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

Marli Fernandes and José Tavares[*]

Nova School of Business and Economics

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Abstract

School closures and consolidation is a policy advocated in several OECD countries. This paper studies the impact of school closures on far-right votes in France between 1995 and 2022. Using a matched difference-in-differences design, we causally show that votes on the Rassemblement National increased by 0.713 percentage points in the first election in municipalities where the only school closed. This effect grows in the next three elections and reaches 1.818 percentage points. We show that voters leaving the municipality cannot explain this effect. However, we provide suggestive evidence that the increase was higher in places that initially voted more for the far-right. In municipalities with more than one school, an effect does not seem to exist, showing that citizens are concerned with the accessibility of public service.

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

JEL classification: D72, D91, H41

1 Introduction

Voting behavior and political attitudes in Western democracies increasingly reveal strong spatial patterns rooted in geographic inequalities serving as breeding grounds for far-right populist parties. In the US, large cities are Democratic

strongholds, while rural counties are a cornerstone for the Republicans. Similar political divergences between urban and rural places have been found in the UK 2016 Brexit vote, the rise of Rassemblement National in France, and the Yellow Vests movement. What leads these places to embrace anti-elite rhetoric and opposition to the establishment? Previous research has highlighted the role of economic decline as the primary driver of spatial divide. We complement this literature by investigating the role of the provision of public services.

In the 2017 and 2022 French Presidential elections, a far-right candidate (Marine Le Pen from the Rassemblement National) reached the second round and 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 across the country started, originating 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, the President 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 four main demands of the citizens: a decrease in taxes, closer public services, institutional reform, and fight climate change.

Focusing on the second demand, we engage in the debate about the effects of public services provision on election outcomes and study, for the first time, to our knowledge, the role of closing schools in far-right voting. Given France's central role in the European Union, understanding French politics is essential in its own right. More importantly, this is not a French feature. Despite its unpopularity, school closures and consolidation is a policy advocated in several OECD countries

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[1]By French law, all drivers must have yellow high-visibility vests in their vehicles and wear them in emergencies. They were chosen for convenience, visibility, and association with working-class industries.

(Abalde (2014)). Thanks to the economies of scale, this policy is effective in 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) find that grades for older students rise while for younger students they decrease in China, while De Haan et al. (2016) find a small positive effect in the Netherlands. For Denmark, Beuchert et al. (2018) find a short-term negative effect associated with the psychological cost of changing the environment. Between 1930 and 1970, over 120,000 schools were eliminated in the US through consolidation; 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 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

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[2]Engberg 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.

of closing public services in explaining changes in electoral outcomes.

We take advantage of the schools closing in France between 1995 and 2017 to identify the effect of losing important public services on far-right voting in presidential elections. School closures are a good experiment for examining the feelings that there is no hope for these municipalities, as the process of closing a school is centralized at the national level, leaving municipalities with bare discretion over the closing. We examine the evolution of the far-right vote, especially in the RN (the most successful far-right party), in municipalities with and without school closures, before and after the event using a matched difference-in-differences strategy in a staggered adoption design. We present an analysis demonstrating the absence of pre-trends and 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 0.713 percentage points in the election after the school closing, an effect that grows in the next three elections, reaching a maximum effect of 1.818 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 participate in the election and 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, an effect does not exist on RN voting. Therefore, it is possible to conclude that in the previous case, citizens were concerned about the access to the public service.

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. (n.d.), 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.

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 (2019) 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 voters 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

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[3]Circulaire 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.

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 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

7

the number of school closures per year, while Figure 2 shows the localization of closures per legislative period.

Figure 1: Number of school closures in France between 1993 and 2017
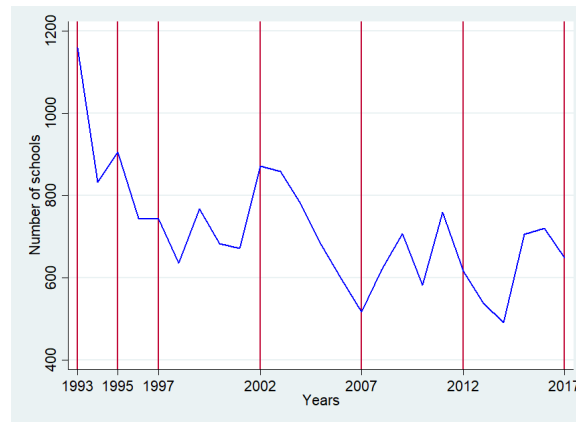
Source: French Ministry of Education. *Notes:* Red vertical lines represent presidential and legislative election years.

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 presidential 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.

8

Figure 2: Localisation of school closures

(a) 1995-2002

(b) 2002-2007

(c) 2007-2012

(d) 2012-2017
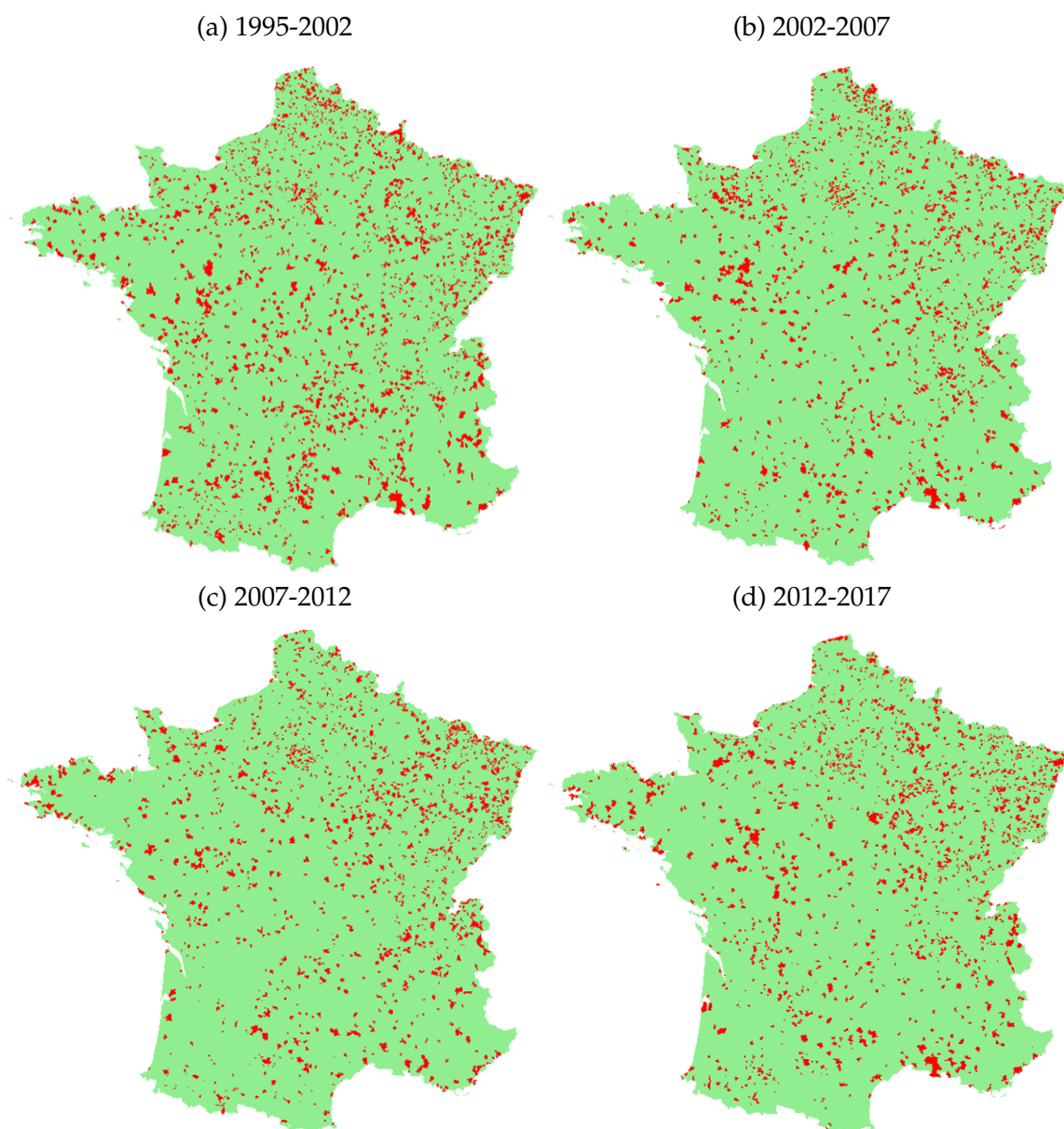
Source: French Ministry of Education. *Notes:* Map of the localization of school closures. Municipalities in green represent municipalities without school closures, and municipalities in red represent school closures.

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, 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.

