

Ne me quitte pas! School closures and the rise of far-right in France

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Abstract

School closures and consolidation have been advocated in several OECD countries. This paper analyzes the impact of school closures on far-right votes in France between the years 1995 and 2022. Using a matched difference-in-differences design, we show that the closure of the only school in a municipality causes an increase of 0.645 in votes for the Rassemblement National (RN) right-wing party. This initial effect grows in the following three elections to reach 1.711 percentage points. We provide suggestive evidence that the increase in the RN vote is higher in places with a higher share of children in the population. In municipalities with more than one school at the time of a school closure, the effect is not present, suggesting that citizens are concerned with accessibility to public education.

Keywords: Elections, far-right, populism, public services, schools

JEL classification: D72, D91, H41

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1 Introduction

Voting behavior and political attitudes in Western democracies increasingly reveal strong spatial patterns rooted in geographic inequalities between urban and rural areas that support far-right populist parties. In the US, whereas large cities are Democratic strongholds, rural counties are a cornerstone for populist politicians such as Donald Trump. Similar political divergences between urban and rural areas have been identified in the UK 2016 Brexit vote, and the rise of *Rassemblement National* and the Yellow Vests movement in France. What leads rural, low density geographies to embrace anti-elite rhetoric and opposition to the establishment?

Voters attribute considerable importance to the provision of public services, as well as to their quality (Ajzenman & Durante (2023), Huet-Vaughn (2019), Rogger & Somani (2023)). This is not unreasonable, as the consumption of public services accounts for about 20% of global poverty reduction since 1980 (Gethin (2023)). In particular, the provision of schools positively affects education and wages (Duflo (2001)). Several media and commentators have advanced that there is a potential causal effect between the closure of public services in rural areas and the radical vote, in the case of the US (Edelman (2018), Hogseth (2020)), France (Richardot (2023)), and Spain, among others. Surprisingly, despite the centrality of public services, there is virtually no research on the relationship between the provision of public services and the growth of the far-right. This paper provides the first evidence of a causal effect between school closures and an increase in the vote for the far-right.

In the 2017 and 2022 French Presidential elections, a far-right candidate (Marine Le Pen from the *Rassemblement National*) reached the second round where she obtained 33.9% and 41.5% of the expressed votes, respectively. While Emmanuel Macron scored best in the big cities, Marine Le Pen performed better in rural areas, north and southeast.

In November 2018, after the government announced an increase in fuel taxes,

mass demonstrations took place across France, in what came to be coined the "Yellow Vests movement".¹ The protests have involved demonstrations and blocking roads and fuel depots, culminating in the most violent demonstrations since May 1968. Faced with the protest movement, President Macron launched an unprecedented nationwide exercise to consult citizens on how to fix France's problems. Two months later, the prime-minister announced the conclusions and the main demands of the citizens: a decrease in taxes and increase in the accessibility and distance to public services.

Focusing on the second demand, we examine the effects of public services provision on election outcomes and analyze, for the first time, the role of schools closures on far-right voting. Given France's central role in the European Union, understanding French politics is essential in its own right. More importantly, school closures are not a French feature: in spite of its unpopularity, school closures and consolidation is a policy advocated in several OECD countries (Abalde (2014)). Thanks to economies of scale, the policy is effective in terms of cost reduction (Andrews et al. (2002), Duncombe & Yinger (2007)).² Regarding effects on primary school students' outcomes, the literature has not yet reached a conclusion. Liu et al. (2010) study the Chineses case and find that grades for older students rise, while decreasing for younger students; for the Netherlands, De Haan et al. (2016) find a small positive effect, and in Denmark, Beuchert et al. (2018) identify a short-term negative effect associated with the psychological cost of a change in context. Between 1930 and 1970, over 120,000 schools were eliminated in the US through consolidation and average school size increased from 87 to 440 students; Berry & West (2010) conclude that students educated in smaller schools obtained higher returns to education and completed more years of schooling.

The controversy of school closures is not necessarily just associated with the

¹By French law, all drivers must have yellow high-visibility vests in their vehicles and wear them in emergencies. The garment was chosen as a vehicle of protest for its convenience, visibility, and association with working-class industries.

²Engberg et al. (2012) and Brummet (2014) find positive effects on students' outcomes when low-performing high schools are targeted. This paper focuses on kindergarten and primary schools.

effects on the children. Principally in rural areas, the school is often at the center of the community's life, social gatherings and an employer. A school closure reduces the accessibility of that service and generates additional using costs, e.g. transportation or congestion costs. The Yellow Vests movement brought to debate regional inequality, including in the access to public services. The loss of a public service might generate citizens experiencing feelings of abandonment and anger for the government; in the words of the former Prime-Minister Édouard Philippe "the second demand [closer public services] is a requirement of fraternity, proximity, daily contact. Isolation, abandonment, indifference, lack of consideration come up in many words. The answer to this deep uneasiness probably consists in restoring the balance between the metropolis and the municipalities".

France is an ideal setting to test the importance of schools closure in the rise of far-right voting. First, the *Rassemblement National* (RN) has run and won more than 10% of votes in all presidential elections since 1988. Second, more than 10000 schools have closed since 1995, although the number of births in the country has been stable over time. The two situations allow for panel data analysis on the role of closing public services in explaining changes in electoral outcomes.

We take advantage of the information on school closures in France between 1995 and 2017 to identify the effect of diminished access to public services on far-right voting in presidential elections. School closures are a valid experiment where to examine feelings of abandonment and distance to power, as the process of closing a school is centralized at the national level, leaving municipalities with little discretion over the closing decision itself. We examine the evolution of the far-right vote in France, especially in the RN, the most successful far-right party, comparing municipalities with and without school closures, before and after the event. Our methodological approach makes use of a matched difference-in-differences strategy in a staggered adoption design. We find no evidence of pre-trends, and directly compare the evolution of far-right voting in treated and comparison municipalities around the election-year of school closing.

In municipalities with one school, mostly in rural areas, we find that votes on the RN increase by 0.645 percentage points in the election after the school closing, an effect that grows in the next three elections, reaching a maximum effect of 1.711 percentage points, on average. We observe a more significant increase in municipalities with a higher share of babies, young citizens, and population density, implying that the relative increase in RN voting occurred among the most affected by the policy. We also show that the rise in RN voting is greater when a higher share of the population is already voting for the far-right. This suggests that closing a school acts as a booster, motivating others to vote for the RN. Compositional changes cannot explain our results; a school closure does not likely lead citizens to migrate to other municipalities.

In municipalities with more than one school, the effect on RN voting disappears. Therefore, the rise in protest vote seems to stem from a discrete change in access to public services, not just its decrease.

The paper is organized as follows. In Section 2 we overview the related literature. In Section 3 we describe the institutional context. Section 4 presents the data, Section 5 the methodology, Section 6 the results and Section 7 concludes.

2 Literature Review

The paper is related to several strands of literature. First, to the research on the political economy of populism that studies the origins of populist parties and policies. For reviews, see Gidron & Bonikowski (2013), Mudde & Kaltwasser (2017) and Guriev & Papaioannou (2022).

Several empirical papers study populism's correlates or origins in specific contexts. Becker et al. (2017) examined who voted for Brexit and found as fundamental characteristics low levels of education and income, historical reliance on manufacturing, and unemployment; Fetzer (2019) defends the role of austerity welfare reforms started in 2010 on Brexit. Colantone & Stanig (2018), Autor et al. (2016), Che

et al. (2016), and Dippel et al. (2015), respectively, show that globalization in general - and in particular import competition with China - is a strong correlate of the Brexit vote, pro-Trump voting, support for right-wing parties across EU regions and voting for far-right parties in Germany. In cross-sectional studies, Funke et al. (2016), Dustmann et al. (2017), Guiso et al. (2017), and Algan et al. (2017) defend economic downturn and economic insecurity as determinants of populism. Inglehart & Norris (2016) diverge from this literature, defending a more important role of psychological factors and cultural backlash of previously dominant strata of society. Related Becker et al. (2016), Hangartner et al. (2019), Dustmann et al. (2019), Edo et al. (2019), and Tabellini (2020) refer to the hostility towards migrants in explaining populism. The closest paper to ours is Cremaschi et al. (2022), who also connect public service deprivation to the rise of far-right. They focus on the case of Italy and the closure of local police, garbage collection and public registries; our paper has the advantage of focusing on schools, which is one of the most valuable public services and covers a longer period of analysis.

Second, the paper relates to the literature on electoral accountability and retrospective voting (see Ashworth (2012) and Healy & Malhotra (2013) for a review). Evaluating incumbent performance at the ballot box has a crucial role in democratic accountability. Some examples of this rich literature are Casaburi & Troiano (2016) on electoral responses to anti-tax evasion programs, Ferraz & Finan (2008) on corruption, Clinton & Sances (2018) on Medicaid, Cook et al. (2020) on charter schools privatization or Ajzenman & Durante (2023) to infrastructure quality of the schools. Inside this literature, there is a large branch that studies the effects of fiscal adjustments on political outcomes (e.g., Alesina et al. (1998), Alesina et al. (2011), Arias & Stasavage (2019) and Fetzer (2019)).

Third, the paper also relates to the literature on electoral and political returns to allocations (see Golden & Min (2013) for a survey). The effectiveness of providing distributive goods in attracting votes for the incumbents seems uncontested in the literature of political economy. This literature focuses on examining whether vot-

ers reward political incumbents for investments in public goods and services (e.g., Milesi-Ferretti et al. (2002), Stratmann & Baur (2002), Cadot et al. (2006) and Cinnirella & Schueler (2018)). Our paper completely distinguishes from this literature since it proposes to study the reverse, what happens when governments remove services from voters.

3 Institutional Context

3.1 Closing schools

The municipality is the main responsible for the public schools. It owns the building and ensures its construction, reconstruction, extension, significant repairs, equipment, and operation (article L.212-4 of the education code). The traditional mode of school management is that of direct municipal management: funding is provided by the municipal budget, which provides the material means.

According to French legislation, "the opening of a class or school is the result of the exercise of shared powers between the State and the municipalities".³ At the same time, the closure of a class or school is a decision made by the academic inspector (senior executives from the Ministry of Education), and the Council of State indeed considers that a class or school can close without the agreement of a municipality.

Schools can close for three reasons:

1. The demographic evolution. The drop in student enrollment is the most apparent reason for a closure. This might be due to a reduction in the local population, led by a decrease in the birth rates and internal migration.
2. Fusion and reach an optimal size. Many schools are made up of less than

³Circulaire no 2003-104 of 3-7-2003. Within the French civil service, a circulaire originates from a ministry to interpret a legal text or regulation, with a view to consistently applying such a regulation. This circulaire replaced the circulaire 21 February 1986, which was interpreted as outdated and did not cover the closure of schools.

three classes; they are very numerous in the rural municipalities because of the size of the population, but they also exist in medium and large cities, in particular at the level of preschools, positioned to limit the displacement of families. The fusion of schools can be within a municipality or between several municipalities. In the first case, the fusion of elementary schools, preschools, or primary schools involves the closure of at least one of the schools, and the municipality's decision is necessary. In the second case, the agreement of the municipalities is unnecessary when one of the schools has less than fifteen students and the distance between the municipalities is less than 3 km; in other cases, the agreement of the municipalities is required.

These two points compose the two main reasons to close a school. Their closure is also related to economic reasons. The operation of a small school involves significant fixed costs, such as catering and equipment like computer rooms and libraries. Tricaud (2021) shows that municipalities forced to integrate into inter-municipal cooperation (IC) did not suffer any change in the number of schools since their location is decided nationally and is not affected by IC.

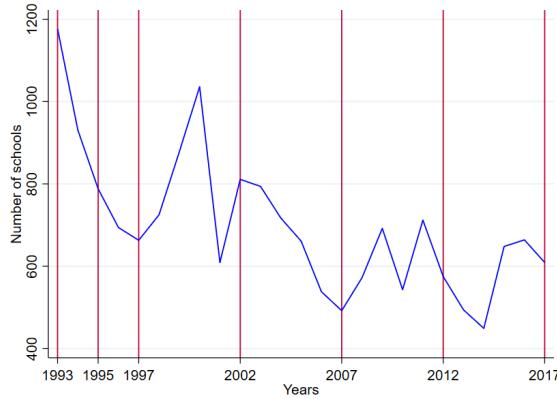
3. State of the building. Several schools, built in an earlier era, cannot meet quality requirements.

In 1995, there were 62888 schools in France, while in 2017, there were 51993. On average, 689 schools closed yearly, with only 204 openings. Figure 1 represents the number of school closures per year, while Figure 2 shows the localization of closures per legislative period.

3.2 Elections in France

We propose to analyze presidential and parliamentary elections. The two elections are held under a two-round plurality voting rule. We focus primarily on presi-

Figure 1: Number of school closures in France between 1993 and 2017



Source: French Ministry of Education. *Notes:* Red vertical lines represent presidential and legislative election years.

dential elections since the candidate is the same across municipalities; we present results for legislative elections for completeness reasons.

