National fractures: The withdrawal of public facilities and electoral dynamics *

Nur Bilge[1], Etienne Farvaque[1,2], and Jan Fidrmuc[1,3,4]

[1] *Université de Lille, CNRS, IESEG School of Management, UMR 9221 Lille Economie Management, Lille, France*

[2] *CIRANO, Montréal, Québec, Canada*

[3] *BOFIT, Bank of Finland, Finland*

[4] *ERUNI, Ostrava, Czech Republic*

Abstract

The paper analyzes the effects of the withdrawal of public services over the period 1998-2018 on election results of 2002-2022 in France. The analysis is based on a detailed inventory of facilities providing public services in French municipalities. We find that the withdrawal of public services translates into an increase in populist votes for both the far left and the far right parties, particularly in larger municipalities. The increase in extreme votes is matched by a decline in the votes for traditional parties.

Keywords – Voting; Extreme parties; Political economy; Interregional inequality

JEL classification – D72; D63; R53

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1 Introduction

An important, and controversial, element of public debate in any country concerns the extent and quality of public services provided in different regions and municipalities. Such this also been the case in France in the last two decades in line with the reduction of public service provision motivated by a desire to reduce the amount of public expenditure. This has led to a perceived withdrawal of the State from many areas, creating a rupture between portions of the French territory benefiting from a broad offer of public services and others less well served. Fourquet (2019) likened this to the emergence of the French archipelago, a fragmented and divided nation with islands of the elites that are well provided by the State, and whose inhabitants are largely ignorant of the rest of the woeful plight of the rest of their country. Guilluy (2014), similarly, argues that the working and lower-middle classes have been largely pushed out of major metropolitan areas into "peripheral France" where they are marginalized economically and politically. This socio-economic and political fragmentation of France, in turn, translates into growing electoral support by the left-behind voters for populist and extremist parties – on the left and right of the political spectrum alike.

Our paper contributes to this debate. Specifically, we investigate whether the reduction in the provision of public services indeed translates into votes for extreme parties. Algan et al. (2020) confirm the impact of the local environment on residents' dissatisfaction. They study the impact of local living conditions on measures of discontent, including the yellow vests movement. In line with some of the analyses proposed to explain the election of Donald Trump in the United States that put anger and resentment at the center of electoral behavior (Ali et al., 2023; Hochschild, 2016), our study seeks to understand the French experience, and to measure whether the public policies resulting in a withdrawal of public services fuel the electoral results of the extreme right or extreme left. The link between public policy cutbacks and electoral behavior also provides important insights into the Brexit vote (Fetzer, 2019). To analyze whether these determinants are found in the French case, we use the most detailed data available, and place the withdrawal of public services at the heart of the analysis.

Our study therefore seeks to further the understanding of the causes of the recent rise of populism, as reflected in the votes for extreme left or right-wing parties. Populism is a difficult concept to define, generally encompassing political movements that share a demand for short-term protection. It can be defined by three main characteristics (Guiso et al., 2017): (i) a claim to protect the people from the elite, (ii) an emphasis on demand-supporting economic policies, and

(iii) a disdain for the future consequences of the proposed policies. Populists perceive the people as a homogeneous entity with a "general will" and thus oppose democratic pluralism and the rule of law (Mudde, 2004). The influence of populist parties can go beyond these fundamental principles, negatively affecting other aspects such as the separation of powers, minority rights (Huber & Schimpf, 2017), and freedom of expression (Kenny, 2020). Also for these reasons, populism is often seen as a potential threat to the stability of democracies, questioning their fundamental principles (Abts & Rummens, 2007).