# 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.

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[4]2012, February 2012.   Marine Le Pen, héraut de la ruralité.   *Europe1*. https://www.europe1.fr/politique/Marine-Le-Pen-heraut-de-la-ruralite-356998

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

| (a) 1995 | (b) 2002 | (c) 2007 |

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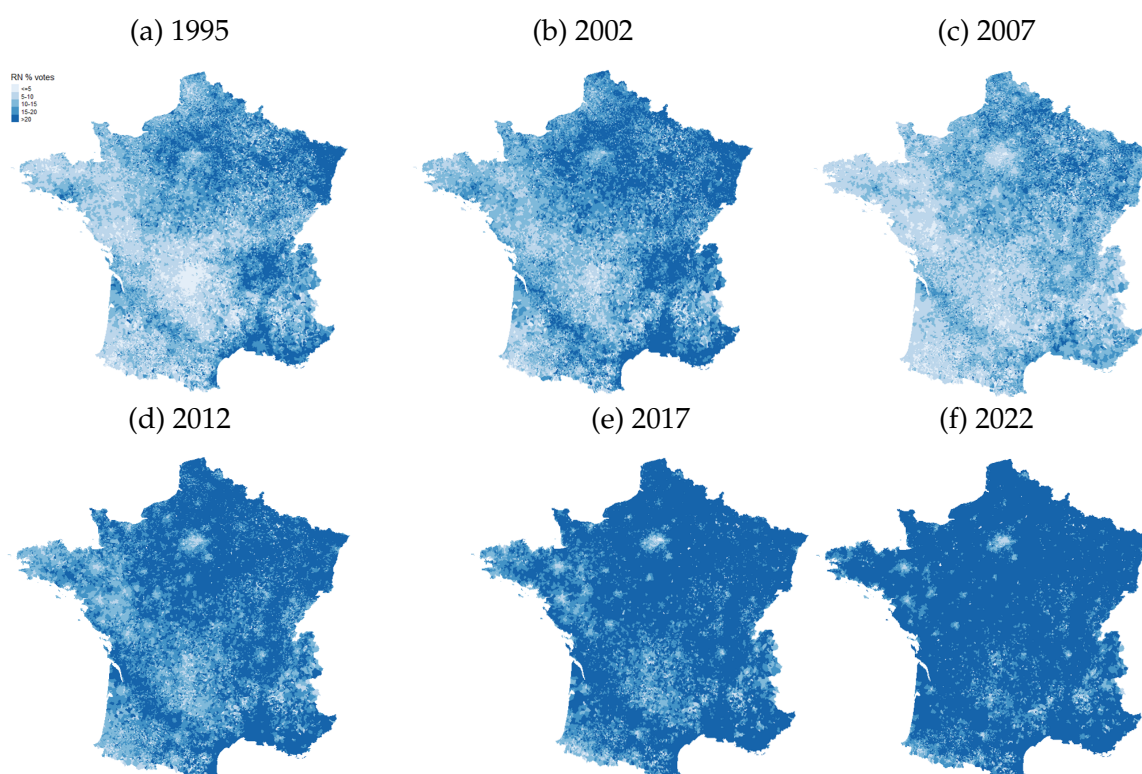
Source: Ministry of Interior. *Notes:* Map of the RN vote share at the first round of presidential elections in 1995, 2002, 2007, 2012, 2017, and 2022. The stronger the blue, the higher the RN vote share.

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. Demo-

graphic 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, education, and vacant housing. We also use the unemployment rate, (log) population, and density. For each measure, we interpolate the variable between census years.

Data on schools Data on schools, including year of opening and closing and geographic coordinates 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

Table 1 shows static differences between municipalities with a school closure 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		2 to 4 schools		
	Closed	Not closed	Difference	Closed	Not closed	Difference
far-right vote share	20.58	20.08	0.50*	20.19	20.17	0.03
unemployment share	0.08	0.09	0.00	0.09	0.09	0.00*
agriculture sector share	0.42	0.54	-0.13***	0.16	0.11	0.05***
industry sector share	0.11	0.08	0.03***	0.21	0.21	0.00
civil construction share	0.10	0.08	0.02***	0.10	0.10	0.00
tertiary sector share	0.37	0.30	0.08***	0.53	0.59	-0.05***
less than high school share	0.83	0.81	0.02***	0.81	0.80	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	0.06	0.00	0.06	0.06	-0.00*
children (5-9 years old)	0.06	0.06	0.01***	0.07	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***	0.18	0.17	0.00
population	245.21	140.46	104.74***	1481.31	2080.95	-599.63***
density	30.68	19.12	11.56***	124.95	157.27	-32.32**
rural	0.98	0.99	-0.02***	0.74	0.61	0.13***
vacant housing share	0.08	0.08	-0.00	0.07	0.07	0.00
Observations	1713	4487	6200	731	782	1513

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

This paper uses 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:

$$Y_{mt} = \alpha + \beta closed_{mt} + \delta_t + \theta_m + \epsilon_{mt} \tag{1}$$

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 see any school close. The parameter β is the causal effect of $closed_{mt}$ on Y_{mt}. Y_{mt} is expressed votes on the RN. δ_t and θ_m are election-year and municipality fixed effects, respectively. Standard errors are clustered at the municipality level.

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

The main concern is that treated and control units are different. For example, a municipality that loses a school may be on a declining economic path, and votes on the far-right are associated with an economic downturn. Matching on observables helps 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, considering observed variables in 1995, by matching following Hainmueller (2012) that uses entropy balancing to reweight observations to achieve balance.[5] Municipalities are balanced on demographics (log of population; density; share of babies, children, young, adults, elderly, without high school, high school, higher education), local labor market indicators (un-

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

employment rate, share of population working in agriculture, industry, civil construction, and tertiary sector), and characteristics (vacant housing and a dummy if it is located in a rural area). In Table B1, we present descriptive statistics with the characteristics reweighted. In addition, we perform a pre-trend analysis in Figure 4a and present placebo tests in Table B2.

We use municipalities that never had a school as a control group from 1995 to 2022. These municipalities are potentially in a more similar economic situation than municipalities that continually have a school since these last ones are on a different trajectory because they start larger and more economically connected relative to municipalities that lose their school. We test our results' robustness using municipalities with only one primary school as a control group. Results are available in the Appendix.

Recent literature in econometrics has demonstrated that in the presence of heterogeneous treatment effects, the coefficients on the leads and lags of the treatment variable in an event study design place negative weights on the average treatment effects for certain groups and periods (Goodman-Bacon (2018), De Chaisemartin & d'Haultfoeuille (2020), Sun & Abraham (2020), Callaway & Sant'Anna (2021)). When already-treated units act as controls, changes in their treatment effects over time get subtracted. This negative weighting arises when treatment effects vary over time, biasing difference-in-differences estimates from the true treatment effect. Estimations present in this paper use the De Chaisemartin & d'Haultfoeuille (2020).[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.

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[6]We 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 one school. Hence, municipalities that experience a school closure lose 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 0.713 percentage points, and it continues to increase in the next three elections, having a maximum effect of 1.818 percentage points; in the fourth election the effect is lower, 1.331. 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 4-elections after treatment, given that this only comprises the 2022 election. A joint placebo test on the lags rejects the hypothesis that they are jointly statistically significant. Lags are also not individually statistically significant.
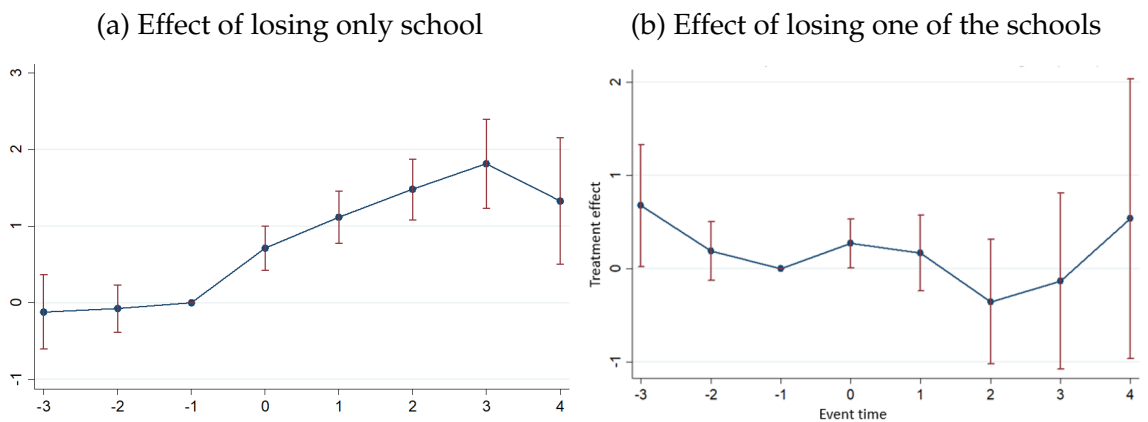
We test the robustness of our results to several specifications. Appendix Figure C.1 presents the results using as a control group municipalities with one school. In the Appendix Figure C.2 we present estimates without matching and with control variables; not matching leads to slightly overestimating the results and there is also evidence of parallel trends. In the Appendix Figure C.3, we present estimates using the traditional two-way fixed effects. We implement the Callaway & Sant'Anna (2021) estimator, which is suitable for (i) cases where the parallel trends assumption holds only after conditioning on covariates, (ii) using different comparison groups (the never-treated and not-yet-treated) and (iii) when units can anticipate treatment and adjust their behavior before the treatment is implemented; Figure C.6 presents the results and Figures C.4 and C.5 by cohort, the results do not significantly differ. In addition, we present results using the Sun & Abraham (2021) estimator (Figure C.7); again, the results are similar. Finally, Figure C.8 replicates

results in Figure 4a using regional-year fixed effects to control for heterogeneity at the regional level in the selection of school closures.

Relative to municipalities with more than one school, panel (b), we restrict the analysis to municipalities with two to four schools to improve the matching. Results do not indicate that there is an effect on voting. This means that citizens tend to worry when they lose access to the public service but are less worried when there are substitutes in the same municipality.