3.2.1 Presidential Elections

After the first round, if no candidate received more than 50% of the expressed votes, a second round is held two weeks later between the two candidates with the largest vote share.

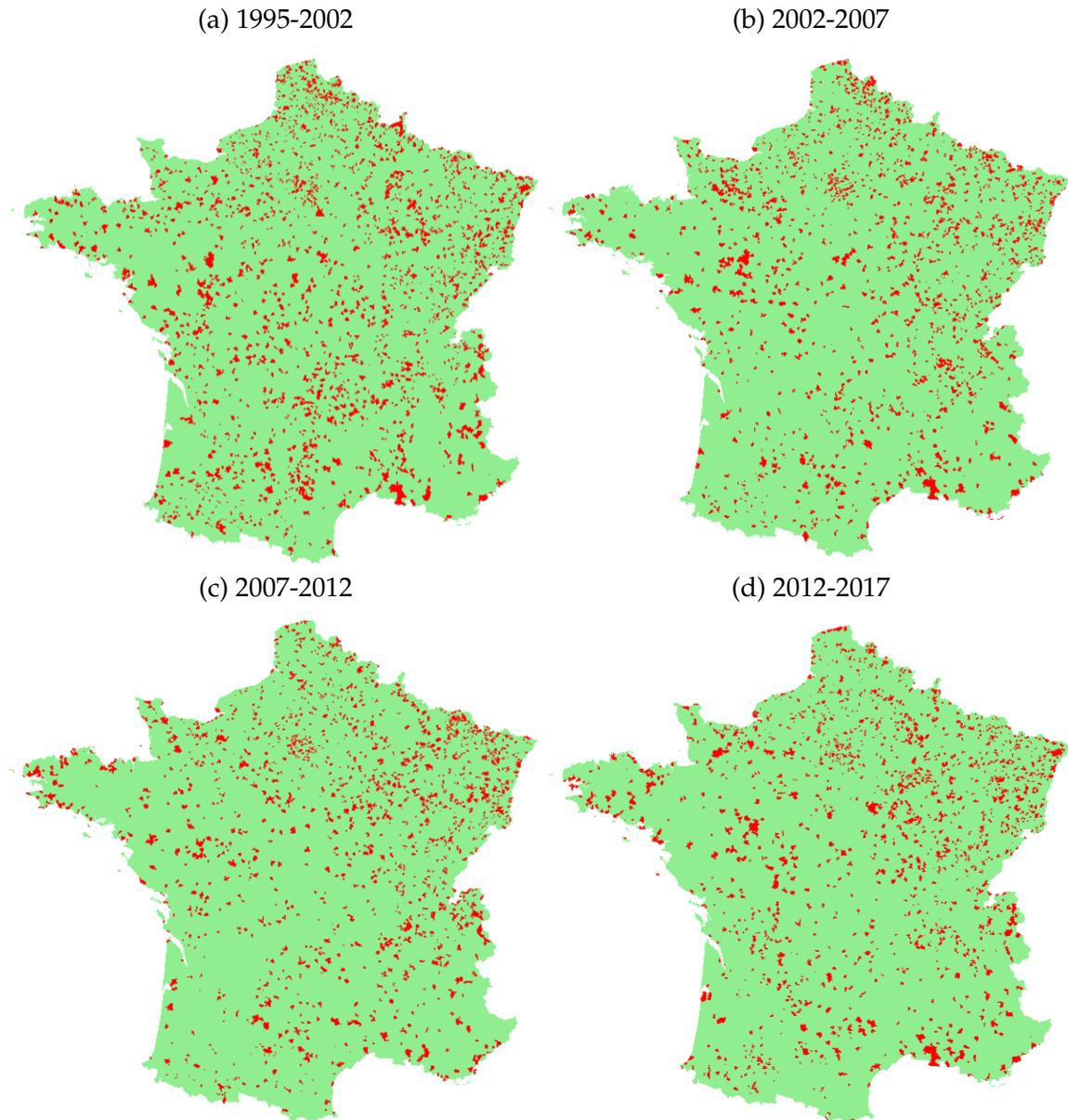
The French Fifth Republic is a semi-presidential system. The President yields significant influence and authority, especially in national security and foreign policy; he also elects the Prime-Minister.

3.2.2 Parliamentary Elections

The difference from the Presidential elections is that in the first round, besides a minimum of 50% of the expressed votes to elect a candidate, it is also necessary 25% of the registered citizens. If no candidate wins in the first round, a second round occurs one week later. The candidate who receives the largest vote share in the second round wins the election.

Parliamentary elections elect the French National Assembly's representatives,

Figure 2: Localisation of school closures



Source: French Ministry of Education. Notes: Map of the localization of school closures. Municipalities in green represent municipalities without school closures, and municipalities in red represent school closures.

the Parliament's lower house. France is divided into 577 constituencies, each electing a Member of Parliament every five years.

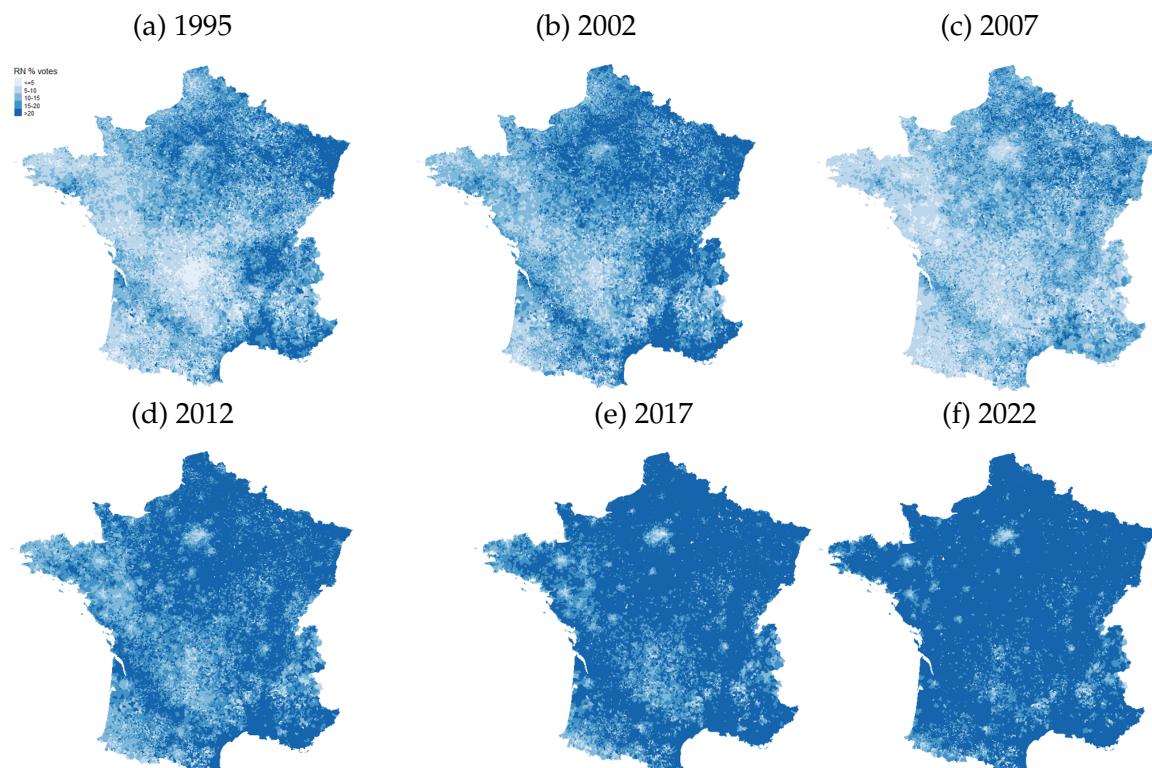
3.3 The Far-Right in France

Historically, France's most successful far-right party is the *Rassemblement National* (RN), initially named Front National, founded in 1972, following the neofascist

group *Ordre Nouveau* ideology. Jean-Marie Le Pen led it until 2011 when it was replaced by his daughter Marine Le Pen. The party presents itself as the defender of the rural areas against the urban elites, as can be seen in this 2012 Marine Le Pen speech: "Together we are going to break with the contempt of a small Parisian elite who believe themselves to be superior. And we are going to put rural France back in France period. If public services desert our campaigns to such an extent, it is because the UMP and the PS have decided so."⁴

Figure 3 represents the growth of the RN between 1995 and 2022. The stronger the blue, the higher the share of votes.

Figure 3: Rassemblement National vote share at presidential elections first round in France



Source: Ministry of Interior. *Notes:* Map of the RN vote share at the first round of presidential elections in 1995, 2002, 2007, 2012, 2017, and 2022. The stronger the blue, the higher the RN vote share.

⁴2012, February 2012. Marine Le Pen, héraut de la ruralité. Europe1.
<https://www.europe1.fr/politique/Marine-Le-Pen-heraut-de-la-ruralite-356998>

4 Data

Data on votes Data on electoral outcomes exists for 1995, 2002, 2007, 2012, 2017, and 2022 presidential elections and 1993, 1997, 2002, 2007, 2012 and 2017 legislative elections. Each dataset records the number of registered voters, abstentions, cast votes, valid and invalid votes, and the votes for each candidate in each municipality. The electoral data for French elections comes from the Interior Ministry and is openly available at data.gouv.fr. We calculate a candidate's or party's vote share as the number of votes cast for the candidate over the total number of valid votes.

The Appendix Table A.1 lists the main candidates, their parties, and corresponding ideology. Ideology refers to the party's ideological family as categorized in the Chapel Hill Expert Survey (Jolly et al. (2022)). The six political families are: far-left, left, green, liberal, right, and far-right.

In this paper, we focus on the *Rassemblement National* for two reasons. First, this is the leading french far-right party; second, they tend to have a more national economic and conservative speech and speak for the rural areas, in contrast to other candidates, like Philippe de Villiers, Bruno Mégret, or Éric Zemmour. The last one, supported by the first two candidates, exerted a campaign in the 2022 Presidential elections about white nationalism and was more successful in urban areas.

Demographic controls We collect municipal-level demographic data. Demographic data from the French National Institute for Statistics and Economic Studies (INSEE) is available for the 1990, 1999, 2006, 2011 and 2016 census years. We compute the share of population by age group, economic sector and education. We also use the unemployment rate, (log) population, and density. For each measure, we interpolate the variable between census years. Data for the share of foreigners comes from Cagé & Piketty (2023).

Data on schools, including year of opening and closing and geographic coor-

dinates is from data.education.gouv.fr.

4.1 Sample restriction

Our analysis focuses on preschools, elementary schools, or schools that include the two levels. The majority of the school closures are at this level.

A school can close due to poor conditions in the state building. In these situations, a school closing might be associated with opening a new school. Voters might perceive this as an investment, and in fact is not a reduction in the availability of public services to the local community, which is the focus of the study. We exclude from our sample municipalities where a school opened between 1995 and 2022.

In November 2018, the Yellow Vests movement erupted. President Emmanuel Macron promised that there would not be more school closures without the mayor's permission, and the COVID-19 pandemic started in January 2020. We exclude municipalities with school closures during Emmanuel Macron's first presidential term, given that the decisions to close these schools were potentially more endogenous.

We also exclude municipalities treated between 1988 and 1995 from our analysis for which we cannot observe pre-treatment voting behavior. We restrict our analysis to metropolitan France, excluding overseas territories and Corsica.

4.2 Descriptive statistics

In our paper, we study the effects of closing the only school in the municipality and closing one of the schools in the municipality. Table 1 shows static differences between municipalities with a closure of their only school and the control group: municipalities with no school. Both treated and control municipalities are usually small and rural, with a high share of the population working in the agriculture sector. Relatively to the other characteristics, they are not substantially different.

Over 63% of the school closures are in a municipality with one school.

Given municipalities with more than one school, we restrict the analysis to municipalities with two to four schools, dropping only 48 municipalities. We proceed in this way to improve the similarity between these municipalities. Municipalities with school closures are less populous and rural.

