panel B: Controls variables [municipality]			
Local population	25,845.17	135,615.1	278
Senior population	5,428.305	29,306.68	278
Female population	13,524.59	71,819.47	278
Pop. growth rate (2011-2016)	3.268	6.890	278
Median income (2017)	23,562.73	5,027.05	278
Age mayor (previous term)	60.199	8.947	276
Female mayor (previous term)	.197	.399	278
White collar mayor (previous term)	.478	.500	278
Retired mayor (previous term)	.399	.490	278
Elementary schools	1.207	4.493	276
Secondary and high schools	12.059	15.971	276
All public facilities	32.613	54.810	276
Support for lockdown (*Survey based*)	2.321	1.170	6,550
Panel C: Additional variables [municipality]			
Municipal excess mortality	1.830	9.766	278
Presence of runoff	.124	.329	6,181
Incumbent runs (first round)	.573	.494	6,181
Incumbent runs in runoff	.038	.193	6,181

Notes: The sample under consideration includes municipalities with population higher or equal than 1,000 inhabitants that have a runoff in 2020 French municipal elections. The only exceptions are the variables "Presence of runoff", "Incumbent runs (first round)" and "Incumbent runs in runoff" that include all French municipalities. The bandwidth adopted is 50km. Panel A contains political variables of the first round, second round and in difference between the two electoral round. The variables *Incumbent's vote share (second round)* and *Incumbent's vote share (diff)* are defined for municipalities in which the incumbent runs in both rounds. Population variables are defined according to 2016 population census.

Table A2: Conditional independence tests

Strategy	Cross-section		First difference	
	T = 0	T = 1	T = 0	T = 1
	(a) Incumbent's vote share			
Treatment	-0.099	-0.026	-0.009	0.049
	(0.066)	(0.063)	(0.025)	(0.045)
Obs.	862	1700	862	1670
	(b) Voter turnout			
Treatment	0.021	-0.124***	-0.025	-0.010
	(0.026)	(0.046)	(0.020)	(0.022)
Obs.	1612	3154	1612	3154

Notes: Symmetric bandwidth of 90km is assessed. CIA tests from equation (4) to the West of the lockdown border (T = 0) and to the East of the border (T = 1). Across strategies, the CIA appears to be satisfied for a symmetric bandwidth of 90km. *Covariates* include the following list of variables: population, female population, share of people above 60 years, wages, coordinates and public facilities count (overall and educational). The unit of analysis is the polling station. Standard errors – clustered at the municipal level – are reported in parentheses.

Table A3: Lockdown and Support for the Mayor, the President and the Government

	President			Government		
Support relative to Mayor	Decrease	Constant	Increase	Decrease	Constant	Increase
Treatment	-0.091	-0.097	0.200**	-0.002	-0.169**	0.280***
	(0.083)	(0.070)	(0.081)	(0.082)	(0.070)	(0.079)
Obs.	1,552	1,552	1,552	1,552	1,552	1,552

Notes: Data from the survey "Citizens' Attitudes Under COVID-19 Pandemic" by the CEVIPOF (Brouard, 2020).

Table A4: Spatial RD design analysis - municipal variation

	(1)	(2)	(3)	(4)	(5)	(6)
Approach	Non-Parametric		RDD Away		CEM	
Strategy	Cross-sec.	First dif.	Cross-sec.	First dif.	Cross-sec.	First dif.
Bandwidth	Opt.	Opt.	90	90	-	-
Pol. order.	Opt.	Opt.	2	2	-	-
Mun. cluster	Yes	Yes	Yes	Yes	Yes	Yes
	(a) Incumbent's vote share					
Treatment	19.023***	5.824*	-0.290	1.955	2.656	2.117***
	(6.875)	(3.373)	(2.809)	(1.660)	(1.809)	(0.802)
Obs.	60	79	226	225	102	99
	(b) Voter turnout					
Treatment	0.026	0.015	0.006	0.008	0.021*	0.011**
	(0.033)	(0.015)	(0.014)	(0.007)	(0.013)	(0.005)
Obs.	140	90	453	453	224	224

Notes: The unit of observation is the municipality. Non-parametric estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection. RDD Away refers to a RD design away from the cutoff following Angrist and Rokkanen (2015) and Hainmueller et al. (2015). Second order polynomials are used. CEM stands for Coarsed Exact Matching (Blackwell et al., 2010). Within each column pair, the first column displays results using the runoff results as dependent variable, whereas the second column displays results using the difference between the first and the second round. Panel (a) focuses on incumbent's vote share, and Panel (b) on voter turnout. *Covariates* include the following list of variables: population, female population, share of people above 60 years, wages, coordinates and public facilities count (overall and educational). Coordinates are excluded when matching under CEM. The unit of analysis is the municipality. Robust standard error are included.