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

(a) Effect of losing only school   (b) Effect of losing one of the schools
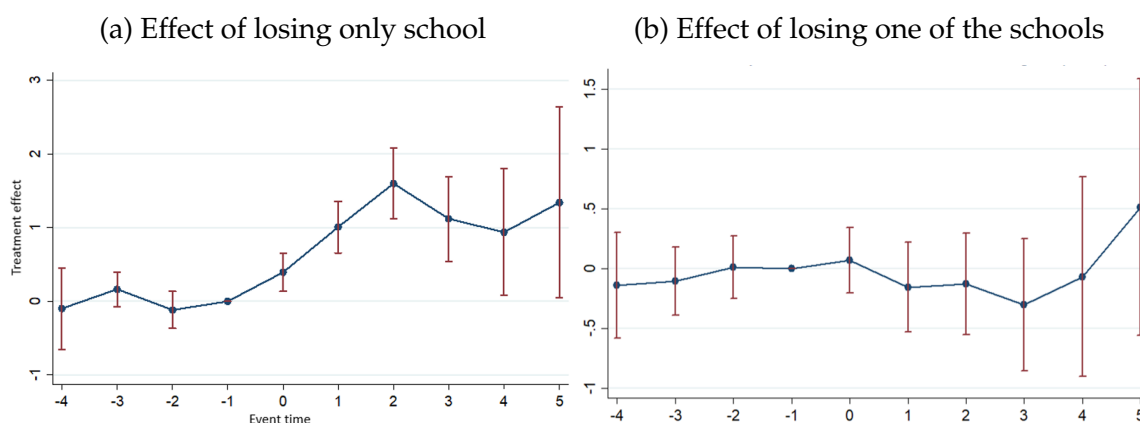
Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Panel (a) reports event study estimation results for treated municipalities with one school and control municipalities without school, (b) for municipalities 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 investigate whether the closure of a school influenced legislative elections. In legislative elections, each electoral constituency elects a member of parliament (MP). MPs primary responsibility is to act in the national interest, but they also act in the interest of their constituents. 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

| (a) Effect of losing only school | (b) Effect of losing one of the schools |

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 also affects Rassemblement National voting in legislative elections. In the election, immediately after the closure of the only school in the municipality, votes on the RN increased by 0.395 percentage points; the effect continued to grow in the next two elections, reaching a maximum effect of 1.602 percentage points. Five elections after a school closure, around 29 years later, municipalities with a school closure vote 1.345 percentage points more on the RN than municipalities without a school closure.[7]

On the other hand, closing one of the municipality's schools does not have any effect, as demonstrated in Figure 5b. 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. Furthermore, 63% of the school closures were in municipalities with only one school.

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[7]Local 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.

6.3 Opening a school

A question that naturally emerges is: what happens if, in the alternative, a school opens in a municipality? We test this hypothesis, focusing on municipalities with one or without a school. One also needs to note that the number of schools opening is significantly smaller; only 351 municipalities have a school opening, after excluding municipalities that have also seen a school closure during the analysis period; consequently, our standard errors are large. In Figure 6, we present our results. None of the leads or lags are statistically significant; furthermore, the estimated effects are negligible. In period 0, the first election after a school opening, the effect is 0.127, and in the next election, -0.408. In sum, opening a school does not seem to fight far-right voting.

Figure 6: Treatment dynamics - Effect of opening a school on Rassemblement National voting in Presidential elections
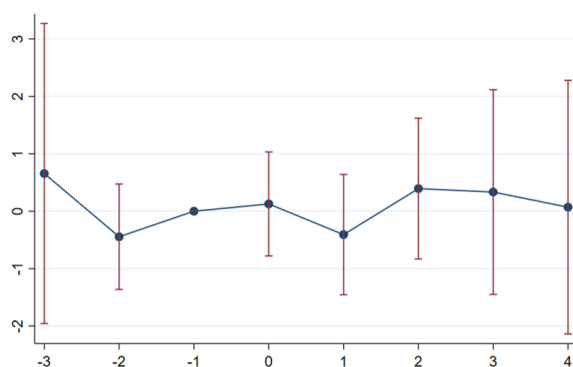
Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Treated and control groups have, at the beginning of the period, 1 to 0 schools. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

6.4 Heterogeneous effects

6.4.1 Political parties

In Figure 7, we investigate whether the increase in RN voting after the closing of the only school in the municipality was more pronounced in municipalities that

voted more/less in far-left, left, liberal, right or far-right candidates.[8] To do so, we split the sample of treated municipalities at the median vote share of the different parties' ideologies in 1995. We also include the abstention rate. It provides suggestive evidence that the increase in voting in the election after the school closure was, on average, higher where voting for the far-right was higher at the beginning of the period.

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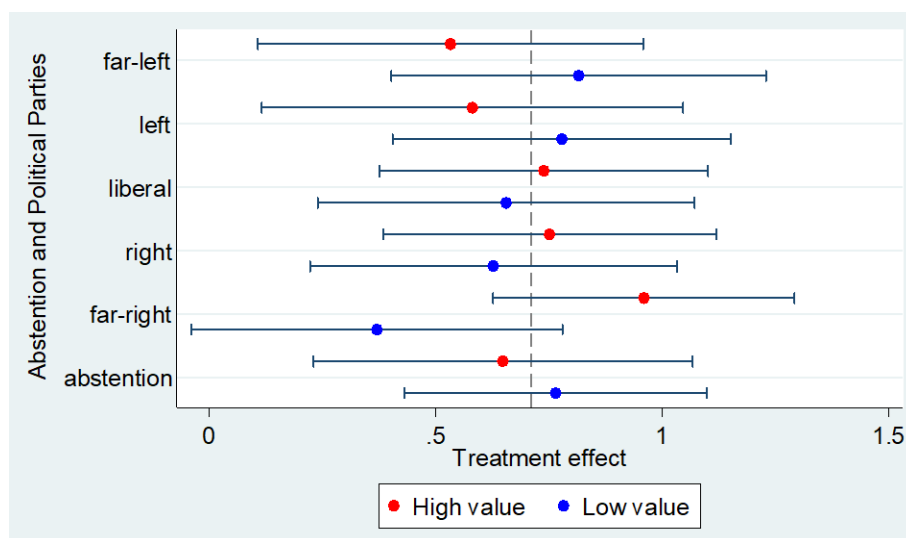
Notes. The incertitude of each point is asserted with 95% confidence intervals. Estimated β from equation (1) in the full sample specification. The dependent variable is the expressed votes on the RN at the presidential election's first round. Standard errors are clustered at the municipal level.

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 the other parties and negative, except for liberal parties. It seems that the left and right parties are the ones that lose the most with a school closure. The effect on abstention is not statistically significant. In the Appendix Table C2, we also present results for another control group: municipalities with one school; with this control group, I do not find statistically significant effects on liberal parties. Furthermore,

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

we also provide the dynamic effects results on abstention rate (Figure C.9) and far-left parties (Figure C.10) in the Appendix.

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

|	Abstention	Far-left	Left	Liberal	Right
Closed	0.147	-0.200*	-0.488**	0.385**	-0.448**
	(0.133)	(0.105)	(0.194)	(0.152)	(0.178)
Observations	37187	37187	37187	37187	37187

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. $\dagger p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001$.

6.4.2 Municipalities' characteristics

This section examines the effect's heterogeneity to see if specific characteristics of the municipality play a role in the magnitude of the results. 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 was 42% in 1995 in municipalities that experienced a school closure between 1995 and 2017. We define "High" a 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 the heterogeneity of the effect based on the proportion of babies (less than five years old) and children (5-10 years old) and density. They also permit us to test our results at the intensive margin since places with a higher share of babies or population density are more affected than places with lower levels. Our results show that votes on the RN increased the most in the most affected municipalities, and these are the most important socio-demographic characteristics. In the Appendix Figure C.11, we present an analysis of the heterogeneity of the effect based on all

observed characteristics.

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
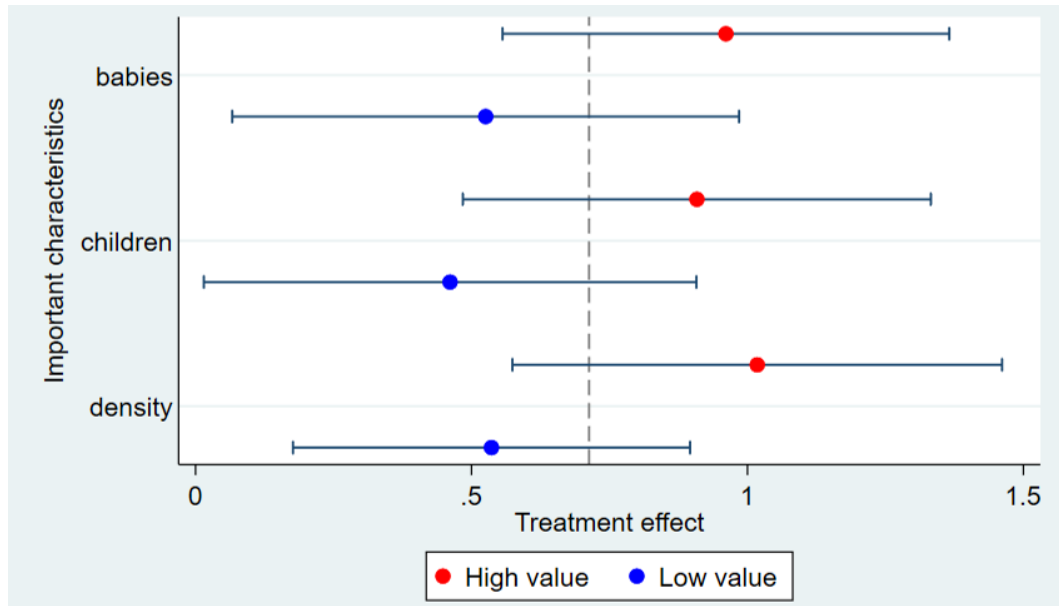

Notes. The incertitude of each point is asserted with 95% confidence intervals. Estimated β from equation (1) in the full sample specification. The dependent variable is the expressed votes on the RN at the presidential election's first round. Standard errors are clustered at the municipal level.