Table 1: Descriptive statistics by closing and non-closing municipalities

	One school	0 schools	Difference	2 to 4 schools		
	Closed	Not closed		Closed	Not closed	Difference
RN vote share	14.09	12.77	-1.33***	13.90	14.36	0.46
unemployment share	0.08	0.09	0.00	0.09	0.09	0.01***
agriculture sector share	0.42	0.55	0.12***	0.16	0.11	-0.05***
industry sector share	0.11	0.08	-0.04***	0.20	0.20	-0.01
civil construction sector share	0.10	0.09	-0.01**	0.10	0.10	0.00
tertiary sector share	0.37	0.29	-0.08***	0.54	0.59	0.06***
less than high school share	0.84	0.82	-0.02***	0.82	0.81	-0.01***
high school share	0.09	0.09	0.01***	0.09	0.10	0.00*
higher education share	0.08	0.09	0.01***	0.09	0.10	0.01***
babies (<5 years old)	0.06	0.05	-0.00*	0.06	0.06	0.00*
children (5-9 years old)	0.06	0.06	-0.01***	0.06	0.07	0.00
young (10-24 years old)	0.19	0.16	-0.02***	0.19	0.19	0.00
adults (25-64 years old)	0.51	0.51	0.01***	0.51	0.51	0.00
elderly (>64 years old)	0.19	0.21	0.02***	0.19	0.18	-0.00
population	240.89	144.70	-96.19***	1447.53	1968.20	520.67***
density	29.78	19.13	-10.65***	111.18	143.16	31.98**
rural	0.98	1.00	0.01***	0.76	0.63	-0.13***
foreigners share	0.02	0.02	0.00***	0.02	0.03	0.00***
Observations	1642	5522	7164	753	811	1564

Source: INSEE - French censuses (1990, 1999). A linear interpolation is performed to convert data annually. The table compares municipalities that experienced a school closure between 1995 and 2017 (closed) and those that did not (not closed) in municipalities without schools and municipalities with more than one school (2 to 4). Values correspond to the mean.

5 Methodology

We rely on a difference-in-differences strategy to assess the impact of school closures on *Rassemblement National* voting. We estimate the following specification for all municipalities with schools in the main sample of analysis over 1995-2022:

$$Y_{mt} = \alpha + \beta Closed_{mt} + \delta_t + \theta_m + \epsilon_{mt} \quad (1)$$

where m stands for the municipality and t for the election-year. $Closed$ is an indicator variable equal to 1 for municipalities where 1 school closed and 0 for municipalities that did not experience any school closure. The parameter β captures the causal effect of $closed_{mt}$ on the dependent variable Y_{mt} , which stands for the share of votes on the RN as a share of total votes (excluding blank and null). The parameters δ_t and θ_m are election-year and municipality fixed effects, respectively. Election-year fixed effects capture any time-specific municipality-invariant unobserved confounders. Municipality fixed effects capture any municipality-specific time-invariant unobserved factors. Standard errors are clustered at the municipality level.

The identifying assumptions underlying our strategy are two. First, closure and non-closure municipalities shared similar voting trends before the treated municipality lost a school. Second, in the absence of treatment, municipalities with one school closure would have continued to follow the same trend as those in the municipalities without closure.

A main concern is whether treated and control units are different. For example, if municipalities that lose one school are in economic decline, votes on the far-right may respond to the economic downturn rather than the school closure. Matching on observables helps us address this concern, by ensuring that treated and control units have similar demographic and economic characteristics before the treatment. Thus, we construct a comparable control group that considers the observed variables in 1995, using entropy balancing to reweight observations and achieve balance, as per Hainmueller (2012).⁵ Municipalities are balanced on demographics - log of population, density, share of babies, children, young, adults, elderly; citizens with no high school, high school, or higher education; and the share of foreigners, local labor market indicators - the unemployment rate, the share of population working in agriculture, industry, construction, and in the tertiary sector, and a dummy if the municipality is located in a rural area. Table B1

⁵We use the Stata package *ebalance* (Hainmueller & Xu (2013)).

presents descriptive statistics with the the reweighted characteristics. We perform a pre-trend analysis, presented in Figure 4a.

As a control group, we use municipalities that never had a school between the years 1995 to 2022. Municipalities with no school potentially share more similarities with our treatment group than municipalities that have a school throughout the period of study, as the latter are larger and more economically connected relative to municipalities that lose their school. Nonetheless, for robustness reasons, we test our results' robustness using municipalities with only one school as the control group. Results, which are available in the Appendix, do not significantly change and our conclusions remain, but the standard errors are larger and the effects slightly smaller.

Recent literature in econometrics has raised concerns regarding the use of two-way fixed-effects (TWFE) linear regressions to estimate the effect of binary treatments (see Goodman-Bacon (2018), De Chaisemartin & d'Haultfoeuille (2020), Sun & Abraham (2020), Callaway & Sant'Anna (2021)). In the TWFE and with multiple time periods and variation of treatment timing, three comparisons are made: treated units relative to never-treated units (which is correct), treated units relative to not-yet-treated units (correct), treated units relative to already treated units (incorrect). Suppose the effects are heterogeneous across different units, exhibit dynamics, or change across different time periods. In that case, these dynamics will be included in our β estimation, and it will be hard to estimate a causal effect. Estimations present in this paper use the De Chaisemartin & d'Haultfoeuille (2020) estimator.⁶ This estimator estimates the treatment effect in the groups that switch to treatment at the time when they switch and does not rely on any treatment effect homogeneity condition. In the Appendix, we also show the robustness of our results to other estimators (TWFE, Callaway & Sant'Anna (2021) and Sun & Abraham (2021) estimators).

⁶We use the Stata package *did_multiplegt*.

6 Results

6.1 Presidential Elections

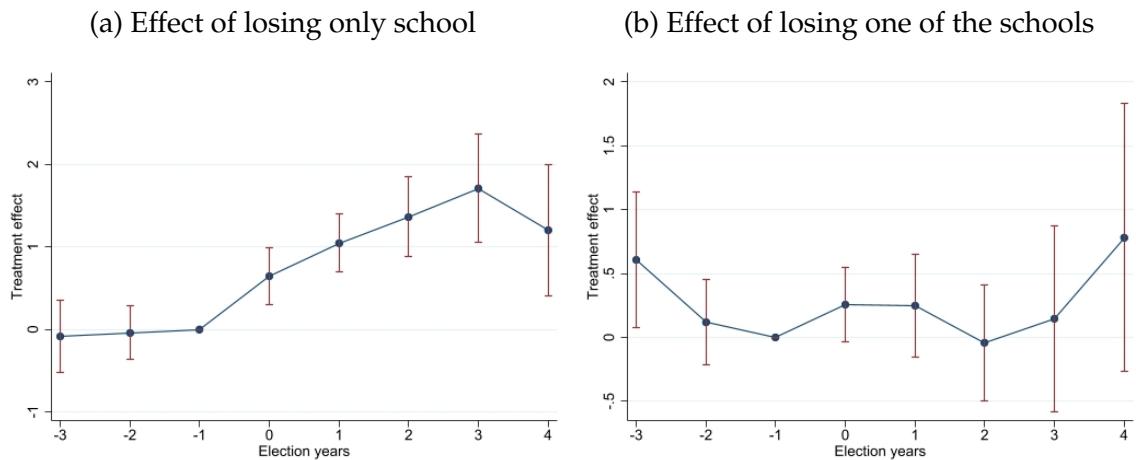
Figure 4a shows the matched difference-in-differences results concerning the vote on the *Rassemblement National*. Panel (a) displays the results for the municipalities with only one school that experience a school closure, thus losing access to this public service. In event-time 0, meaning in the first election after the school closure, the vote for the RN increases on average by 0.645 percentage points. The estimated rise in RN's vote share continues to increase in the next three elections until it reaches a total effect of 1.711 percentage points, decreasing in the fourth election after the change to 1.202. This is a relevant and very long-lasting effect of school closures on the share of vote for the RN. All the leads are statistically significant at 0.1% level, except for lead 4, which is statistically significant at 1% level. Standard errors are larger for lead-4 after treatment, given that this only comprises the 2022 election. To test for the evidence of parallel trends, a joint placebo test on the lags rejects the hypothesis that they are jointly statistically significant. Lags are also not individually statistically significant.

We test the robustness of our results to several specifications. Appendix Figure C.1 presents the results using as control group municipalities with one school and no closures, standard errors are larger with this control group and the estimated effect slightly smaller. In Appendix Figure C.2 we present estimates without matching and with control variables. As expected, not matching leads to slightly overestimating the results, while there is also some evidence of parallel trends. In Appendix Figure C.3, we present estimates using the traditional two-way fixed effects. We implement the Callaway & Sant'Anna (2021) estimator, suitable for (i) cases where the parallel trends assumption holds only after conditioning on covariates, (ii) cases using different comparison groups (the never-treated and not-yet-treated) and (iii) when units anticipate treatment and adjust their behavior be-

fore the treatment is implemented; Figure C.4 presents the results, which do not significantly differ from benchmark estimates. In addition, we present results using the Sun & Abraham (2021) estimator, as in Figure C.5, which is robust to heterogeneous treatment effect and only uses one control group (never treated). Again, results do not significantly change. Finally, Figure C.6 replicates results in Figure 4a using regional-year fixed effects to control for heterogeneity at the regional level in the selection of school closures.

As for municipalities with more than one school, presented in panel (b), we restrict the analysis to municipalities with two to four schools to raise the quality of the matching. Results do not indicate that there is an effect on voting, which suggests that what is politically relevant is the closure of the last school, a discrete decrease in access to an important public service, and not a closure that can be accommodated by other schools in the same municipality.

Figure 4: Treatment dynamics - Effect of a school closure on Rassemblement National voting in Presidential elections

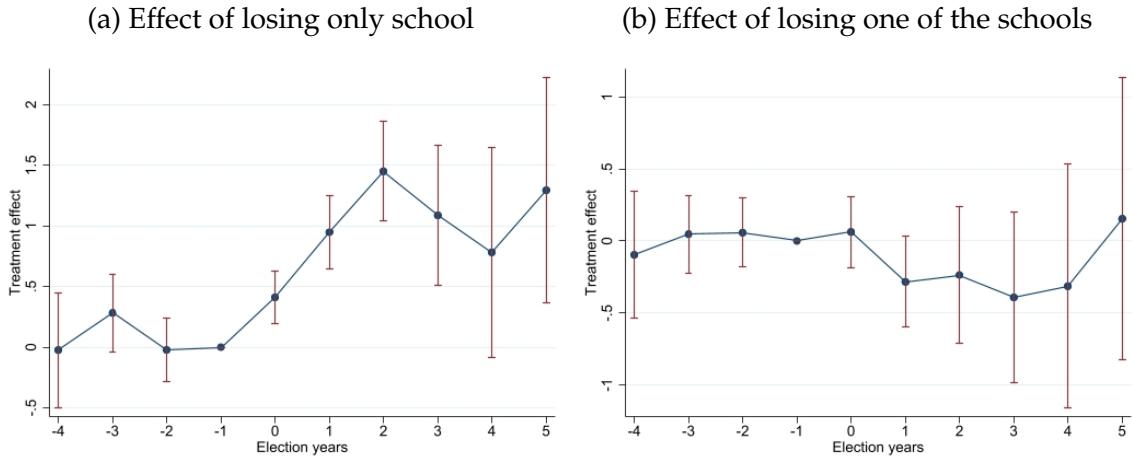


Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Panel (a) reports event study estimation results for treated municipalities with one school and control municipalities without school, (b) for municipalities with two to four schools. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

6.2 Legislative Elections

We now investigate whether the closure of a school influences legislative elections' results. In legislative elections, each electoral constituency elects a member of parliament (MP). MPs primary responsibility is formally to act in the national interest, but they naturally will also consider the interest of their constituents. Since 2002 and for most of our period of analysis, they have been held around two months after the Presidential elections; the two exceptions are the elections held in 1993 and 1997, which were not in the same year as the Presidential elections. In these elections, the elected President aims to obtain a majority in the National Assembly. We consider changes in the vote share of the *Rassemblement National* party in the first round of legislative elections between 1993 and 2022.

Figure 5: Treatment dynamics - Effect of a school closure on Rassemblement National voting in Legislative elections



Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Panel (a) reports event study estimation results for treated municipalities with one school and control municipalities without school, (b) for municipalities with two to four schools. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

In Figure 5a, we show that the closure of the only school in the municipality also has a noticeable and important effect on the vote share of the *Rassemblement National*. In the election immediately after the closure of the only school in the

municipality, votes on the RN increased by 0.411 percentage points, and the effect grows thenceforth in the next two elections, reaching a maximum effect of 1.452 percentage points. Five elections after a school closure, that is, about three decades later, municipalities with a school closure still vote 1.293 percentage points more for RN than municipalities without a school closure in the past.⁷

On the other hand, closing one of the municipality's schools does not have any effect, as shown in Figure 5b. In all our estimates, none of the leads (or lags) is statistically significant.

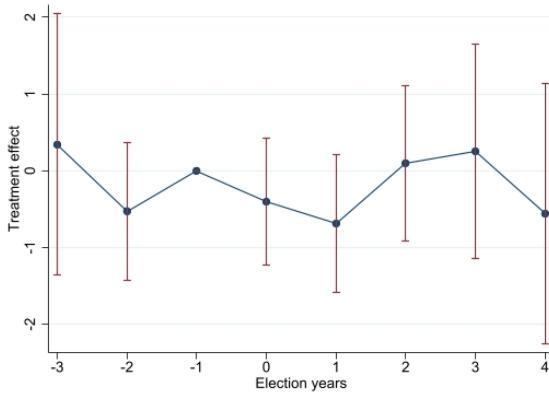
Given that we only find statistically significant effects for municipalities with one school, we concentrate the rest of the paper on these municipalities. As almost two thirds, 63% of school closures occurred in municipalities with only one school, this is not a limitation.