We thus contribute to two strands of the literature. First, we shed some new light on the political impacts of public spending, redistributive policies and the influence of inequality on the success of populist movements. For example, several studies report a strong association between greater inequality and increasing political polarization in the United States (Duca & Saving, 2016; Garand, 2010; McCarty et al., 2016; Voorheis et al., 2015). Winkler (2019) documents a positive correlation between inequality and support for left-wing parties. Dorn et al. (2020), on the other hand, find a positive effect of inequality between regions on support for far-right parties in Germany. Left-wing extremist parties also benefit from rising regional economic inequality. However, while the German left-wing party Die Linke only benefits from rising inequality in West German regions, far-right parties - notably the AfD - are particularly successful in East Germany. The exact effect of inequality could therefore depend on other contextual factors. These factors may depend, for instance, on regional economic development, but also on the individual experiences of the voting groups concerned. Roth and Wohlfart (2018) find that people who experienced greater inequality during their formative years are more likely to reject redistribution and less likely to support left-wing parties. This literature has also examined "economic insecurity". In their study, Guiso et al. (2024) use survey data from 31 European countries and measure economic insecurity along three dimensions (ability to live with current income, experience of unemployment, impact of globalization on employment). The results of their study suggest that increased economic insecurity is correlated with increased support for populist parties.

Secondly, our paper extends the literature on the causes of populism by examining possible remedies. This literature has analyzed the political consequences of international migration (Dustmann et al., 2019; Halla et al., 2017; Steinmayr, 2021; Torres, 2023), macroeconomic shocks such as financial crises (Funke et al., 2016), increased international trade (Autor et al., 2020; Dippel et al., 2022) or technological change (Anelli et al., 2019; Frey et al., 2018). These contributions show that the regional sub-units of developed economies are very differently

affected by macroeconomic developments. While some regions benefit from economic change, others are left behind in structural change. Regions on the losing side of this process are more likely to support populist parties and candidates (Ali et al., 2023; Fetzer, 2019; Hochschild, 2016).

The two papers closest to our analysis are Godoye and Genre-Grandpierre (2023) and Rodríguez-Pose et al. (2023). The first analyze the closures of oublic (schools) and private (bank branches) between 2007 and 2017, and assess their impact on accessibility to services. Their results show that the withdrawal of local services is limited, and especially that it is not complete (with a simultaneous withdrawal of public and private services). The authors conclude that "no vast sectors [...] are gradually becoming remote from everything, abandoned, even if the closures and consequent deterioration in accessibility can be very unpleasant for the populations concerned" (Godoye & Genre-Grandpierre, 2023). The findings of Rodríguez-Pose et al. (2023) are less optimistic: studying the association between GDP per capita, interpersonal inequality, and the rise of far-right populism in Europe and the USA, they show that, while in the USA, neither interpersonal inequality nor economic decline alone can explain populist support, these factors become important when considered in conjunction with the racial composition of the region. Counties with large white populations, where economic growth has stagnated and inequality has risen, support Donald Trump. In Europe, the most significant factor behind the rise of far-right populism is economic decline. This effect is particularly strong in areas with a high proportion of immigration.

On the backdrop of these two analyses, our paper focuses on France, and considers the withdrawal of public services throughout the country, at municipal level, to see whether the places most “abandoned” by the State saw greater rises in extreme voting. The French case differs from others (notably the US) in that populism is expressed both to the left and to the right of the parties generally described as “government”. Both types of populism will therefore be considered in the analysis. Our findings show that the withdrawal of public services over the 1998-2018 period is associated with a rise in votes for extreme parties in elections held between 2002 and 2022. We also show that the dynamics are not the same on the left and the right, depending on the type of public services concerned, and the size of the municipality. The return of public services is therefore not enough to tackle populism, as the drivers of the protest vote are more complex than a more aggregated analysis might suggest. The paper is structured as follows: section 2 describes the data used. Next, the methodology is presented. Section 4 details the results obtained; section 5 presents the robustness tests carried out, and section 6 contains

our conclusions.

2 Data and Descriptive Statistics

The variable of interest in our analysis is the supply of public services at municipal level. This variable is defined as the number of public facilities available. We use the INSEE's communal inventory for 1998, which has been transformed into the permanent equipment database since 2007 (BPE, available every year until 2020). The data provide information on the level of facilities and services by category and for each French municipality. We only use public services for which the State is responsible, and not those provided by municipalities or other levels of regional government. Given that we are interested in the impact on the national elections, it makes sense to consider public services that are actually the responsibility of the central government. Additionally, this helps reduce a potential problem of endogeneity. as the decision regarding the opening or closing of centrally-provided public facilities thus does not depend on the municipal government.