Table A5: Evolution of the vote share by political groups

	(1)	(2)	(3)	(4)	(5)	(6)
Approach	Non-Parametric		RDD Away		CEM	
Strategy	Cross-sec.	First dif.	Cross-sec.	First dif.	Cross-sec.	First dif.
Bandwidth	Opt.	Opt.	90	90	-	-
Pol. order.	Opt.	Opt.	2	2	-	-
Mun. cluster	Yes	Yes	Yes	Yes	Yes	Yes
	(a) Left-wing					
Treatment	-0.204	-4.391	-4.467	-5.727	-4.002	-5.254*
	(8.121)	(4.177)	(6.808)	(4.307)	(4.230)	(2.828)
Obs.	4,151	4,121	5,063	5,033	4,290	4,260
	(b) Right-wing					
Treatment	0.409	1.724	-3.363	-1.040	-3.713	-1.039
	(5.102)	(4.071)	(5.574)	(3.240)	(2.760)	(1.823)
Obs.	2,885	2,885	3,684	3,684	3,693	3,693
	(c) Other main parties					
Treatment	-1.750	-0.563	0.190	-3.124	3.325	-0.456
	(3.767)	(2.119)	(4.944)	(2.654)	(6.190)	(2.638)
Obs.	534	534	712	712	640	640

Notes: Non-parametric estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection. RDD Away refers to a RD design away from the cutoff following Angrist and Rokkanen (2015) and Hainmueller et al. (2015). Second order polynomials are used. CEM stands for Coarsed Exact Matching (Blackwell et al., 2010). Within each column pair, the first column displays results using the runoff results as dependent variable, whereas the second column displays results using the difference between the first and the second round. Panel (a) focuses on incumbent's vote share, and Panel (b) on voter turnout. *Covariates* include the following list of variables: population, female population, share of people above 60 years, wages, coordinates and public facilities count (overall and educational). Coordinates are excluded when matching under CEM. The unit of analysis is the polling station. Standard error – clustered at the municipal level – are included.

Table A6: Heterogeneity analysis: voter turnout

	(1)	(2)	(3)	(4)
Approach	RDD away		CEM	
Bandwidth	90	90	-	-
Polynomial order	2	2	-	-
Covariates	Yes	Yes	-	-
	Voter turnout			
	Runoff	First diff.	Runoff	First diff.
Treatment	2.974**	1.733*	4.059**	1.285**
	(1.501)	(0.997)	(1.990)	(0.639)
Treatment**Incumbent runs*	-0.797	-0.940	-0.717	-0.109
	(1.545)	(1.106)	(2.698)	(0.989)
Adj. R^2	0.327	0.140	0.048	0.034
Obs.	4,766	4,766	514	514

Notes: RDD Away refers to a RD design away from the cutoff following Angrist and Rokkanen (2015) and Hainmueller et al. (2015). CEM stands for Coarsed Exact Matching (Blackwell et al., 2010). Within each column pair, the first column displays results using the runoff results as dependent variable, whereas the second column displays results using the difference between the first and the second round. *Covariates* include the following list of variables: population, female population, share of people above 60 years, wages, coordinates and public facilities count (overall and educational). Coordinates are excluded when matching under CEM. The unit of analysis is the polling station. Standard error – clustered at the municipal level – are included.

Table A7: Spatial RD design analysis of the yellow zone

	(1)	(2)	(3)	(4)	(5)	(6)
Approach	Non-Parametric		RDD Away		CEM	
Strategy	Cross-sec.	First dif.	Cross-sec.	First dif.	Cross-sec.	First dif.
Bandwidth	Opt.	Opt.	90	90	-	-
Pol. order.	Opt.	Opt.	2	2	-	-
Mun. cluster	Yes	Yes	Yes	Yes	Yes	Yes
	(a) Incumbent's vote share					
Treatment	4.325***	15.569***	13.878**	9.015**	1.463	4.810***
	(0.459)	(0.000)	(6.548)	(3.965)	(4.837)	(1.434)
Obs.	88	74	1,583	1,553	246	246
	(b) Voter turnout					
Treatment	2.373	-0.898	1.357	-0.974	-3.499	1.159
	(3.275)	(1.360)	(2.516)	(1.803)	(3.170)	(1.749)
Obs.	360	197	2,717	2,717	88	88

Notes: Non-parametric estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection. RDD Away refers to a RD design away from the cutoff following Angrist and Rokkanen (2015) and Hainmueller et al. (2015). Second order polynomials are used. CEM stands for Coarsed Exact Matching (Blackwell et al., 2010). Within each column pair, the first column displays results using the runoff results as dependent variable, whereas the second column displays results using the difference between the first and the second round. Panel (a) focuses on incumbent's vote share, and Panel (b) on voter turnout. *Covariates* include the following list of variables: population, female population, share of people above 60 years, wages, coordinates and public facilities count (overall and educational). Coordinates are excluded when matching under CEM. The unit of analysis is the polling station. Standard error – clustered at the municipal level – are included.