6.3 Opening a school

A question that naturally emerges is: what happens if, quite the contrary, a municipality experiences a school opening? We test for this occurrence, focusing on municipalities with one or no school. One needs to note that the number of schools opening is significantly smaller than those closing, at only 351, after we exclude municipalities that had both a school opening and a school closure during the period of interest. Thus, the standard errors for the effect of a school opening on the vote are larger than before. In Figure 6, we present our results. The estimated effects are small and not significantly different from 0. None of the leads or lags are statistically significant. In period 0, the first election after a school opening, the effect is -0.404 and, in the next election, -0.687, none statistically significant, leading credence to the hypothesis that opening a school does not have a symmetric impact on the far-right vote share as school closures did.

⁷Local elections in municipalities with less than 1000 residents (3500 before 2014) are held under a two-round majority-at-large voting with a panachage system. Given that we concentrate our paper on small municipalities and in these municipalities, most of the candidates are independent, we do not study the effect on this type of election.

Figure 6: Treatment dynamics - Effect of opening a school on Rassemblement National voting in Presidential elections



Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Treated and control groups have, at the beginning of the period, 1 to 0 schools. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

6.4 Heterogeneous effects

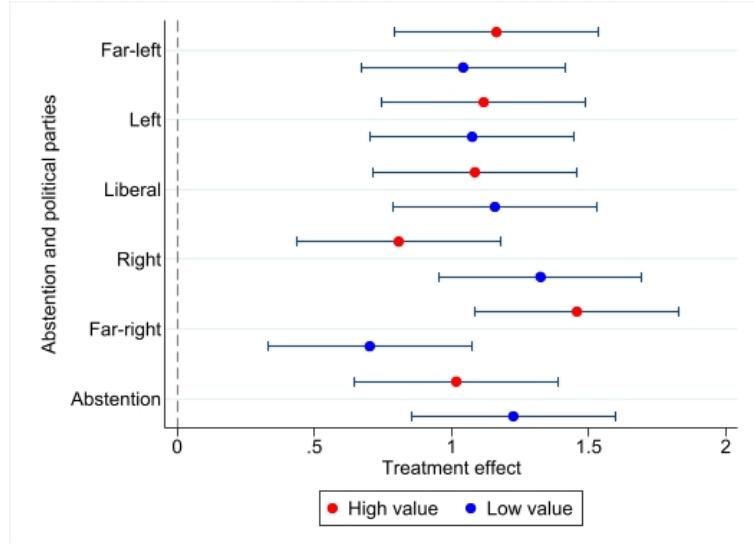
6.4.1 Political parties

We now turn to the possible presence of heterogeneous effects of school closures on the voting share. In Figure 7, we investigate whether the increase in RN voting after the closure of an only school is more pronounced in municipalities that voted more - or less in far-left, left, liberal, right or far-right candidates.⁸ To assess it, we split the sample of treated municipalities at the median vote share of the different parties' ideologies in 1995. We also consider the abstention rate. We find suggestive evidence that the increase in RN voting in the election after the school closure is, on average, higher where voting for the far-right was higher at the period start.

Table 2 reproduces the main analysis for other political parties and abstention in the election after a school closure. The magnitudes are significantly smaller for all other parties, suggesting the vote for the RN is the most responsive to school closures. More important, with the exception of liberal parties, all other parties tend to lose votes, not gain them, after a school closure. Moreover, the far-left

⁸We do not include green parties given that in 2017 they did not present a candidate.

Figure 7: Treatment heterogeneity by political ideology vote share in 1995 - Effect of closing a school on Rassemblement National voting in the first presidential election after treatment



Notes. The incertitude of each point is asserted with 95% confidence intervals. Estimated β from equation (1) in the full sample specification. The dependent variable is the expressed votes on the RN at the presidential election's first round. Standard errors are clustered at the municipal level.

and left parties lose the most vote share after a school closure. These parties are pro-redistribution; therefore, one could expect them to gain from school closures. However, they advocate redistribution funded by taxes, and as previously referred to, one of the conclusions of the "Great Debate" was that citizens want lower taxes. There is a small positive and statistically significant effect on abstention. In the Appendix Table C2, we also present results for the alternative control group, municipalities with one school, and provide the estimated dynamic effects results on abstention rate (Figure C.7) and far-left parties (Figure C.8) in the Appendix.

6.4.2 Municipalities' characteristics

This section examines the heterogeneity of the effects on vote share according to specific characteristics of the municipality. Again, we divided the samples at the median value of the observable characteristics of treated municipalities in 1995. For example, the median percentage of citizens working in the agriculture sector

Table 2: Average effect of closing a school on turnout and other political parties voting at presidential elections

	Abstention	Far-left	Left	Liberal	Right
Closed	0.274** (0.122)	-0.688*** (0.140)	-0.506*** (0.152)	0.187 (0.187)	-0.305 (0.245)
Observations	32689	32689	32689	32689	32689

Treated municipalities only had one school in 1995, and control municipalities never had a school. Matched difference-in-differences with staggered adoption. Matching is performed using entropy balancing. Estimations were obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020). Standard errors are clustered at the municipality level in parenthesis. † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

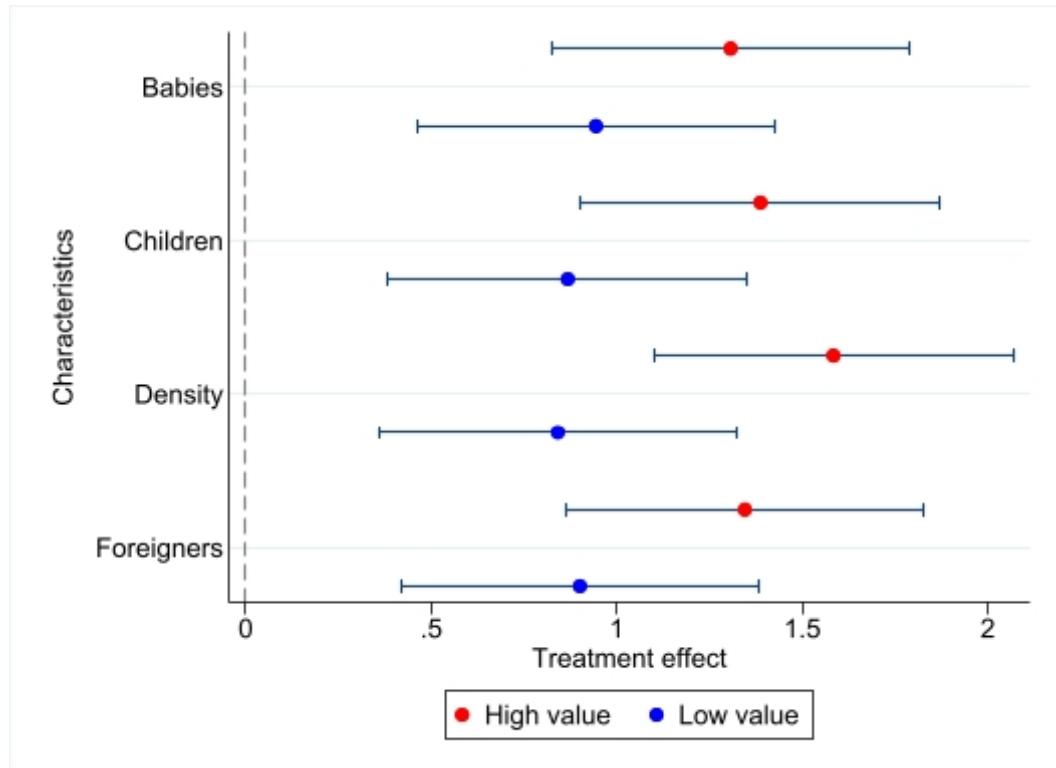
was 42% in 1995 in municipalities that experienced a school closure between 1995 and 2017. We define as “High” the sample of municipalities with a share above or equal to 42% of the population working in agriculture, and “Low” a sample of municipalities with a percentage below 42%.

Figure 8 presents an analysis of heterogeneous effects according to the proportion of babies - less than five years old, and children - 5 to 10 years old, and density. This allows us to test our results at the intensive margin as places with a higher share of babies or children are more affected than places with lower levels. Our results show that votes on the RN increase the most in precisely the municipalities with more babies and higher population density, and that these are the most important socio-demographic characteristics to consider. In the Appendix Figure C.9, we present an analysis of the heterogeneity of the effect based on all observed characteristics.

In addition, our results are also especially strong in municipalities with a higher share of foreigners. A potential explanation for this result is that the loss of a public school leads voters to be susceptible to the far-right rhetoric that blames immigrants for Governments’ disinvestment in public services. Furthermore, public schools have a low degree of excludability; when public services are scarce, voters prefer to allocate them to their own group, and immigrants are perceived to

deserve less of them (Alesina et al. (2021), Alesina et al. (2023), Cavaillé & Van Der Straeten (2023)).

Figure 8: Treatment heterogeneity by municipality characteristics in 1995 - Effect of closing a school on Rassemblement National voting in the first presidential election after treatment



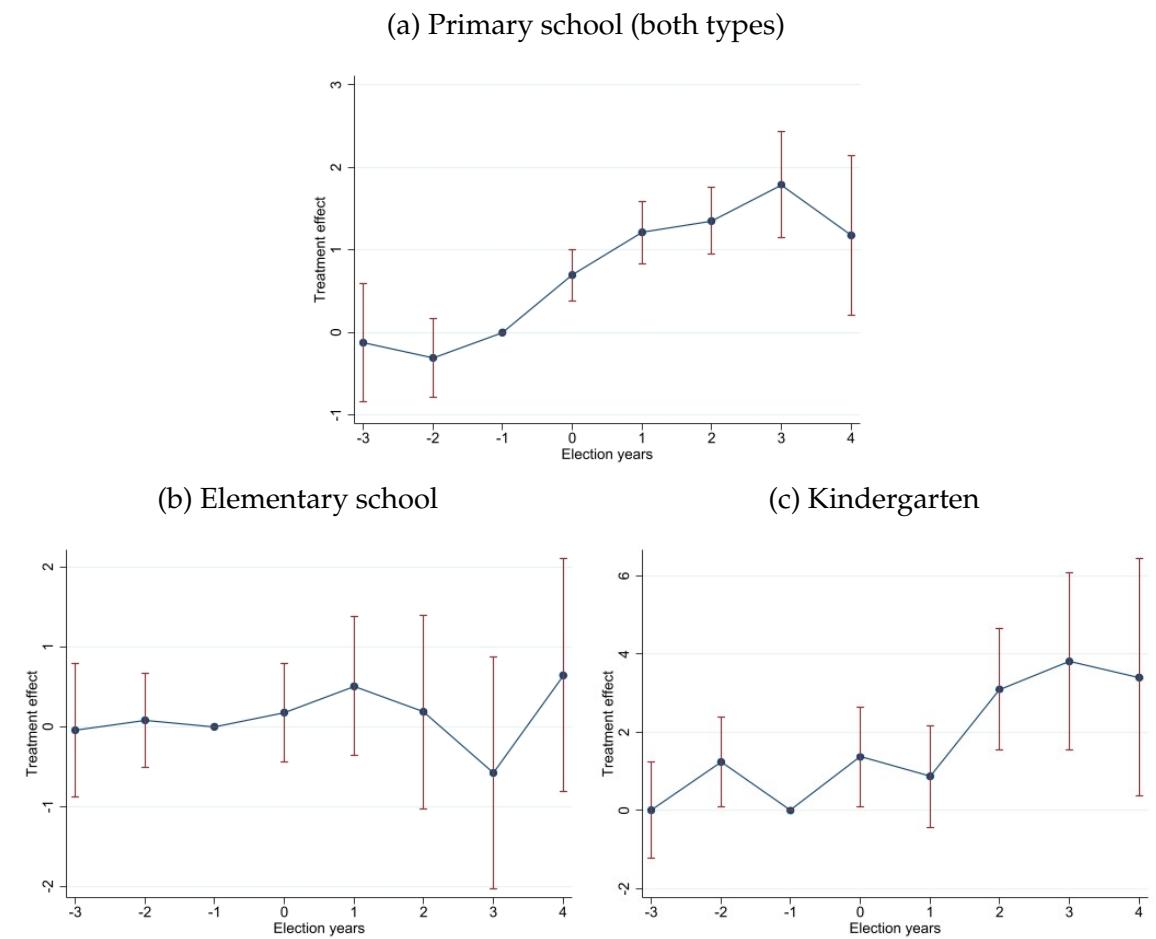
Notes. The incertitude of each point is asserted with 95% confidence intervals. Estimated β from equation (1) in the full sample specification. The dependent variable is the expressed votes on the RN at the presidential election's first round. Standard errors are clustered at the municipal level.