We have selected the categories of public facilities at municipal level that are likely to improve the well-being of citizens through their presence – or diminish it through their absence – but whose withdrawal will also be visible and therefore felt by voters. Access to basic amenities improves living conditions and simplifies daily life (mobility, rapid access, time savings, etc.). We have therefore chosen as categories of public services the police (and gendarmerie), the tax office, the Employment Office (Pôle Emploi, recently renamed France Travail), the Post Office, and educational institutions. For this last category, only public providers are considered, and we include only kindergarten and elementary education, as the other levels are often historically shared between several municipalities. With these categories, we cover public services linked to areas of security (police and gendarmerie), relationship between the State and citizens (tax services, which also play a role in informing taxpayers, employment services, the post office) and educational provision (elementary and kindergarten). We consider the quantity of public service facilities because of the lack of information on its quality[1].

Table 1 presents descriptive statistics of the variation in public facilities included in the study for each decade, and then as a whole. The last line of the table shows the (variation in the) sum of these public facilities. Our motivation is to measure the reduction in the number of public

[1] See Cassette et al. (2011) for a study on "visible" expenditure, as its visibility can foster appreciation of the quality of the expenditure.

facilities over time. Paris, Lyon and Marseille are not included in our analysis, due to their size, and therefore their ability to "retain" public facilities. We also exclude from the sample municipalities that have disappeared or been absorbed over the period. Our sample is therefore virtually exhaustive, covering more than 31 thousand out of France's 36 thousand municipalities.

To measure the effect of the reduction in public services on populist or extreme votes, we consider municipalities where there is a lack of facilities, or where the number of facilities is shrinking, to the point where these municipalities (and their citizens) feel "forgotten" (Rodríguez-Pose et al., 2023). The withdrawal of public services thus accentuates the effect of periods of economic decline and stagnation (Pike et al., 2023). The withdrawal of public services can be clearly seen over the period under consideration, with an average variation over the period 1998-2018 of -1,394 per 1,000 inhabitants.

The distribution of public services is illustrated in Figure 1. The fact that not everyone has the same access to public services is likely to increase inequalities between the inhabitants of different municipalities. This, in turn, could fuel "anger" among citizens, leading to an electoral backlash in favor of populist or extremist parties.

To analyze the effects of changes in the number of public facilities on the evolution of electoral results, we use the results of the first round of the 2002, 2012 and 2022 presidential

Table 1: Descriptive statistics on party election results over the years

	Level	Variation		
	1998	Δ1998-2008	Δ2008-2018	Δ1998-2018
Police	0.072	-0.007	-0.010	-0.017
	(0.357)	(0.151)	(0.209)	(0.264)
Treasury	0.056	-0.017	-0.015	-0.032
	(0.300)	(0.209)	(0.194)	(0.276)
Employment office	0.003	-0.002	0.033	0.031
	(0.037)	(0.036)	(0.293)	(0.294)
Post office	0.426	-0.156	-0.065	-0.222
	(0.973)	(0.720)	(0.747)	(0.932)
Educational institutions	1.679	-1.068	-0.087	-1.153
	(2.376)	(2.104)	(0.751)	(2.201)
Public facilities	2.237	-1.251	-0.144	-1.394
	(2.844)	(2.308)	(1.150)	(2.532)
Observations	31535	31513	31470	31439