Table A8: Spatial RD design analysis controlling for first round results

	(1)	(2)	(3)
Approach	Non-Parametric	RDD Away	CEM
Strategy	Cross-sec.	Cross-sec.	Cross-sec.
Bandwidth	Opt.	90	-
Pol. order.	Opt.	2	-
Mun. cluster	Yes	Yes	Yes
	(a) Incumbent's vote share		
Treatment	6.522^{**}	2.620^{*}	3.971^{*}
	(2.863)	(1.471)	(2.263)
Obs.	181	2,532	148
	(b) Voter turnout		
Treatment	-0.264	1.759^{*}	3.115^{**}
	(1.627)	(1.000)	(1.485)
Obs.	670	2,669	400

Notes: Non-parametric estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection. RDD Away refers to a RD design away from the cutoff following Angrist and Rokkanen (2015) and Hainmueller et al. (2015). Second order polynomials are used. CEM stands for Coarsed Exact Matching (Blackwell et al., 2010). Within each column pair, the first column displays results using the runoff results as dependent variable, whereas the second column displays results using the difference between the first and the second round. Panel (a) focuses on incumbent's vote share, and Panel (b) on voter turnout. *Covariates* include the following list of variables: population, female population, share of people above 60 years, wages, coordinates, public facilities count (overall and educational), voter turnout in the first round, incumbent vote share in the first round and number of votes to the incumbent over registered citizens in the first round. Coordinates are excluded when matching under CEM. The unit of analysis is the polling station. Standard error – clustered at the municipal level – are included.

Table A9: Cross-sectional spatial RD: probability that the incumbent wins

	(1)	(2)	(3)
Approach	Non-parametric	RDD away	CEM
Bandwidth	Opt.	90	-
Polynomial order	Opt.	2	-
Covariates	Yes	Yes	-
	(a) Polling station analysis		
Treat	0.479***	0.023	0.193**
	(0.045)	(0.231)	(0.074)
Obs.	148	2,532	550
	(b) Municipality analysis		
Treat	0.075	-0.187	0.018
	(0.270)	(0.272)	(0.099)
Obs.	50	205	104

Notes: Non-parametric estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection. RDD Away refers to a RD design away from the cutoff following Angrist and Rokkanen (2015) and Hainmueller et al. (2015). Second order polynomials are used. CEM stands for Coarsed Exact Matching (Blackwell et al., 2010). Within each column pair, the first column displays results using the runoff results as dependent variable, whereas the second column displays results using the difference between the first and the second round. Panel (a) shows a polling station-specidic analysis and the dependent variable captures if the incumbent wins in a certain polling station. Panel (b) shows a municipal specific-analysis and the dependent variable captures if the incumbent wins in a certain municipality. *Covariates* include the following list of variables: population, female population, share of people above 60 years, wages, coordinates, public facilities count (overall and educational) and number of days of restrictions. Finally, the analysis at the municipal level also includes the standard deviation of the first round turnout between polling stations. Coordinates are excluded when matching under CEM. Standard error – with municipal clustering in the polling station-specific analysis – are included.

B Appendix: Rolling regressions on voter turnout and incumbent's vote share

Table A10: Spatial RD - Rolling regressions (1)