6.4.3 Type of school

We also investigate heterogeneity according to the type of school, focusing on three types: kindergarten, elementary, and schools that include both of levels – called “primary”. The number of treated municipalities with only one kindergarten or elementary level is small, 135 and 272, respectively, while the number of treated municipalities with both levels is 1305. Our results are shown in Figure 9. We do not find statistically significant effects for the case of elementary schools. A potential explanation is that in these schools, class size is usually very small, or they have

fewer resources, and parents interpret that children were transferred to a more adequate class size or better schools. We find large effects in the case of kindergarten closures, when it is logical to expect that parents are not so concerned about teaching quality. Our estimations are robust to using as the alternative control group municipalities with only one school of the relevant type, presented in Appendix in Figure C.10.

Figure 9: Treatment dynamics - Effect of a school closure on Rassemblement National voting in Presidential elections by type of school



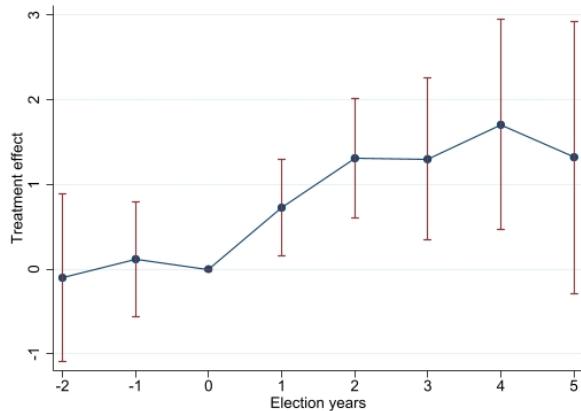
Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Panel (a) reports event study estimation results for treated municipalities with one primary school, (b) reports event study estimation results for treated municipalities with one elementary school, and (c) reports event study estimation results for treated municipalities with one kindergarten school. For all estimations, the control group is municipalities without a school. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

6.5 Robustness checks

6.5.1 Exclude neighboring municipalities

We now address the effect of potential spillovers by reassessing our results after excluding neighboring municipalities in the control group, affected by a school closure. If there is an effect of a school closure on neighboring municipalities – beyond those directly affected, our results above may be underestimated. We retain 490 treated municipalities, and 1454 as controls. In Figure 10, we present the event study. We estimate an average treatment effect of 1.212 percentage points, for the whole period. The effects remain similar in magnitude to those in Figure 4a (1.119 percentage points, on average), indicating that spillover effects are unlikely to have biased the results significantly.

Figure 10: Treatment dynamics - Effect of school closure on Rassemblement National voting (excluding neighboring municipalities)

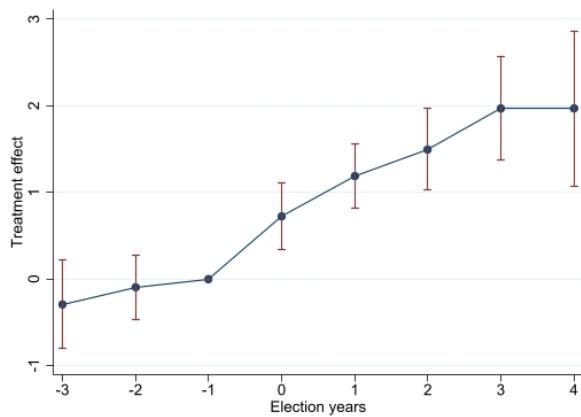


Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Treated municipalities only had one school in 1995, and control municipalities do not have any schools. Adjacent municipalities are excluded. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

6.5.2 Far-right

Electors might also express possible discontent at school closures by voting for other far-right candidates, including, but not limited to the *Rassemblement National* party. Figure 11 presents results for the vote share for the ensemble of far-right candidates. The treatment effects are actually slightly higher than in Figure 4a, while most of the quantitative effect seem to stem from votes on the RN. We confirm the evidence in favor of parallel trends, where none of the lags are statistically significant.

Figure 11: Treatment dynamics - Effect of a school closure on far-right voting



Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Treated municipalities only had one school in 1995, and control municipalities do not have any schools. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

6.6 Do politicians strategically choose what schools to close?

Extensive literature shows that governments tend to invest in public services in areas where they expect electoral returns or where mayors are politically aligned with the government (e.g., Adiguzel et al. (2023), Solé-Ollé & Sorribas-Navarro (2008), Cadot et al. (2006)). We empirically test whether being politically aligned with the government decreases the chances of having a school closed, and thus

focus on narrowly won or lost municipal elections by a candidate aligned with the central government - i.e., the left-wing candidate under a left-wing presidency, and the same for the right. This considers quasi-random variation in whether the government has an incentive not to close a school in a specific city to ensure a politically aligned local mayor has more chances of reelection in the next election. With this purpose, we employ a regression discontinuity design, using the following specification:

$$y_{mt} = \gamma + \tau_0 T_{mt} + \tau_1 f(\text{margin}_{mt}) + \tau_2 T_{mt} \times f(\text{margin}_{mt}) + \xi_{mt} \quad (2)$$

where y_{mt} is the number of schools closed at the municipality m level at time t . Our coefficient of interest, τ_0 , corresponds to the difference between the intercepts of the two regressions, estimating the causal impact of being aligned with the government. Our baseline is non-parametric, following Imbens & Lemieux (2008) and Calonico et al. (2014), and we estimate it using the Stata package `rdrobust` (Calonico et al. (2017)).

We only test this hypothesis for municipalities above 3500 inhabitants (1000 in 2014) since only above this threshold elections are held under a proportional system. Below this threshold, elections are held under a multi-member plurality system, and data about their political affiliation is unavailable, and independent candidates are very common. Furthermore, in France, there are also elections at the department level - an administrative district, that allow for the election of the members of the department council. We also test if having a member aligned with the government impacts the number of schools closed.

Table 3 presents our results, presenting no evidence that the central government behaves strategically regarding school closures.

Table 3: Regression discontinuity designs testing selection into treatment

	(1) Departmental	(2) Municipal
Aligned	0.00197 (0.00253)	-0.0137 (0.0786)
Observations	162214	8651
Eff. number of obs	84793	5441
Polyn. order	1	1
Bandwidth	11.36	17.30

Column (1) shows the results for a regression discontinuity design, testing the null hypothesis: electing a department councilor aligned with the government impacts the probability of closing a school. Column (2) shows results for a regression discontinuity design, testing the null hypothesis: electing a mayor aligned with the government impacts the probability of closing a school.

6.7 Examining alternative explanations

6.7.1 Compositional changes

A possible alternative mechanism explaining an increase in voting for RN are changes in the demographic compositions, namely those caused by the out-migration of non-RN voters, as the closure of a school might lead a subset of citizens to move from treated municipalities to control municipalities, where the public schools are still available. If those citizens tend to be those not-voting for the RN- because of different income, education, or other, then the vote share for RN in the municipality losing the school will naturally increase. We investigate this by employing the same matched difference-in-differences described in Section 5. The regression includes a municipality-level specific trend to capture differences in time trends at the municipality level and guarantee parallel trends.

We find that closing a school does not immediately affect the number of registered voters, as per Figure 12a, in the first three elections – up to 15 years after the school closure, as the effect is not statistically significant and close to 0. In sum, for

periods 0, 1, and 2, our results cannot be explained by compositional changes. The number of registered voters starts to decrease from that moment on, decreasing by 7.87% four elections after (approximately 27 years later).⁹ ¹⁰ ¹¹

6.7.2 Labour market changes

A longer driving distance to school, following a school closure, might lead a parent out of the labor force as it impacts her or his time availability, impacting household income also. Such decrease in economic welfare can account for the increase in far-right votes, in line with evidence that economic factors play an important role in the rise of anti-establishment sentiment (Guriev (2018), Guriev & Papaioannou (2022)). Given the uneven distribution of tasks in the care of kids between men and women, we focus on female employment. As shown in Figure 13, we find no evidence in favor of this hypothesis as none of the leads or lags are statistically significant.

Overall, this section supports the view that the rise in the vote for the *Rassemblement National* following the closure of the only school in a municipality is not driven by composition or labor market-related negative shocks.

6.8 Spillover effects

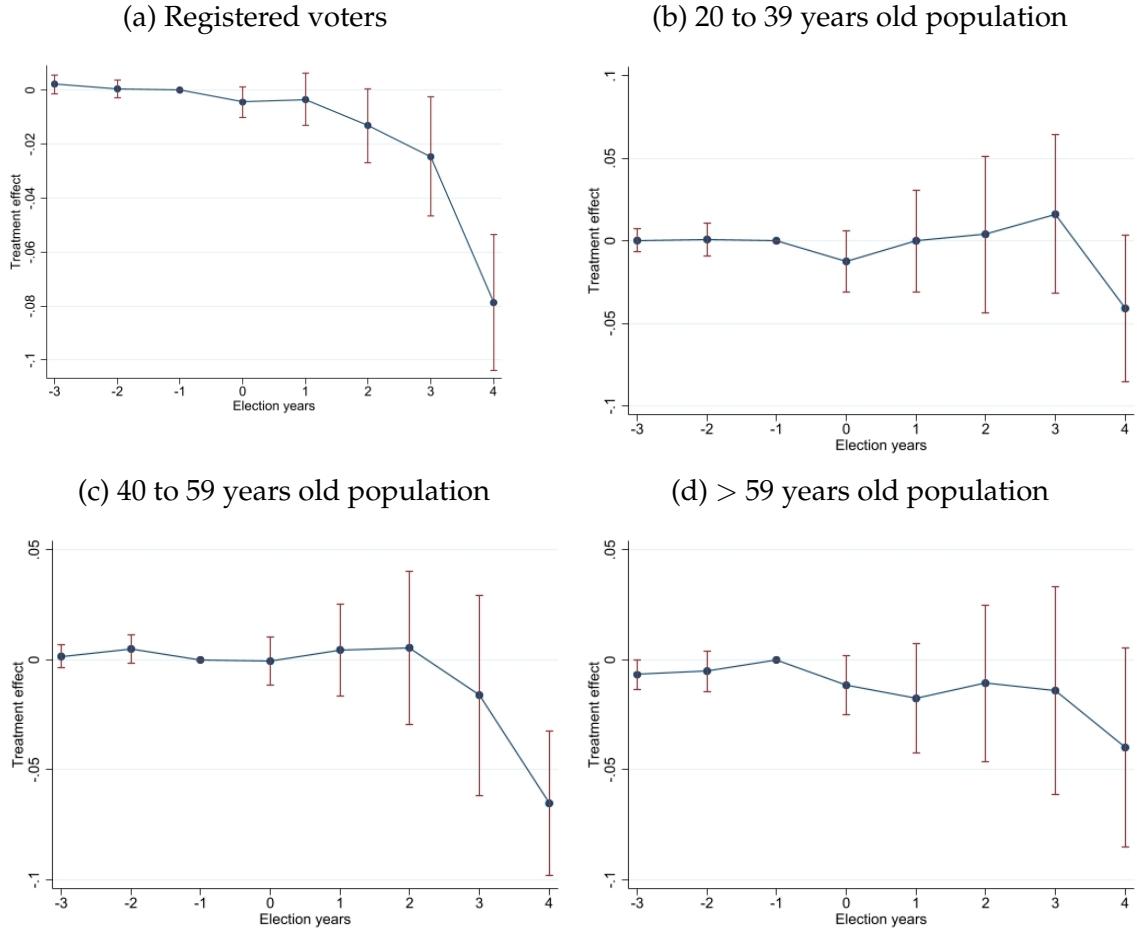
School closures could also affect neighboring municipalities, especially those without a school. In this section, we present results about the effect of closing a school in neighboring municipalities. We drop from our sample all the treated municipi-

⁹Results are robust to another control group: municipalities with one school. We present them in the annex in Figure C.11.

¹⁰Given that population census data is only available until 2019, we do not present results for the last election.

¹¹We decide to explore further the patterns of out-migration by exploring population growth for individuals between 20-39 years old, 40-59 years, and over 59 years old. According to an Ipsos-France poll, during the first round of the 2022 Presidential elections, the *Rassemblement National* was stronger among those under 60 years old. If we use as a control group municipalities without a school, our leads and lags are not statistically significant, and we cannot conclude that closing a school leads a municipality to lose population, for any of the cohorts. In Appendix Figure C.11, we present results when the control group is municipalities with one school and conclude that results are similar, but with a small population decline among the citizens at least 60 years old.