6.4.3 Type of school

We also investigate heterogeneity in the type of school. Our paper focuses on three types of schools: kindergarten, elementary, and schools that have both levels (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. In this sense, our initial estimations mainly capture the effect of closing schools with both levels, as shown in Figure 9a. We do not find statistically significant effects for the case of elementary schools, potentially because class size is especially small and parents are concerned with learning quality. We find large effects in the case of kindergarten closures. Our estimations are robust to using alternative control groups: municipalities with only one school

of the respective type, and we present them in the Appendix in Figure C.12.

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

(a) Primary school (both types)

(b) Elementary school

(c) Kindergarten
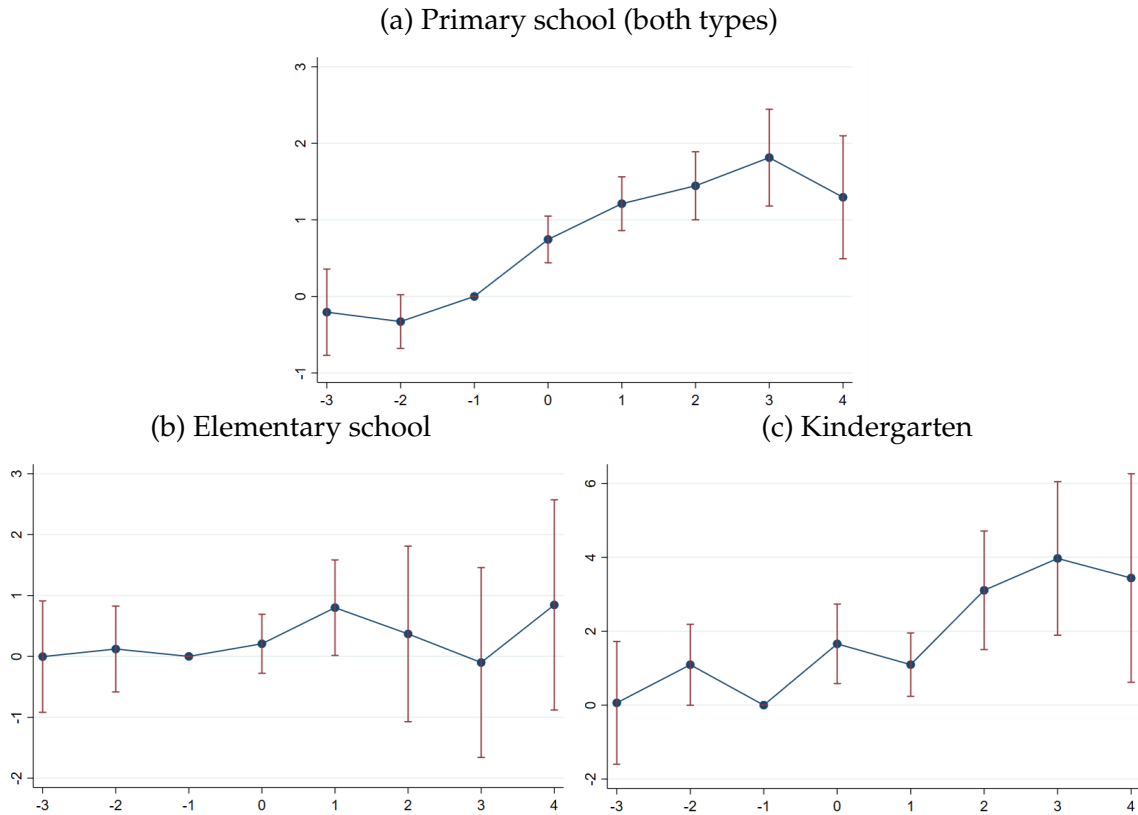
Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Panel (a) reports event study estimation results for treated municipalities with one primary school, (b) reports event study estimation results for treated 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 address the effect of potential spillovers by excluding all municipalities whose neighbors were affected by a school closure. If close control municipalities are also exposed to treatment, the effect of closing a school can be underestimated.

This leads us to drop a significant number of observations, retaining 490 treated municipalities and 1454 as controls. In Figure 10, we present the event study. The effects remain similar in magnitude to those in Figure 4a, indicating that spillover effects are unlikely to bias the results significantly.

Figure 10: Treatment dynamics - Effect of school closure on Rassemblement National voting (excluding neighboring municipalities)
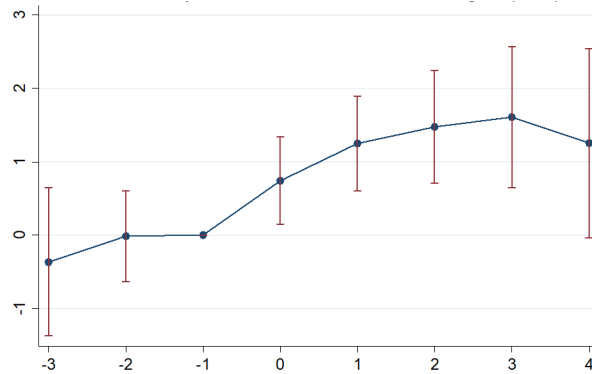
Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Treated municipalities only had one school in 1995, and control municipalities do not have any schools. Adjacent municipalities are excluded. Matching is 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 vote for other far-right candidates to express their discontent. Figure 11 presents the results for all far-right candidates. The treatment effects are slightly higher than in Figure 4a, given that most of the effect we capture comes from votes on the RN. We continue to confirm the evidence of parallel trends, given that none of the lags are statistically significant.

6.5.3 Selection into treatment

Parallel trends in the difference-in-differences allow selection bias, but the bias for selecting into treatment must be the same over periods. We test if previous electoral results drive the selection into treatment. Extensive literature shows that gov-

Figure 11: Treatment dynamics - Effect of a school closure on far-right voting
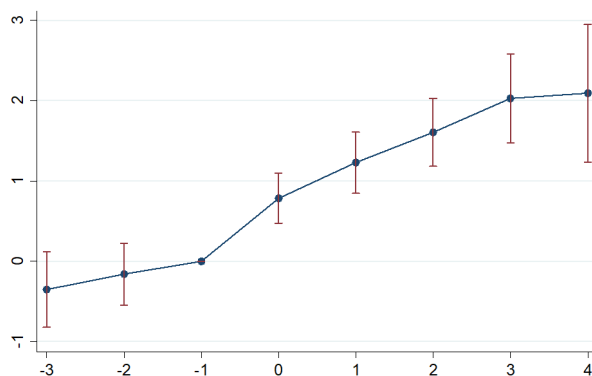
Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Treated municipalities only had one school in 1995, and control municipalities do not have any schools. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

ernments 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 if being politically aligned with the government decreases the chances of having a school closed. We 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 provides quasi-random variation in whether the government is incentivized not to close a school in a specific city to ensure the local mayor is reelected in the next election. To study this, we employ a regression discontinuity design and use the following specification:

$$y_{mt} = \gamma + \tau_0 T_{mt} + \tau_1 f(margin_{mt}) + \tau_2 T_{mt} \times f(margin_{mt}) + \xi_{mt} \qquad (2)$$

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, it estimates 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, data about their political affiliation is unavailable, and independent candidates are very common. We also test if having a plurality system impacts the number of schools closed. Furthermore, in France, there are also elections at the department level (an administrative district) that permit 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. We conclude that the government does not tend to behave strategically regarding school closures.

Table 3: Regression discontinuity designs testing selection into treatment

	(1) Municipal	(2) Departmental	(3) Local election type
Aligned	-0.044	-0.001	0.013
	(0.064)	(0.003)	(0.010)
Observations left	1783	22007	6044
Observations right	1850	24932	3177
Polyn.	1	1	1
Bandwith	15.833	10.236	450.046

Column (1) 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. Column (2) 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 (3) shows the results for a regression discontinuity design, testing the null hypothesis: having local elections under a proportional list system (versus plurinomial system with panachage) impacts the probability of closing a school.

6.6 Channels

6.6.1 Compositional changes

A possible mechanism for the increase in RN voting is compositional changes caused by the out-migration of non-RN voters; the closure of a school might lead citizens to move to municipalities where the public service is available; in other words, individuals might move from treated municipalities to control municipalities. We investigate this situation 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.
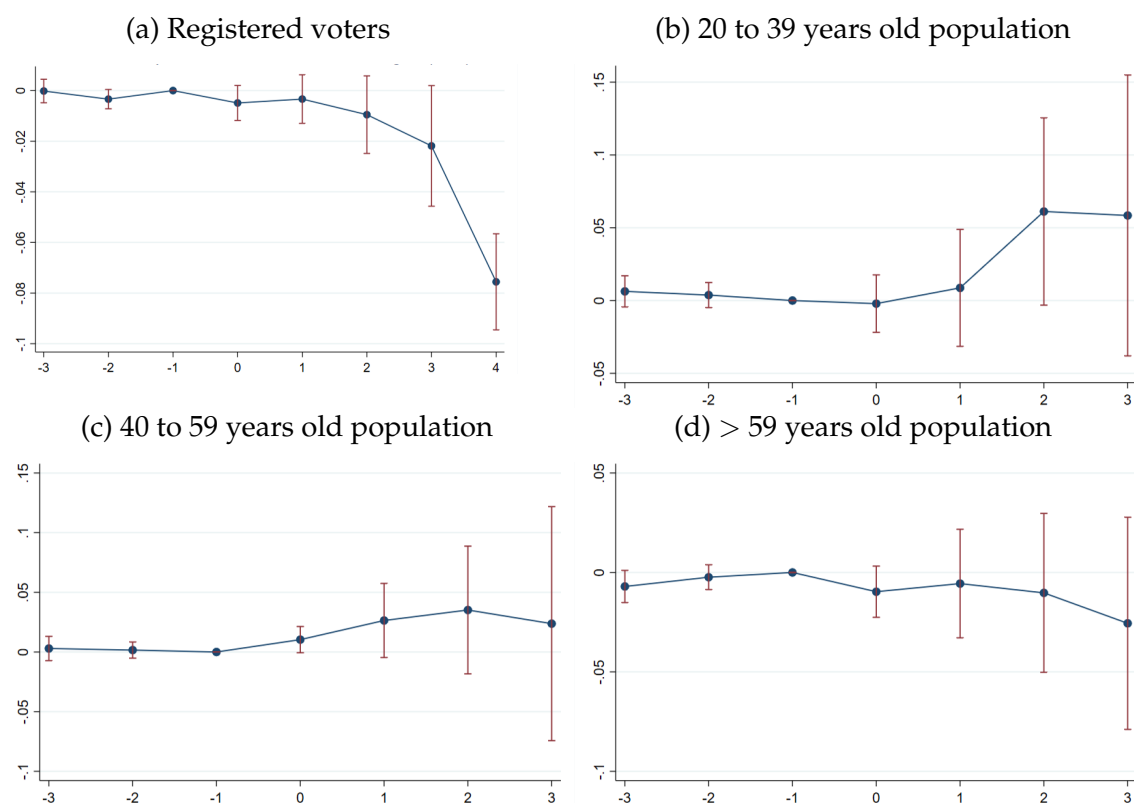
We show that closing a school does not immediately affect the number of registered voters in Figure 12a. In the first three elections (less than 15 years after), the effect is not statistically significant and close to 0. It seems clear that at least for periods 0, 1, and 2, our results cannot be explained by compositional changes. The number of registered voters starts to decrease from that moment on, decreasing by 7.56% four elections after (approximately 27 years later).[9] We 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.[10] 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 the Appendix Figure C.13, we present results when the control group is municipalities with one school and conclude that results are similar.