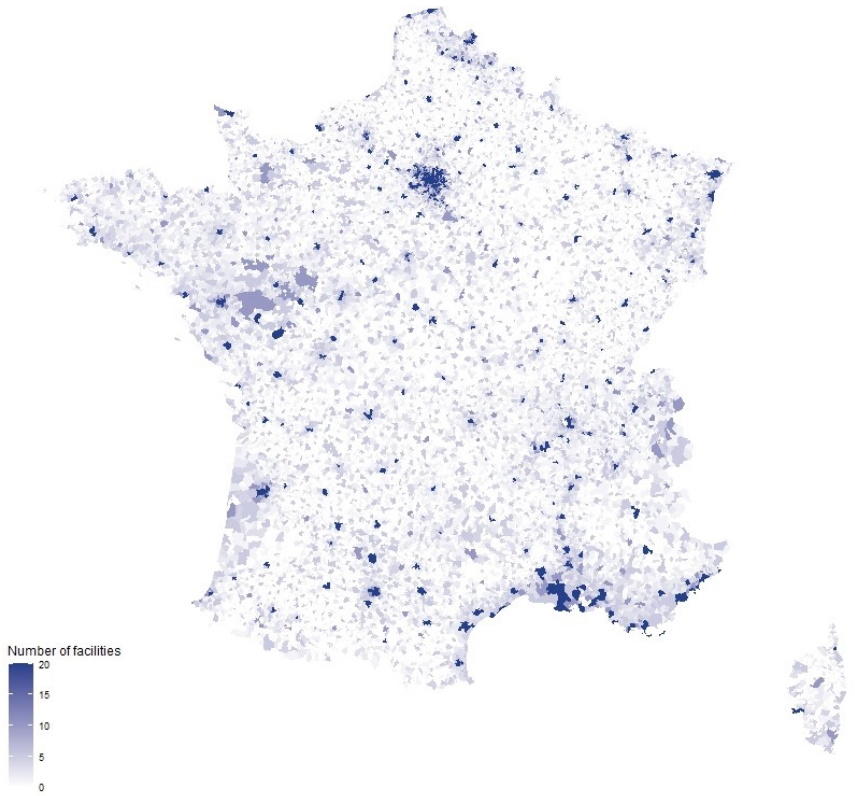
Notes: The average change in public amenities per 1,000 inhabitants is reported. Standard deviations calculated at commune level are shown in parentheses. Paris, Lyon, Marseille and absorbed communes are not included. *Source:* Authors' calculations based on Inventaire communal (1998) and BPE (2008 & 2018) data.

elections, which come from the French Ministry of the Interior and Overseas France. This provides us a detailed information on the number of registered voters, voter turnout, valid votes, votes cast for each candidate, as well as blank and invalid votes (which we will use in our robustness tests). The classification of parties is based on that used by Edo et al. (2019), also used by Cagé and Piketty (2023). The latter also pay particular attention to political polarization in their analysis. Political parties are thus divided into four political currents: extreme left, left and green, center-right and extreme right (see Table A.1 in Appendix).

Table 2 presents descriptive statistics for votes received by far-right and far-left parties over the period 2002-2022. The data reveal growing political polarization over the period under study, especially through the steady increase in votes for the far right, which almost doubled its scores between the beginning and end of the period, especially in northeastern France (see Figure 3).

Overall, in 2022, extreme votes account for more than half of all votes cast in the first round of the presidential election, and their presence is felt throughout the country (see Figure 2 and

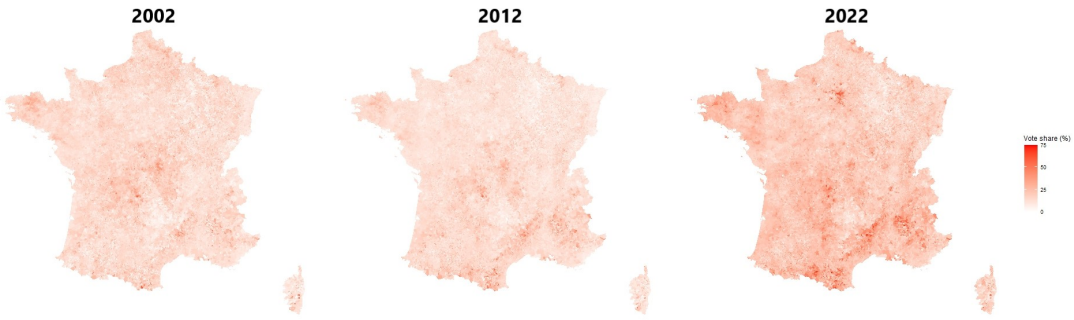
Figure 1: Distribution of public facilities in 2018



Notes: The number of public facilities is set to 5 if the number of public facilities is between 5 and 10, to 10 if the number is between 10 and 20, and to 20 if the number is greater than 20. Paris, Lyon and Marseille are shown in red.
Source: Authors' calculations based on data Base permanente des équipements (2018), INSEE

Figure 3). Beyond this classification, when we look at parties and candidates more specifically, Table A.2 in the appendix shows that the increase is largely due to votes received by the Front National (now Rassemblement National) for the far right and by *France Unbowed* (La France Insoumise) for the far left. Control variables at municipal level are taken from the dataset provided by Cagé and Piketty (2023).