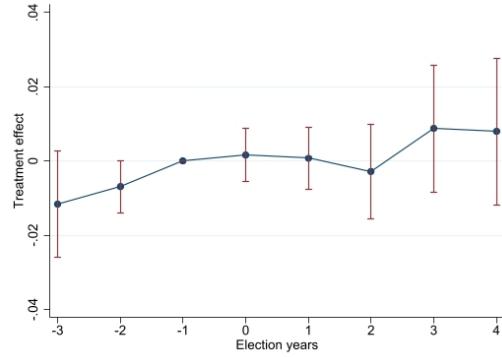
Figure 12: Effect of closing a school on registered voters



Notes. The dependent variables are the log number of registered voters in (a), the (log) population between 20 and 39 years old in (b), the (log) population between 40 to 59 years old in (c), the (log) population above 60 years old. In the figure, each point and the 95 percent confidence interval in red, represent the treat-control difference from estimating Equation (1). The regression further includes a municipality-level specific trend. Control group are municipalities that never have a school. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

palities (with a school closure) and use the same matching procedure described in Section 5. In Figure 14a, we use as a treatment group municipalities without a school but with a school closure in a neighboring municipality; the control group are the municipalities without a school and without a school closure in a neighboring municipality. In Figure 14b, the treatment group are municipalities with one school and with a school closure in a neighboring municipality (but not in their

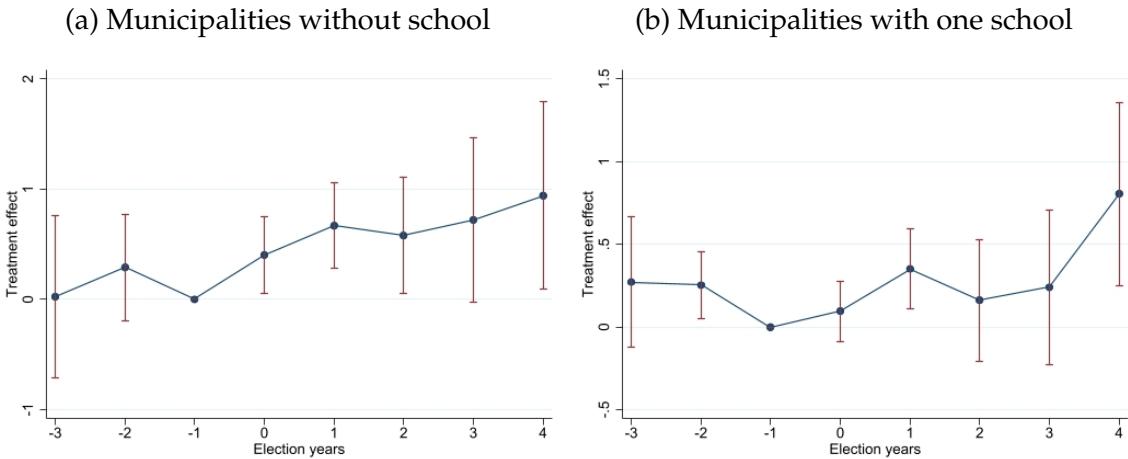
Figure 13: Effect of closing a school on women's employment



Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). The control group is municipalities that never have a school. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

own), and the control group are municipalities with one school without a school closure in their municipality or neighbor. The effects are smaller than in the directly treated municipalities, especially those with a school.

Figure 14: Treatment dynamics - Effect of a school closure on Rassemblement National voting in neighboring municipalities



Notes. In the figure, each point and the 95 percent confidence interval in red, represent the treat-control difference from estimating Equation (1). Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

7 Conclusion

We study the electoral impact on the vote for the far-right in France, at the municipal level. Our estimates employ a matched difference-in-differences design. In municipalities with one school, located mostly in rural areas, losing access to this public service increases votes for *Rassemblement National*, the most successful far-right party in France, by 0.645 percentage points in the following election. The effect continues to grow in the next three elections and, approximately 15 years later, municipalities that lost their school vote 1.711 percentage points more on the RN than municipalities without a school closure. In municipalities with more than one school, a school closure does not seem to impact far-right voting, suggesting the political impact of school closures is a question of absolute access rather than density of access.

Our findings have important policy implications and inform the global debate on the geography of far-right voting. In particular, policymakers should consider policies that consider the revitalization of rural areas through continued access to public services. Investing in these regions is also a matter of political survival for mainstream political actors, furthering the quality of democracies.

Acknowledgements

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A Political orientations

We allocate presidential candidates into six political orientations (far-left, left, green, liberal, right, and far-right), considering their parties and following the Chapel Hill Expert Survey (Jolly et al. (2022)). The following tables show the mapping between candidates, political labels, and orientations.

1995 Presidential Elections		
Name of the candidate	Party	Political orientation
Lionel Jospin	Socialist	Left
Jacques Chirac	Rassemblement pour la République	Right
Édouard Balladur	Union pour la Démocratie Française	Liberal
Jean-Marie Le Pen	Front National	Far-right
Robert Hue	Parti Communiste Français	Far-left
Arlette Laguiller	Lutte Ouvrière	Far-left
Philippe de Villiers	Mouvement pour la France	Right
Dominique Voynet	Les Verts	Green
Jacques Cheminade	Fédération pour une Nouvelle Solidarité	Left

2002 Presidential Elections

Name of the candidate	Party	Political orientation
Jacques Chirac	Rassemblement pour la République	Right
Jean-Marie Le Pen	Front National	Far-right
Lionel Jospin	Socialiste	Left
François Bayrou	Union pour la Démocratie Française	Liberal
Arlette Laguiller	Lutte Ouvrière	Far-left
Jean-Pierre Chevènement	Mouvement des Citoyens	Left
Noël Mamère	Les Verts	Green
Olivier Besancenot	Ligue Communiste Révolutionnaire	Far-left
Jean Saint-Josse	Chasse, Pêche, Nature et Traditions	Right
Alain Madelin	Démocratie Libérale	Right
Robert Hue	Parti Communiste Français	Far-left
Bruno Mégret	Mouvement National Républicain	Far-right
Christiane Taubira	Parti Radical de Gauche	Far-left
Corinne Le Page	Cap21	Green
Christine Boutin	Forum des Républicains Sociaux	Right
Daniel Gluckstein	Parti des Travailleurs	Far-left

2007 Presidential Elections

Name of the candidate	Party	Political orientation
Nicolas Sarkozy	Union pour un Mouvement Populaire	Right
Ségolène Royal	Parti Socialiste	Left
François Bayrou	Union pour la Démocratie Française	Liberal
Jean-Marie Le Pen	Front National	Far-right
Olivier Besancenot	Ligue Communiste Révolutionnaire	Far-left
Philippe de Villiers	Mouvement pour la France	Far-right
Marie-George Buffet	Parti Communiste Français	Far-left
Dominique Voynet	Les Verts	Green
Arlette Laguiller	Lutte Ouvrière	Far-left
José Bové	Divers de gauche (no party affiliation)	Left
Frédéric Nihous	Parti Chasse, pêche, nature et traditions	Right
Gérard Schivardi	Parti des Travailleurs	Far-left

2012 Presidential Elections

Name of the candidate	Party	Political orientation
François Hollande	Parti Socialiste	Left
Nicolas Sarkozy	Union pour un Mouvement Populaire	Right
Marine Le Pen	Front National	Far-right
Jean-Luc Mélenchon	Parti de Gauche	Far-left
François Bayrou	MoDem	Liberal
Eva Joly	Europe Écologie les Verts	Green
Nicolas Dupont-Aignan	Debout la République	Far-right
Philippe Poutou	Nouveau Parti Anticapitaliste	Far-left
Nathalie Arthaud	Lutte Ouvrière	Far-left
Jacques Cheminade	Solidarité et Progrès	Far-left

2017 Presidential Elections

Name of the candidate	Party	Political orientation
Emmanuel Macron	En Marche	Liberal
Marine Le Pen	Front National	Far-right
François Fillon	Les Républicains	Right
Jean-Luc Mélenchon	La France Insoumise	Far-left
Benoît Hamon	Parti Socialiste	Left
Nicolas Dupont-Aignan	Debout la France	Far-right
Jean Lassalle	Résistons	Right
Philippe Poutou	Nouveau Parti Anticapitaliste	Far-left
François Asselineau	Union Populaire Républicaine	Far-right
Nathalie Arthaud	Lutte Ouvrière	Far-left
Jacques Cheminade	Solidarité et Progrès	Far-left

2022 Presidential Elections

Name of the candidate	Party	Political orientation
Emmanuel Macron	En Marche	Liberal
Marine Le Pen	Rassemblement National	Far-right
Jean-Luc Mélenchon	La France Insoumise	Far-left
Éric Zemmour	Réconquête	Far-right
Valérie Pécresse	Les Républicains	Right
Yannick Jadot	Europe Écologie les Verts	Green
Jean Lassalle	Résistons	Right
Fabien Roussel	Parti Communiste Français	Far-left
Nicolas Dupont-Aignan	Debout la France	Far-right
Anne Hidalgo	Parti Socialiste	Left
Philippe Poutou	Nouveau Parti Anticapitaliste	Far-left
Nathalie Arthaud	Lutte Ouvrière	Far-left

B Methodology

Difference-in-differences require that, in the absence of treatment, the average outcomes for the treated and control groups would have followed parallel paths over time. As referred by Abadie (2005), this assumption may be implausible if pre-treatment characteristics associated with the dynamics of the outcome variable are unbalanced between the two groups. We match control and treated municipalities regarding their characteristics in 1995, as referred in Section 5. We follow Hainmueller (2012) and use entropy balancing to reweight observations to achieve balance.

Table B1: Descriptive statistics by closing and non-closing municipalities

	Closed	Not closed	Closed balanced	Not closed balanced
RN vote share	14.09	12.77	14.09	13.22
unemployment share	0.08	0.09	0.08	0.08
agriculture sector share	0.42	0.55	0.42	0.42
industry sector share	0.11	0.08	0.11	0.11
civil construction sector share	0.10	0.09	0.10	0.10
tertiary sector share	0.37	0.29	0.37	0.37
less than high school share	0.84	0.82	0.84	0.84
high school share	0.09	0.09	0.09	0.09
higher education share	0.08	0.09	0.08	0.08
babies (< 5 years old)	0.06	0.05	0.06	0.06
children (5-9 years old)	0.06	0.06	0.06	0.06
young (10-24 years old)	0.19	0.16	0.19	0.19
adults (25-64 years old)	0.51	0.51	0.51	0.51
elderly (> 64 years old)	0.19	0.21	0.19	0.19
population	240.89	144.70	240.89	336.14
density	29.78	19.13	29.78	29.79
rural	0.98	1.00	0.98	0.98
foreigners	0.02	0.02	0.02	0.02
Observations	1642	5522	1642	5522

Source: INSEE - French censuses (1990, 1999). A linear interpolation is performed to convert data annually. The table compares municipalities that experienced the closure of their only school between 1995 and 2017 (closed) and those that did not have a school (not closed). Values correspond to the mean and in the last two columns are reweighted using entropy balancing.

C Results

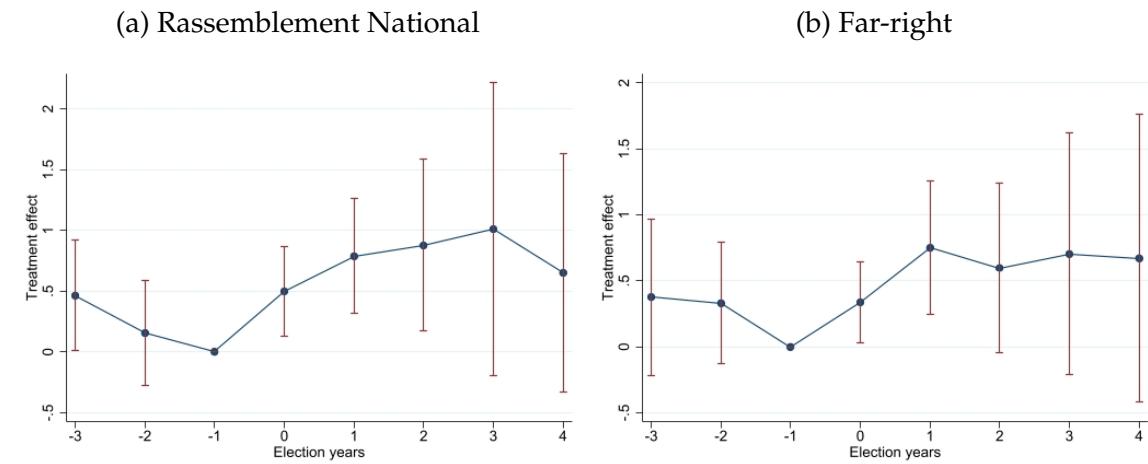
C.1 Presidential elections

Table C1: Descriptive statistics by closing and non-closing municipalities (Treatment and control group: municipalities with one school)

	Not balanced		Balanced	
	Closed	Not closed	Closed	Not closed
RN vote share	20.47	19.51	20.47	19.16
unemployment share	0.08	0.09	0.08	0.08
agriculture sector share	0.42	0.32	0.42	0.42
industry sector share	0.11	0.14	0.11	0.11
civil construction sector share	0.10	0.11	0.10	0.10
tertiary sector share	0.37	0.43	0.37	0.37
less than high school share	0.84	0.82	0.84	0.84
high school share	0.09	0.09	0.09	0.09
higher education share	0.08	0.09	0.08	0.08
babies (<5 years old)	0.06	0.06	0.06	0.06
children (5-9 years old)	0.06	0.07	0.06	0.06
young (10-24 years old)	0.19	0.18	0.19	0.19
adults (25-64 years old)	0.51	0.51	0.51	0.51
elderly (>64 years old)	0.19	0.18	0.19	0.19
population	240.89	532.22	240.89	257.67
density	29.78	49.19	29.78	29.86
rural	0.98	0.95	0.98	0.98
foreigners share	0.02	0.02	0.02	0.02
Observations	1642	6323	1642	6323