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[9]Results are robust to another control group: municipalities with one or 0 schools. We present them in the annex in Figure C.13.

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

Figure 12: Effect of closing a school on registered voters

(a) Registered voters   (b) 20 to 39 years old population

(c) 40 to 59 years old population   (d) > 59 years old population

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).

6.6.2   Labour market changes

A longer driving distance to school could lead women out of the labor force since it reduces their time availability; consequently, household income, in this case, will decrease. Worsened economic conditions could account for the increase in far-right votes, in accordance with the evidence that economic factors play an important role in the recent rise of anti-establishment sentiment (Guriev (2018), Guriev & Papaioannou (2022)). As shown in Figure 13, we do not confirm this hypothesis since none of the leads or lags are statistically significant.

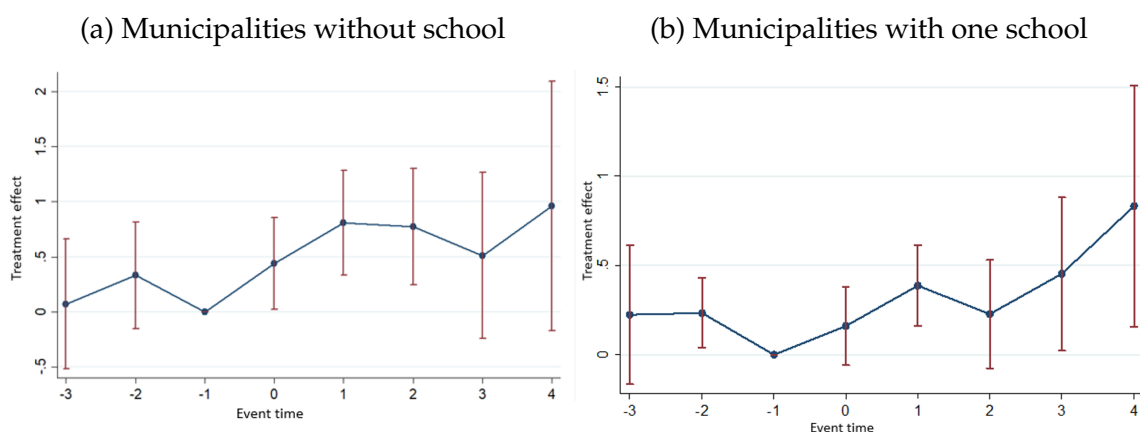Figure 13: Effect of closing a school on women's employment
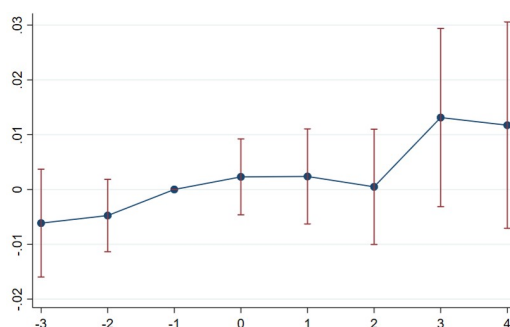
Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). The control group is municipalities that never have a school. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of De Chaisemartin & d'Haultfoeuille (2020).

Overall, this section indicates that composition or labor market-related negative shocks are unlikely to account for the increase in far-right voting following the closure of the unique school in a municipality.

6.7 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 municipalities (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 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

(a) Municipalities without school

(b) Municipalities with one school

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

This paper studies the impact of losing a school on far-right voting. To estimate their causal effect, we employ a matched difference-in-differences design. In municipalities with one school, mostly in rural areas, losing access to this public service increases votes for Rassemblement National in the next election, the most successful far-right party in France, by 0.713 percentage points. The effect continues to grow in the next three elections; approximately 15 years later, municipalities that lost their school vote 1.818 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.

These findings have important policy implications and can inform the global debate on the geography of far-right voting. They may, in particular, assist policymakers in adapting policies to revitalize rural areas along with research work

on jobs policies to help distressed communities (Bartik (2020)). Investing in these regions is also a matter of political survival for mainstream political actors and democracy, that despite all its problems, indeed causes growth, increases redistribution, and reduces inequality (Acemoglu et al. (2015), Acemoglu et al. (2019)).

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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
far-right vote share	20.58	20.08	20.58	20.78
unemployment share	0.08	0.09	0.08	0.08
agriculture sector share	0.42	0.54	0.42	0.42
industry sector share	0.11	0.08	0.11	0.11
civil construction sector share	0.10	0.08	0.10	0.10
tertiary sector share	0.37	0.30	0.37	0.37
less than high school share	0.83	0.81	0.83	0.83
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	0.06	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	245.21	140.32	245.21	362.37
density	30.68	19.12	30.68	30.68
rural	0.98	0.99	0.98	0.98
vacant housing share	0.08	0.08	0.08	0.08
Observations	1713	4486	1713	4486

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.

The identification relies on the assumption that municipalities where a school closed experienced similar trends as municipalities where a school did not close. To test this assumption, we use the placebo estimate of De Chaisemartin & d'Haultfoeuille (2020) that compares the evolution of the RN voting from $t-2$ to $t-1$ in municipalities that are treated and those not treated between $t-1$ and t. Table C1 displays

the results of these placebo tests, and none of them show a significant effect on RN voting, supporting the claim that the effects observed can be interpreted as causal.

Table B2: Placebo: Effect of closing a school on Rassemblement National voting at previous presidential election

	Control group: no school	Control group: one school
closed	-0.074	0.163
	(0.191)	(0.181)
Election-year fixed effects	Yes	Yes
Municipality fixed effects	Yes	Yes
Observations	37182	56165

The dependent variable is the vote share on the Rassemblement National. The table compares the evolution of the RN voting from $t-2$ to $t-1$ in the municipalities that are treated and not treated between $t-1$ and t. Standard errors are clustered at the individual level in parenthesis. $*p < 0.1, **p < 0.05, ***p < 0.01$

B0

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
far-right vote share	20.58	19.49	20.58	19.52
unemployment share	0.08	0.09	0.08	0.08
agriculture share	0.42	0.35	0.42	0.42
industry share	0.11	0.13	0.11	0.11
civil construction share	0.10	0.11	0.10	0.10
tertiary sector share	0.37	0.41	0.37	0.37
less than high school share	0.83	0.82	0.83	0.83
high school share	0.09	0.09	0.09	0.09
higher education share	0.08	0.09	0.08	0.08
babies ($<$5 years old)	0.06	0.06	0.06	0.06
children (5-9 years old)	0.06	0.06	0.06	0.06
young (10-24 years old)	0.19	0.18	0.19	0.19
adults (25-64 years old)	0.51	0.51	0.51	0.51
elderly ($>$64 years old)	0.19	0.19	0.19	0.19
population	245.21	468.90	245.21	287.62
density	30.68	45.34	30.68	30.74
rural	0.98	0.95	0.98	0.98
vacant housing share	0.08	0.08	0.08	0.08
Observations	1713	7648	1713	7648