	(1)	(2)	(3)	(4)
Approach	Non-parametric			
	Voter turnout		Incumbent's vote share	
Strategy	Cross-sec.	First dif.	Cross-sec.	First dif.
Bandwidth	Opt.	Opt.	Opt.	Opt.
Polynomial order	Opt.	Opt.	Opt.	Opt.
Covariates	Yes	Yes	Yes	Yes
Excluded department number				
Number 1	5.979**	3.910**	24.242***	7.195**
	(2.554)	(1.682)	(4.513)	(3.266)
Number 3	8.156*	4.897***	26.236***	3.103
	(4.866)	(1.805)	(5.038)	(3.587)
Number 14	6.819**	4.310**	24.641***	6.204*
	(2.873)	(1.684)	(4.681)	(3.379)
Number 18	6.842**	3.197**	24.524***	6.372*
	(2.800)	(1.597)	(4.669)	(3.684)
Number 23	6.604***	4.816***	24.507***	6.352*
	(2.443)	(1.660)	(4.667)	(3.668)
Number 26	7.266***	4.812***	24.507***	6.352*
	(2.479)	(1.660)	(4.667)	(3.668)
Number 27	6.927***	2.482	16.838***	4.046
	(2.332)	(1.551)	(4.635)	(4.397)
Number 28	9.209**	4.850***	33.182***	8.433**
	(3.717)	(1.263)	(4.602)	(3.653)
Number 36	6.612***	4.797***	24.507***	6.352*
	(2.447)	(1.661)	(4.667)	(3.668)
Number 38	7.386	3.747**	24.319***	6.911*
	(4.537)	(1.731)	(4.654)	(4.048)
Number 41	6.590***	4.837***	24.479***	6.351*
	(2.434)	(1.663)	(4.665)	(3.667)
Number 42	4.339**	3.380*	24.590***	3.518
	(2.063)	(1.737)	(4.675)	(2.884)
Number 43	6.603***	4.827***	24.507***	6.352*
	(2.443)	(1.660)	(4.667)	(3.668)
Number 45	6.497**	4.643**	23.035***	6.284*
	(2.759)	(1.979)	(4.118)	(3.259)
Number 58	8.597*	4.310***	15.887***	-0.504
	(4.453)	(1.331)	(3.052)	(1.424)
Number 39	7.163	4.186**	28.714***	6.334
	(4.389)	(1.704)	(3.887)	(3.878)
Number 60	7.873*	4.649***	26.443***	6.473*
	(4.550)	(1.686)	(4.093)	(3.618)
Number 61	7.102***	4.817***	24.507***	6.352*
	(2.476)	(1.660)	(4.667)	(3.668)

Table A11: Spatial RD - Rolling regressions (2)

	(1)	(2)	(3)	(4)
Approach	Non-parametric			
	Voter turnout		Incumbent's vote share	
Strategy	Cross-sec.	First dif.	Cross-sec.	First dif.
Bandwidth	Opt.	Opt.	Opt.	Opt.
Polynomial order	Opt.	Opt.	Opt.	Opt.
Covariates	Yes	Yes	Yes	Yes
Excluded department number				
Number 62	6.943**	3.604**	24.405***	7.800*
	(3.054)	(1.737)	(4.659)	(4.235)
Number 63	8.426**	4.271**	24.392***	6.243*
	(3.463)	(1.687)	(4.658)	(3.531)
Number 69	8.136**	1.634	24.681***	6.347*
	(3.944)	(1.508)	(4.685)	(3.665)
Number 71	7.641	4.040**	23.345***	6.483*
	(4.764)	(1.839)	(4.447)	(3.744)
Number 72	6.604***	4.803***	24.507***	6.352*
	(2.443)	(1.661)	(4.667)	(3.668)
Number 73	7.152***	4.609***	24.441***	6.371*
	(2.602)	(1.667)	(4.662)	(3.684)
Number 74	7.487	5.062***	24.861***	8.388*
	(4.580)	(1.652)	(4.699)	(4.308)
Number 75	7.752*	2.911*	24.507***	6.352*
	(4.649)	(1.707)	(4.667)	(3.668)
Number 76	5.954**	-0.296	10.253	21.165**
	(2.745)	(2.959)	(6.694)	(8.790)
Number 77	7.030***	3.364*	24.275***	6.642
	(2.534)	(1.745)	(4.661)	(4.203)
Number 78	8.180***	4.043**	35.719***	7.759**
	(2.423)	(1.600)	(5.056)	(3.816)
Number 80	6.308	3.663**	29.351***	6.705*
	(4.493)	(1.694)	(4.781)	(3.539)
Number 89	6.942***	1.396	24.926***	6.521*
	(2.112)	(1.448)	(4.808)	(3.497)
Number 91	6.803**	3.740**	24.981***	6.803*
	(2.644)	(1.622)	(4.457)	(4.103)
Number 92	7.473	4.418***	24.106***	3.021
	(4.575)	(1.584)	(4.644)	(3.000)
Number 93	6.609***	3.137*	24.519***	3.627
	(2.149)	(1.722)	(4.668)	(3.122)
Number 94	8.138**	5.017***	24.557***	6.918*
	(3.942)	(1.654)	(4.672)	(4.050)
Number 95	7.284***	3.439**	24.740***	6.376*
	(2.546)	(1.737)	(4.692)	(3.654)