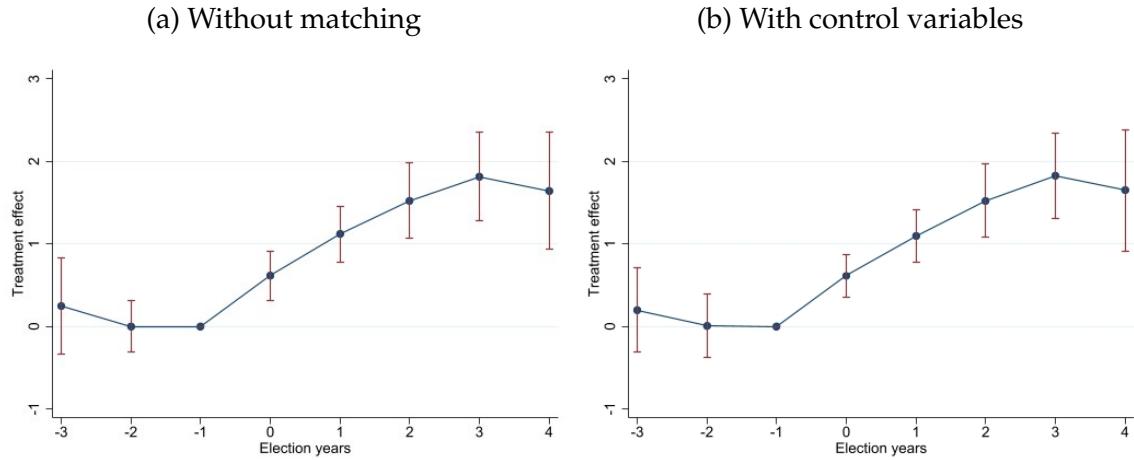
Source: INSEE - French censuses (1990, 1999). A linear interpolation is performed to convert data annually. The table compares municipalities that experienced the closure of their only school between 1995 and 2017 (closed) and those that did not and do not have a school or have one (not closed). Values correspond to the mean, and the last two columns are reweighted using entropy balancing.

Figure C.1: Treatment dynamics - Effect of a school closure on Presidential elections (Treatment and control group: municipalities with one school)



Notes. In the figure, each point and 95 percent confidence interval in red, represent the treat-control difference from estimating Equation (1). For both panels, the control group is municipalities with one primary school. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

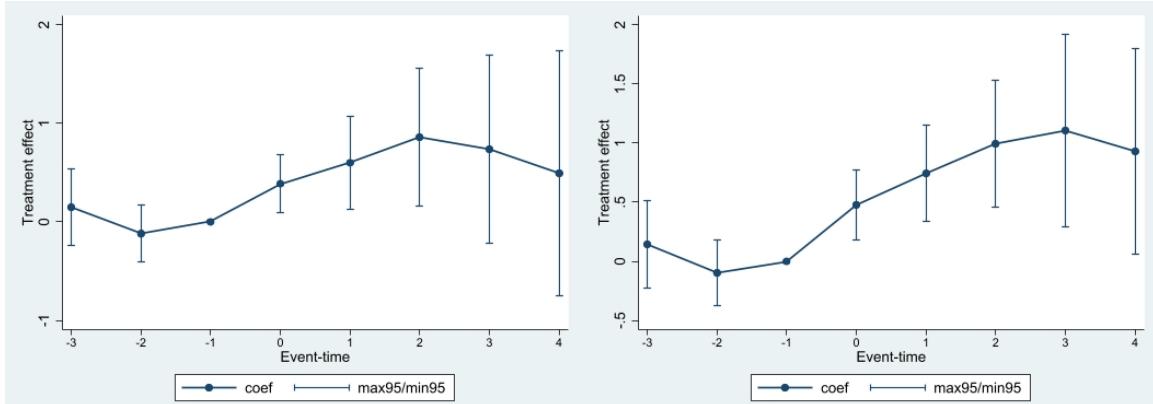
Figure C.2: Treatment dynamics - Effect of school closure on Rassemblement National voting in Presidential elections



Notes. In the figure, each point and 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Panel (a) reports event study estimation results for municipalities with one school without matching, and panel (b) without matching but adding control variables. The control group is municipalities without a school and not yet treated. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

Figure C.3: Treatment dynamics - Effect of a school closure on Rassemblement National voting in Presidential elections (Traditional two-way fixed effects method)

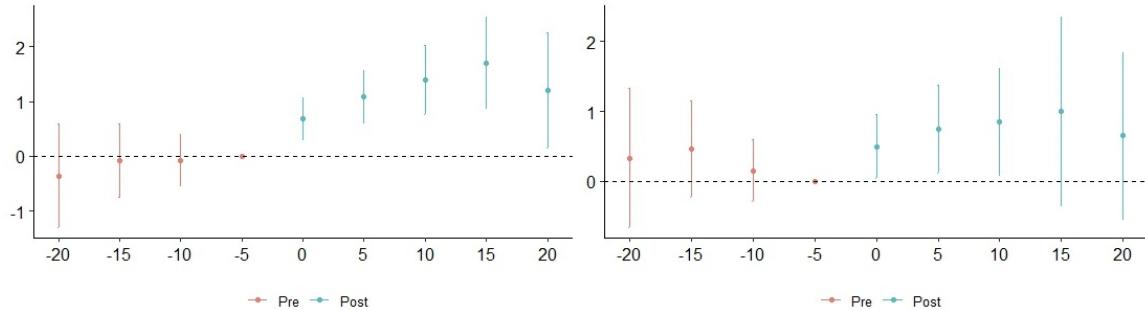
(a) Control group: municipalities without a school (b) Control group: municipalities with 1 school



Notes. In the figure, each point and the associated 95 percent confidence interval represent the treat-control difference from estimating Equation (1) using the traditional two-way fixed effects. Panel (a) reports event study estimation results for treated municipalities with one school and control municipalities without a school, (b) the control group is municipalities with one school that never closed. Matching is performed using entropy balancing. The control group is municipalities without a school and not yet treated. Standard errors are clustered at the municipality level.

Figure C.4: Treatment dynamics - Effect of a school closure on Rassemblement National voting in Presidential elections (Callaway & Sant'Anna (2021) estimator)

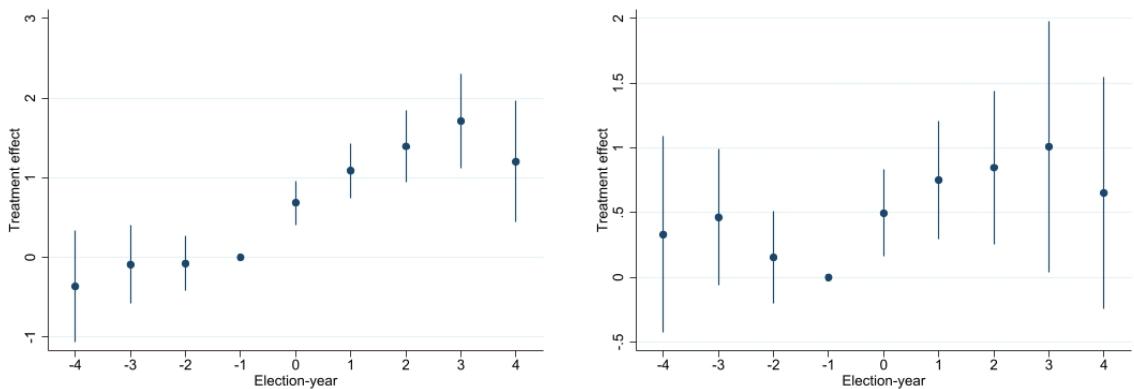
(a) Control group: municipalities without one school (b) Control group: municipalities with 1 one school



Notes. In the figure, each point and the associated 95 percent confidence interval represent the treat-control difference from estimating Equation (1). Panel (a) reports event study estimation results for treated municipalities with one school and control municipalities without a school, (b) the control group is municipalities with one school that never closed. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of Callaway & Sant'Anna (2021).

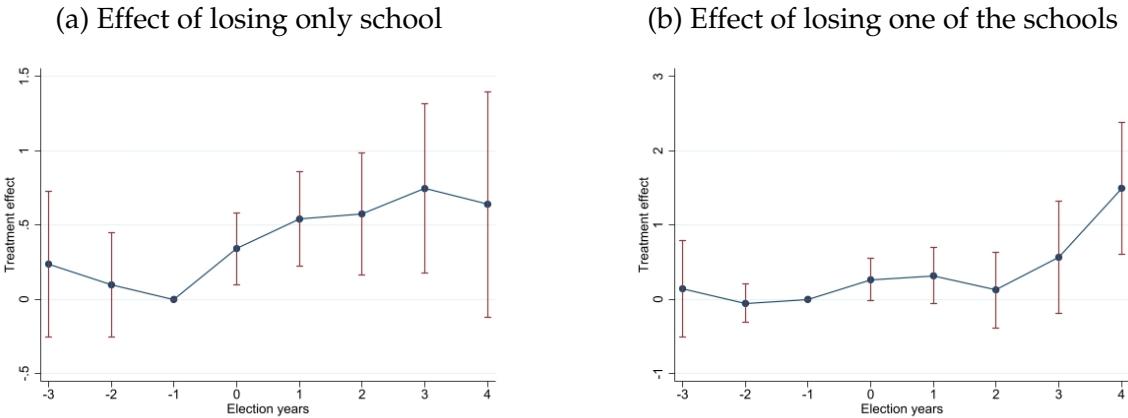
Figure C.5: Treatment dynamics - Effect of a school closure on Rassemblement National voting in Presidential elections (Sun & Abraham (2021) estimator)

(a) Control group: municipalities without one school (b) Control group: municipalities with 1 one school



Notes. In the figure, each point and the associated 95 percent confidence interval represent the treat-control difference from estimating Equation (1). Panel (a) reports event study estimation results for treated municipalities with one school and control municipalities without a school, (b) the control group is municipalities with one school that never closed. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of Sun & Abraham (2021).

Figure C.6: Treatment dynamics - Effect of a school closure on Rassemblement National voting in Presidential elections (regional-year fixed effects)



Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1) with regional-year fixed effects. Panel (a) reports event study estimation results for treated municipalities with one school and control municipalities without school, (b) for municipalities with two to four schools. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

C.2 Heterogeneous effects

C.2.1 Political parties

Table C2: Average effect of closing a school on turnout and other political parties voting at presidential elections (Treated and control group: municipalities with one school)

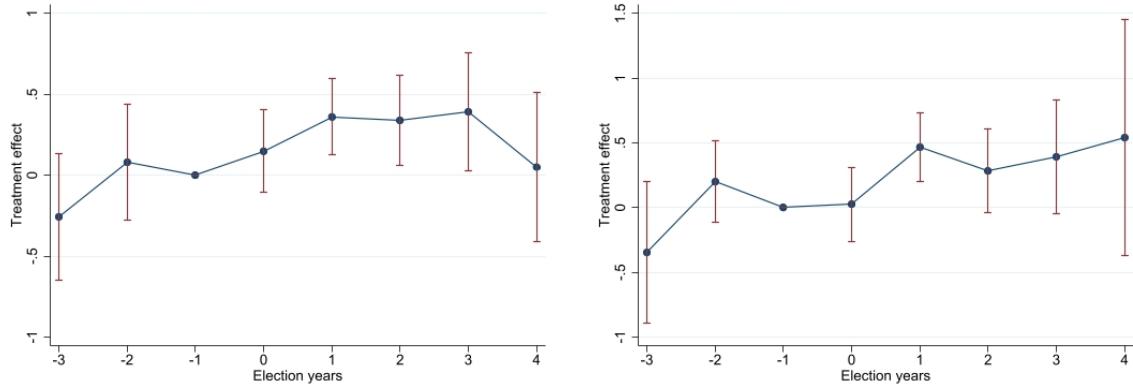
	Abstention	Far-left	Left	Liberal	Right
Closed	0.305** (0.151)	-0.765** (0.326)	0.796*** (0.258)	-0.139 (0.275)	-0.464* (0.270)
Observations	32693	32693	32693	32693	32693

Treated and control municipalities only have one school in 1995.

Matched difference-in-differences with staggered adoption. Matching is performed using entropy balancing. Estimations obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020). Standard errors clustered at the municipality level in parenthesis. $\dagger p < 0.1$, $* p < 0.05$, $** p < 0.01$, $*** p < 0.001$.