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)
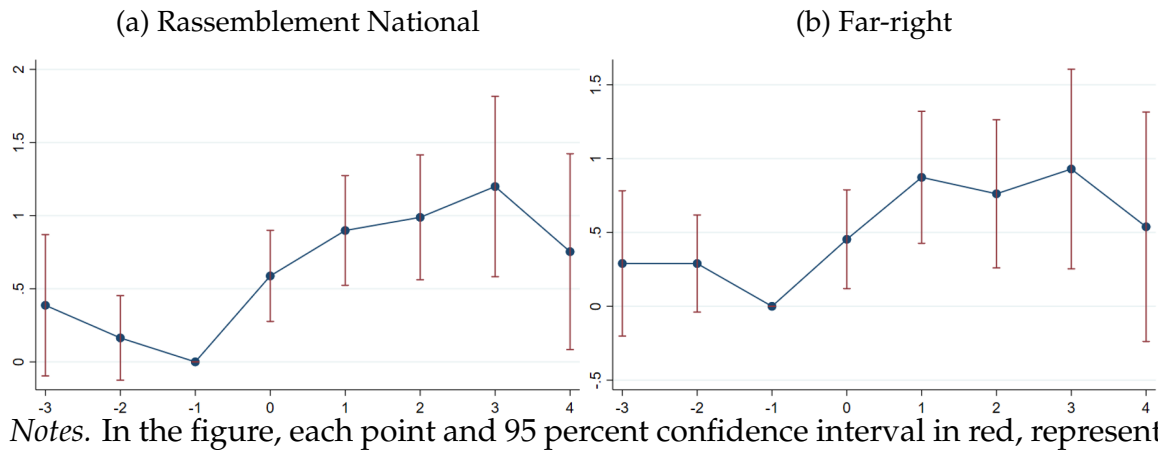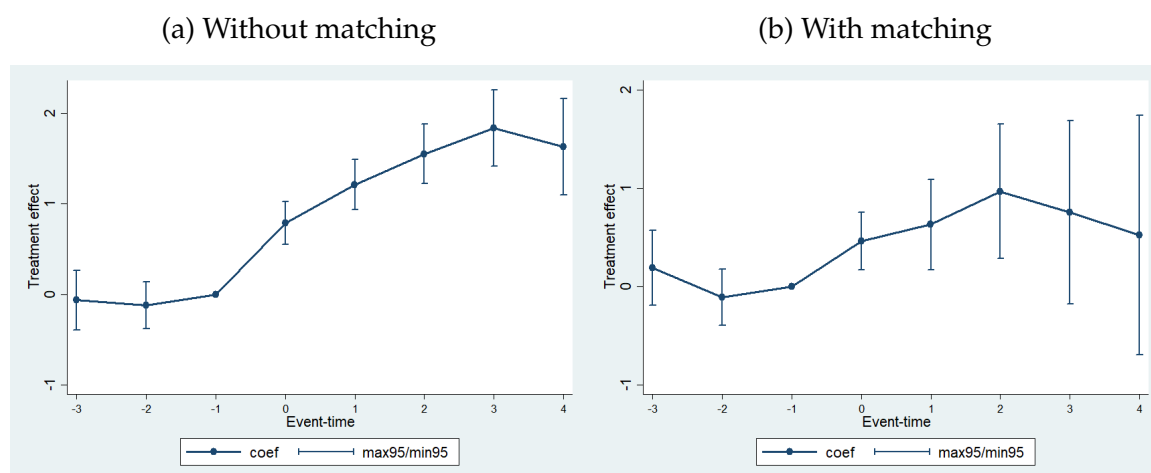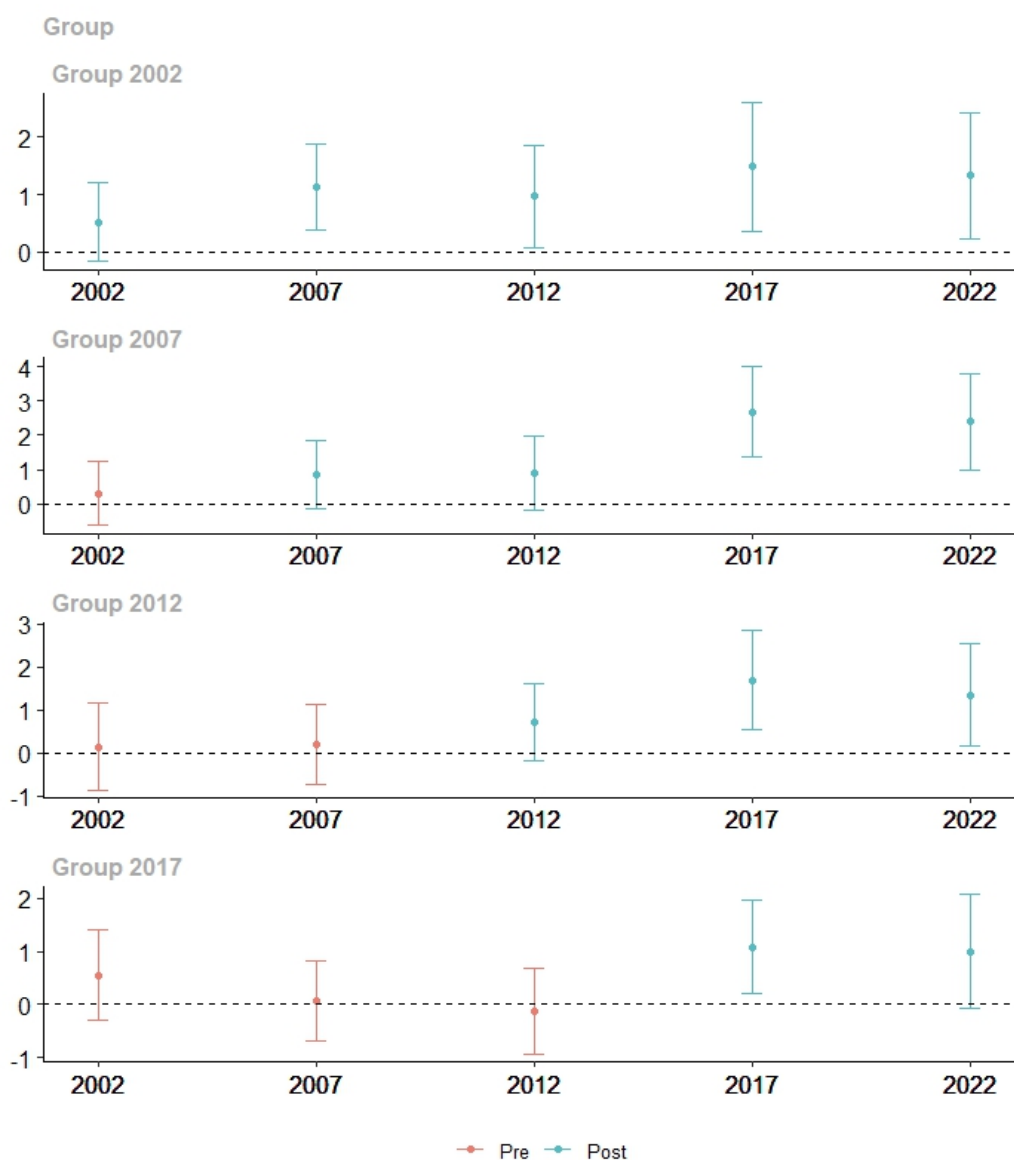
(a) Rassemblement National	(b) Far-right

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

(a) Without matching	(b) With control variables
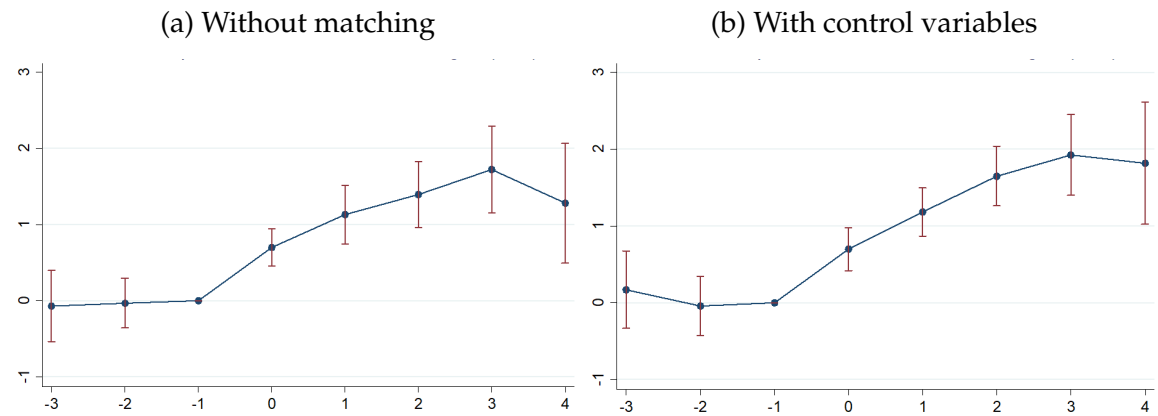
Notes. In the figure, each point and 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Panel (a) reports event study estimation results for municipalities with one school without matching, and panel (b) without matching but adding control variables. 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)

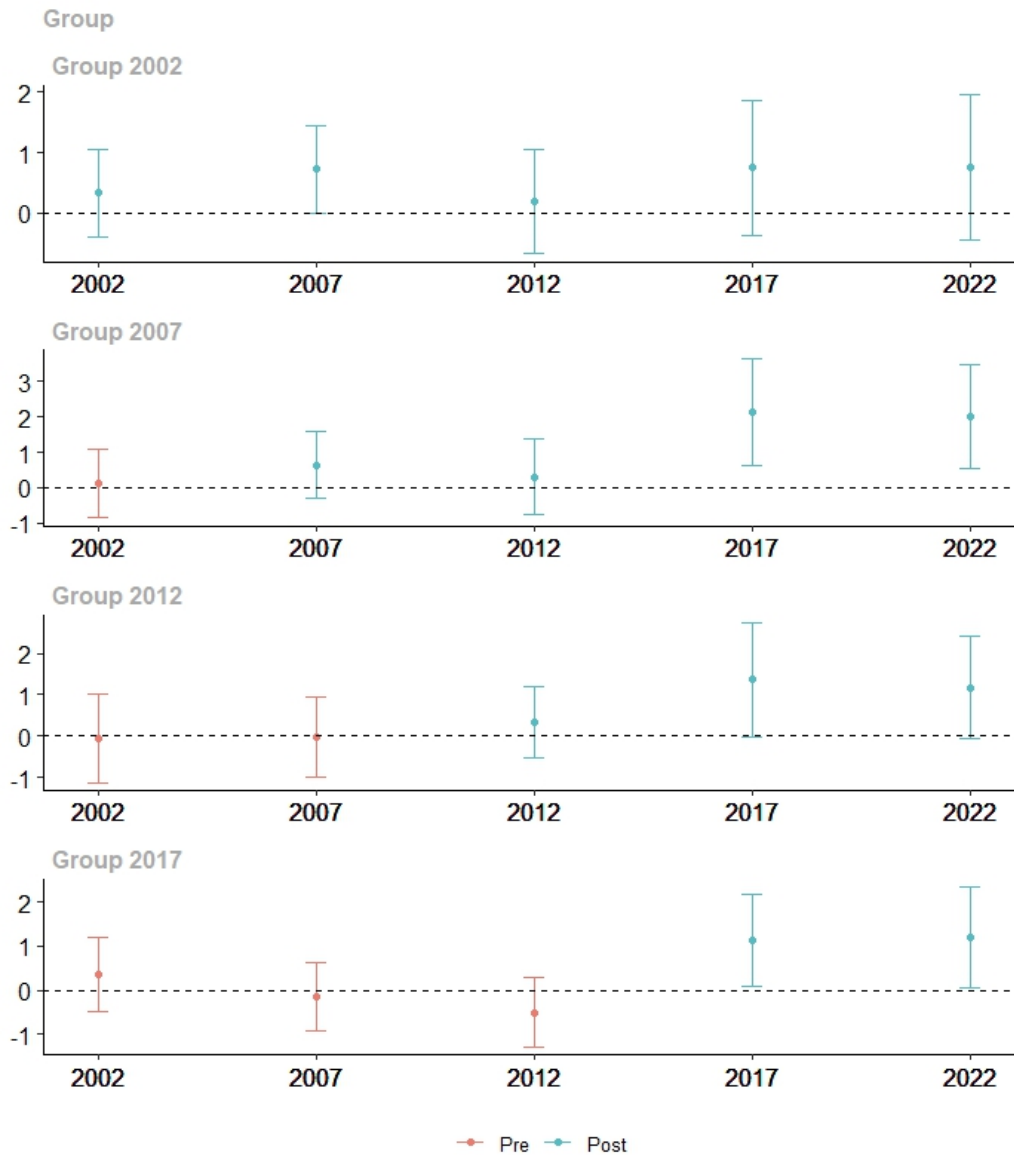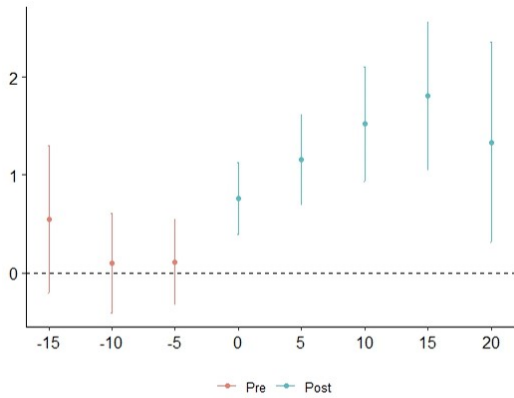(a) Without matching   (b) With matching

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 municipalities with one school without matching, and panel (b) with matching. 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: Effect of school closure on Rassemblement National voting per cohort in Presidential elections (Control group: municipalities without a school)

Notes. In the figure, each point and the associated 95 percent confidence interval represent the treat-control difference from estimating Equation (1) for each cohort. The treatment group is municipalities with only one school that eventually closed. The control group are municipalities without school. Matching is performed using entropy balancing. Standard errors are clustered at the municipality level. Graph obtained using the estimator of Callaway & Sant'Anna (2021).
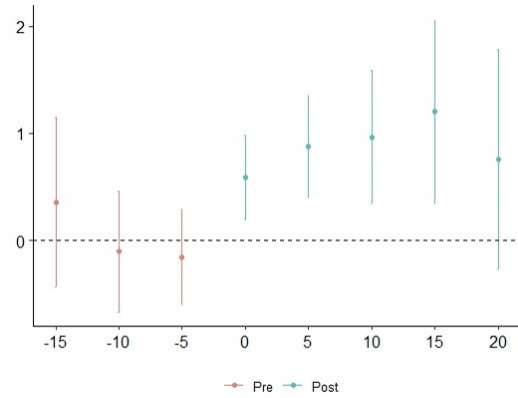
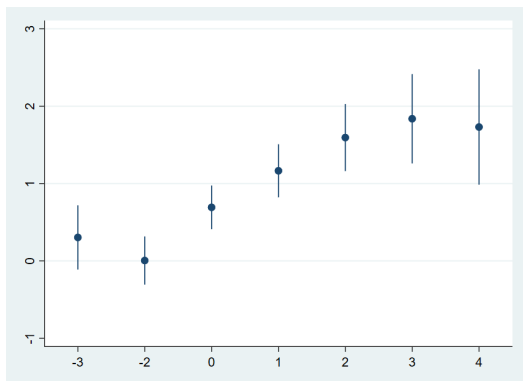Figure C.5: Effect of school closure on Rassemblement National voting per cohort in Presidential elections (Control group: municipalities with one school)
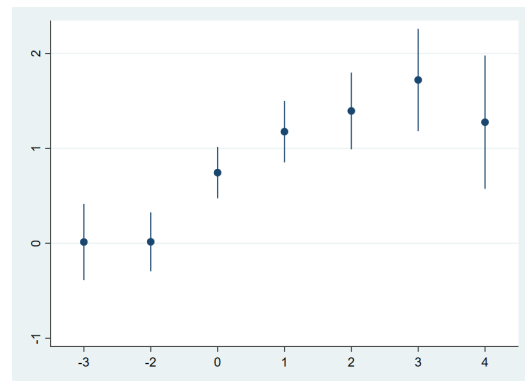

Notes. In the figure, each point and the associated 95 percent confidence interval represent the treat-control difference from estimating Equation (1) for each cohort. The treatment group is municipalities with only one school that eventually closed. The control group is municipalities with one school 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.6: Treatment dynamics - Effect of a school closure on Rassemblement National voting in Presidential elections (Callaway & Sant'Anna (2021) estimator)

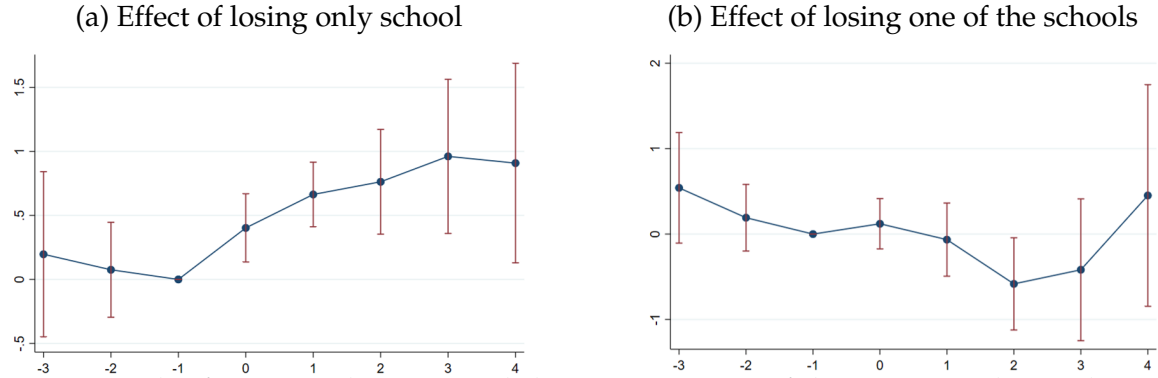(a) Control group: municipalities without school

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

(a) Control group: municipalities without 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.8: Treatment dynamics - Effect of a school closure on Rassemblement National voting in Presidential elections (regional-year fixed effects)

(a) Effect of losing only school   (b) Effect of losing one of the schools

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

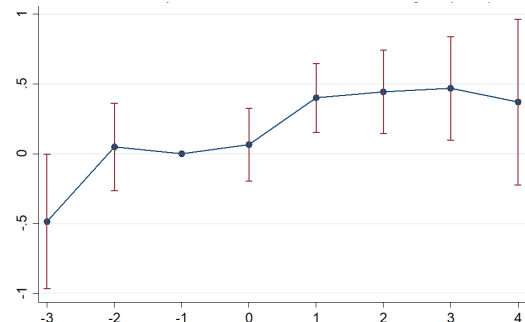|	Abstention	Far-left	Left	Liberal	Right
Closed	0.065	-0.138	-0.055	-0.194	-0.258
	(0.131)	(0.147)	(0.164)	(0.151)	(0.195)
Observations	34127	34127	34127	34127	34127

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.9: Treatment dynamics - Effect of the only school in the municipality closing on abstention rate in Presidential elections
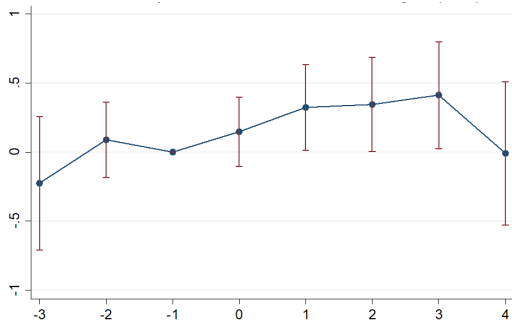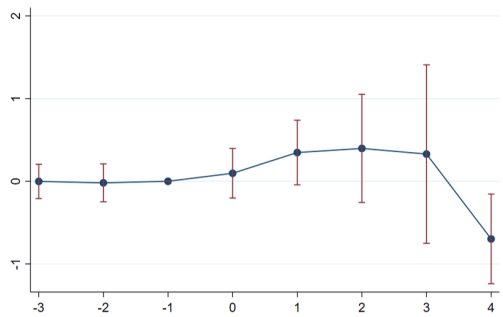
(a) Control group: municipalities without school