Figure C.7: Treatment dynamics - Effect of the only school in the municipality closing on abstention rate in Presidential elections

(a) Control group: municipalities without school (b) Control group: municipalities with 1 school

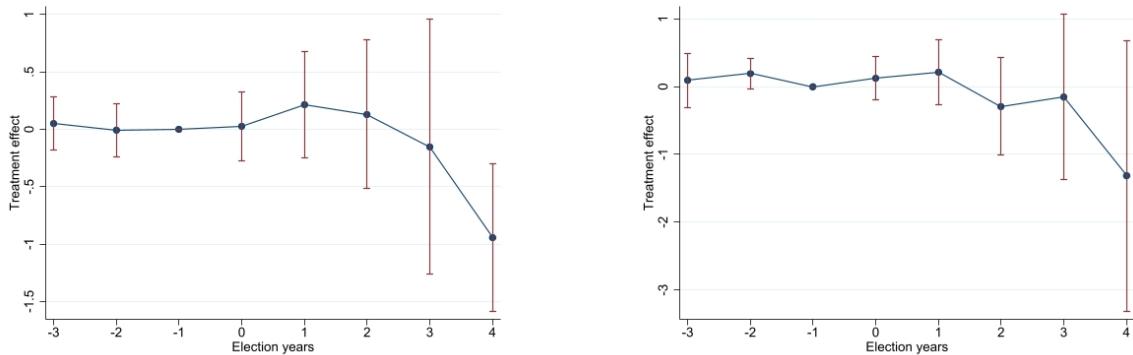


Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Panel (a) and (b) report event-study estimation results for treated municipalities with one school that eventually closed. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

Figure C.8: Treatment dynamics - Effect of the only school in the municipality closing on far-left voting in Presidential elections

(a) Control group: municipalities without school

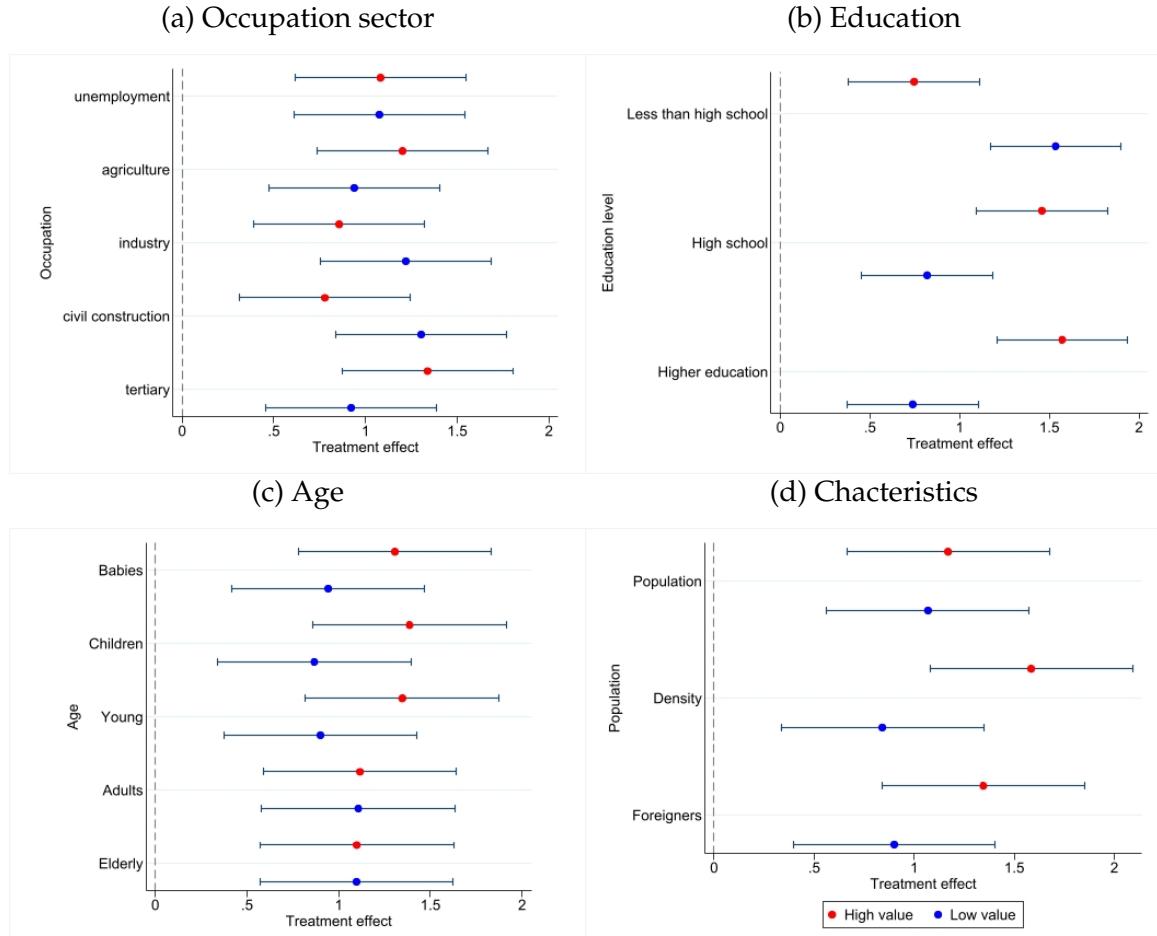
(b) Control group: municipalities with 1 school



Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Panel (a) and (b) report event-study estimation results for treated municipalities with one school that eventually closed. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

C.2.2 Municipalities' characteristics

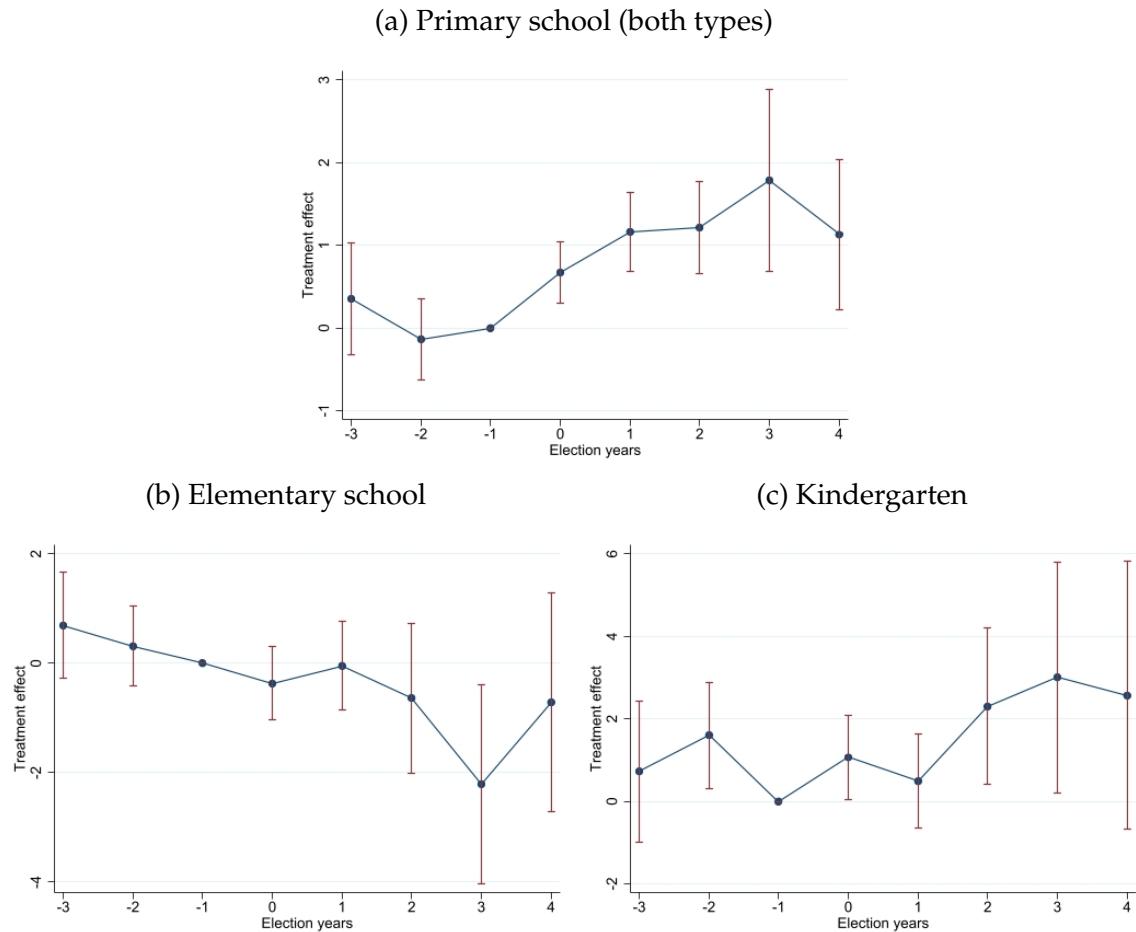
Figure C.9: Treatment heterogeneity by municipality characteristics in 1995 - Effect of closing a school on Rassemblement National voting in the first presidential election after treatment



Notes. The incertitude of each point is asserted with 95% confidence intervals. Estimated β from equation (1) in the full sample specification.

C.2.3 Type of school

Figure C.10: Treatment dynamics - Effect of a school closure on Rassemblement National voting in Presidential elections by type of school

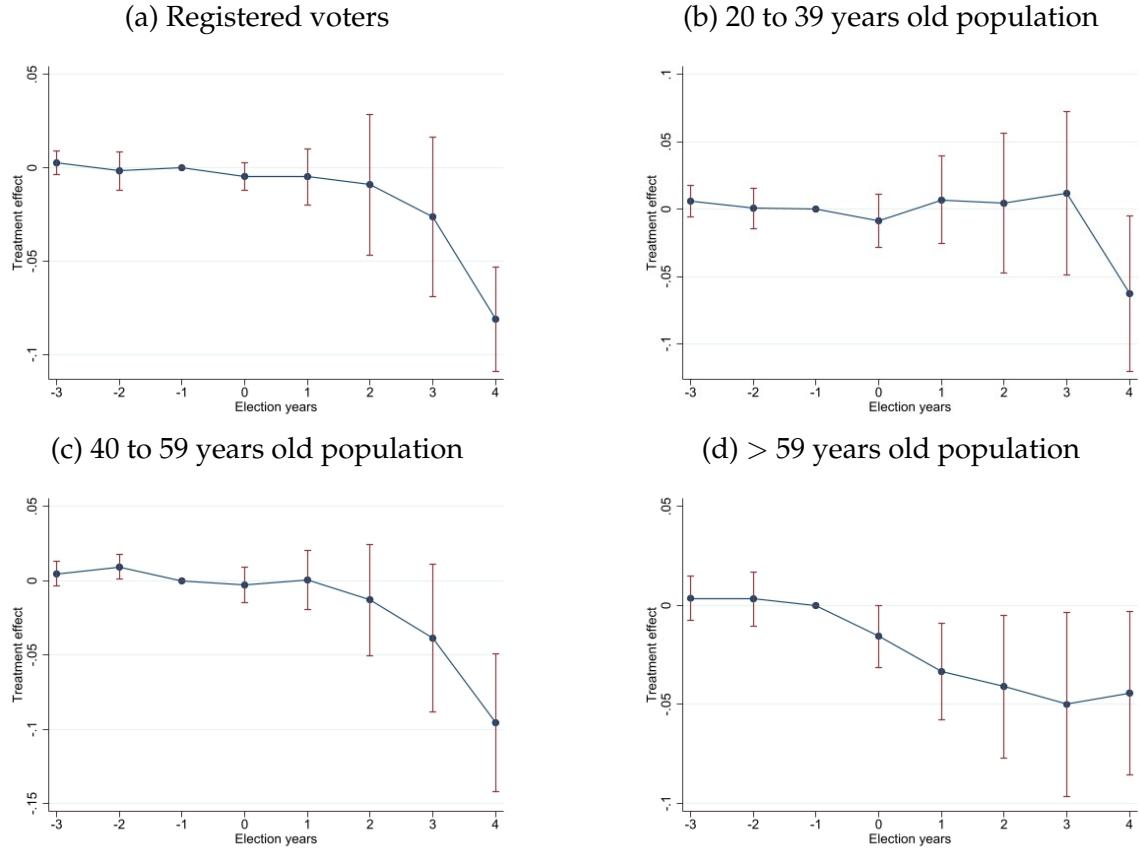


Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Panel (a) reports event study estimation results for treated municipalities with one primary school and the control group is municipalities with only one primary school that did not close; (b) reports event study estimation results for treated municipalities with one elementary school and the control group is municipalities with only one elementary school that did not close; (c) reports event study estimation results for treated municipalities with one kindergarten school and the control group is municipalities with only one kindergarten school that did not close. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

C.3 Channels

C.3.1 Compositional changes

Figure C.11: Effect of closing a school on population movements (Treatment and control group: municipalities with one school)



Notes. The dependent variables are the log number of registered voters in (a), the (log) population between 20 and 39 years old in (b), the (log) population between 40 to 59 years old in (c), the (log) population above 60 years old. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). The regression further includes a municipality-level specific trend. Control groups are municipalities with one school (and did not lose it). Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).