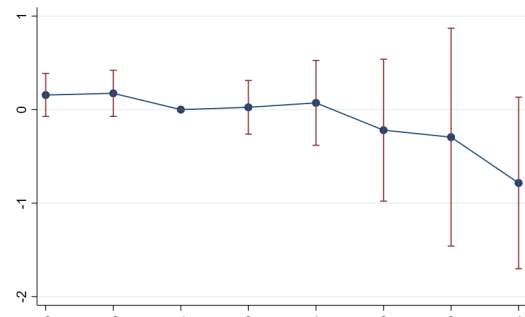(b) Control group: municipalities with 1 school

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

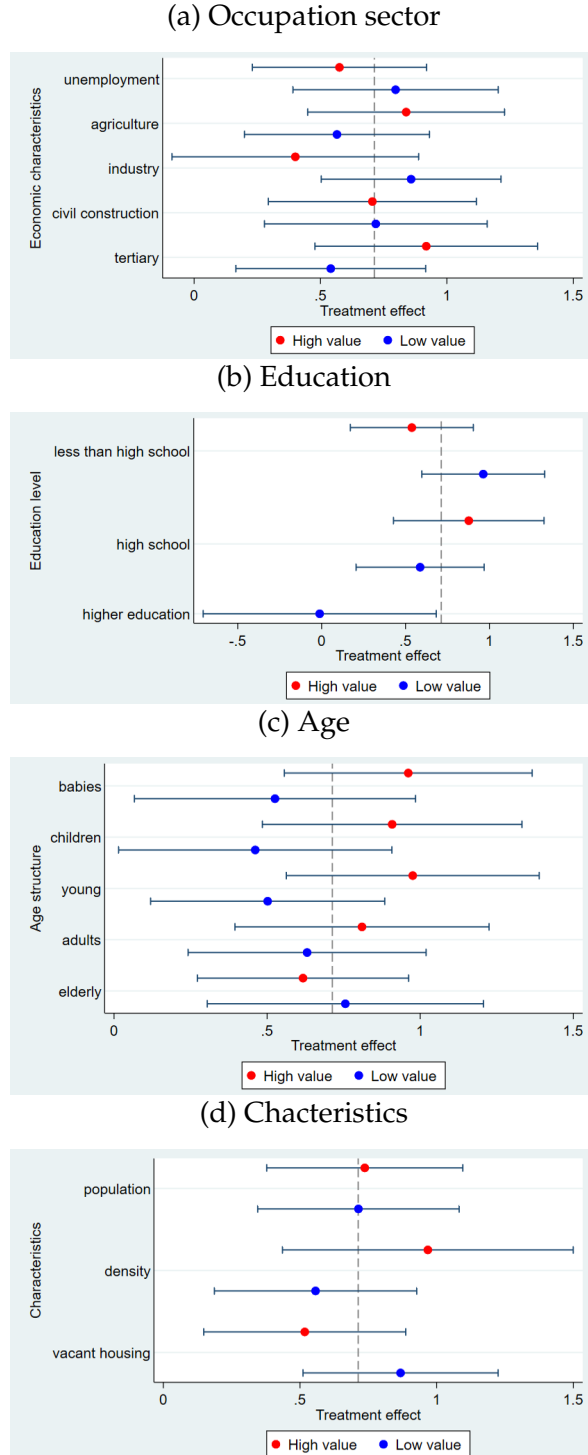(a) Control group: municipalities without school

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

(a) Occupation sector

(b) Education

(c) Age

(d) Chacteristics

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

(a) Primary school (both types)

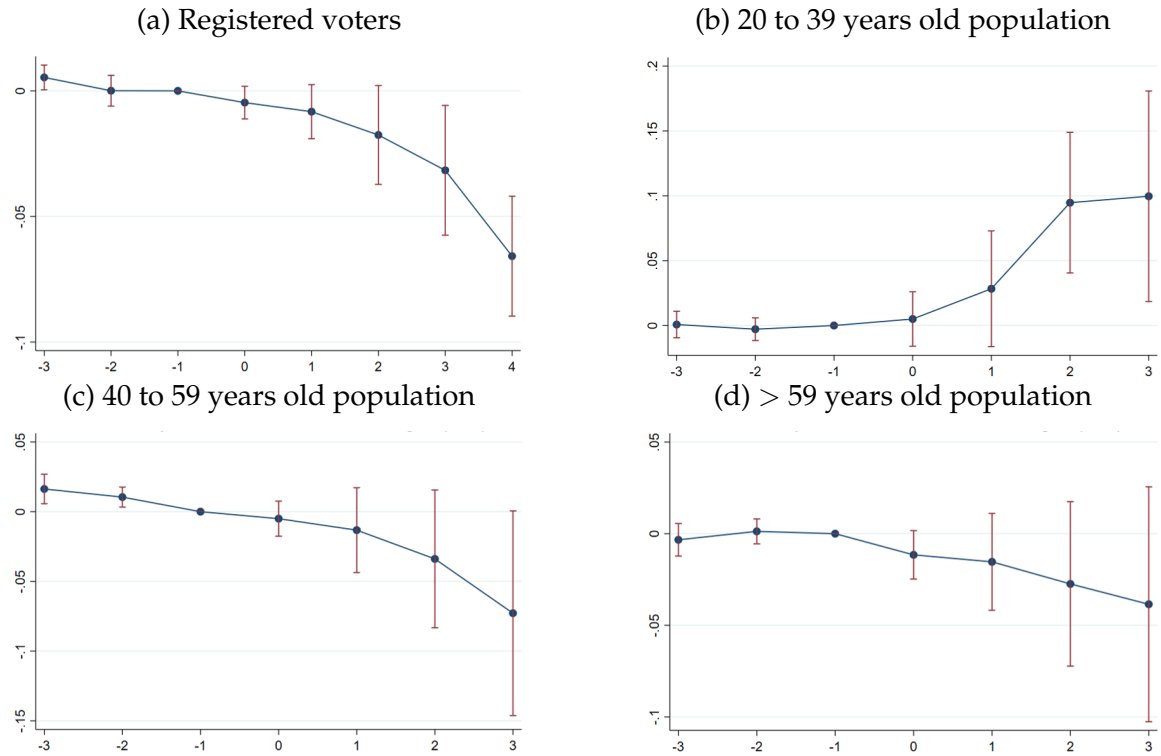(b) Elementary school

(c) Kindergarten
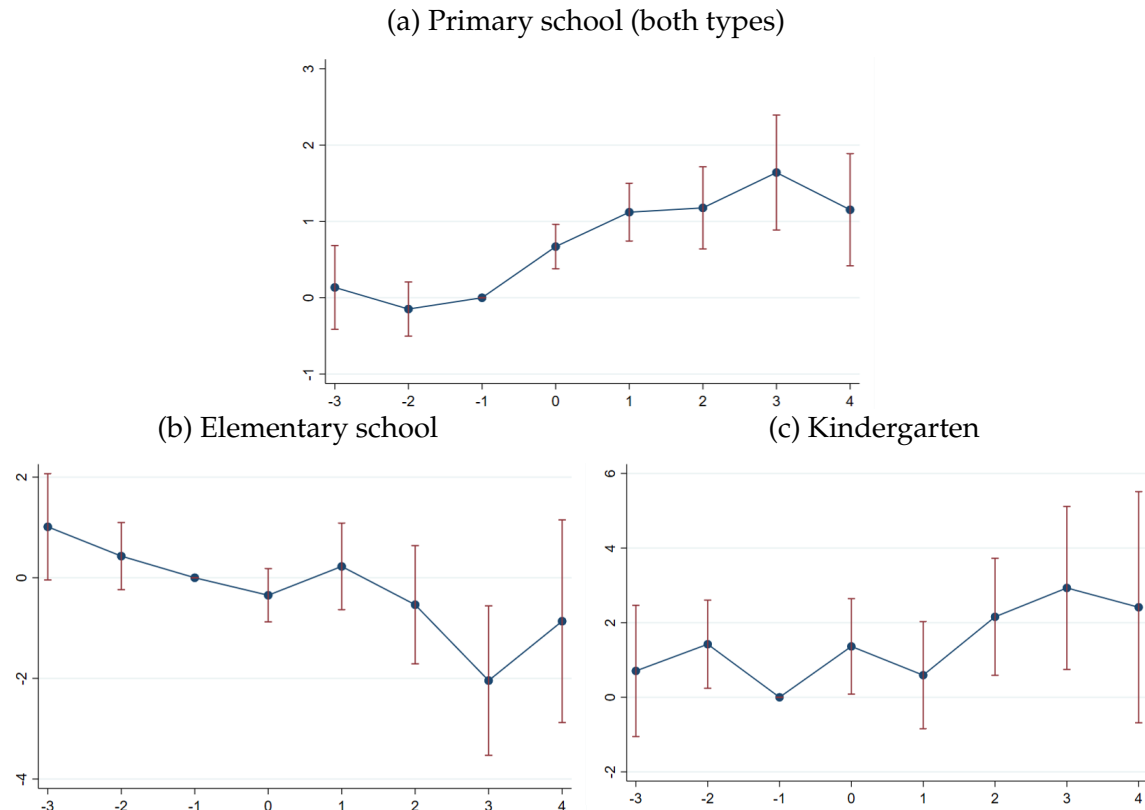
Notes. In the figure, each point and the 95 percent confidence interval in red represent the treat-control difference from estimating Equation (1). Panel (a) reports event study estimation results for treated municipalities with one primary school and the control group is municipalities with only one 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.13: Effect of closing a school on population movements (Treatment and control group: municipalities with one school)

(a) Registered voters   (b) 20 to 39 years old population

(c) 40 to 59 years old population   (d) > 59 years old population

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).