Figure 2: Change in vote share for far-left parties (2002-2022)



3 Empirical strategy

To estimate the effects of the public facilities on the party election results, a first-difference model is estimated as follows:

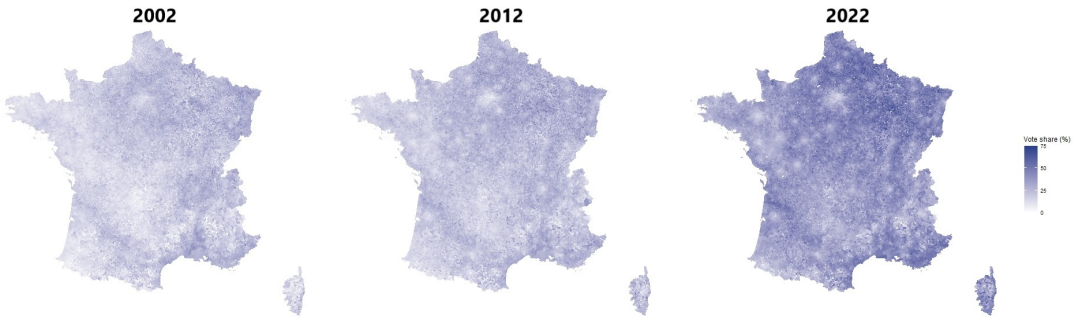
$$\Delta VS_{i,m,e} = \beta_0 \cdot \Delta PF_{m,b} + \beta_1 \cdot \Delta X_{m,e} + \lambda_b + \lambda_m + \Delta\epsilon_{m,e} \tag{1}$$

Table 2: Descriptive statistics on party election results over the years

	2002	**2012**	**2022**
Center-right	39.21	36.56	35.48
	(9.47)	(8.99)	(7.64)
Left-green	26.67	27.26	5.37
	(7.16)	(7.76)	(2.56)
Extreme left	14.20	12.68	20.43
	(5.27)	(4.84)	(7.10)
Extreme right	19.93	23.50	38.72
	(7.40)	(7.02)	(9.64)
Extreme votes	34.12	36.18	59.15
	(8.18)	(7.22)	(8.29)
Observations	31535	31530	31460

Notes: The table shows the average election results in terms of percentage. Standard deviations calculated at municipal level are shown in parentheses. Paris, Lyon, Marseille and municipalities subject to territorial reform, especially absorbed municipalities, are not included.
Source: Authors' calculations based on Ministry of the Interior and the Overseas data.

Figure 3: Change in vote share for far-right parties (2002-2022)



where m and e denote the municipality and the observation year (which is an election year), respectively. $\Delta VS_{i,m,e}$ represents the variation in votes, which is defined as the share of total votes for party i over valid votes in the municipality m at time e (multiplied by 100). $PF_{m,b}$ is the variation in public facilities, defined as the ratio of the number of public facilities to the total population of commune m at time b (multiplied by 1000, so that it measures the public facilities per 1000 inhabitants). The variable is taken out of sync with the election year: for the 2022 election, we consider the facilities from 2018, and we maintain the same gap for the remaining elections. The model includes an annual fixed effect λ_b and the municipality fixed effect λ_m to take account of the unobservable characteristics of the communes and years considered. Wooldridge (2013) recommends replacing first-difference dummy variables with an intercept and regular dummy variables. Hence, as consider three elections and look at changes between elections, our model includes an intercept and a single dummy variable for the last period. Taking into account both types of fixed effect, and the four-year lag between each election and the information on public facilities reduce the potential endogeneity problem. Following the example of Clemens et al. (2012), we deal with potential biases linked to reverse and simultaneous causality using the lag method. The use of lags for the control variables is in line with comparable studies (e.g. Baccini and Urpelainen (2014), Lehoucq and Pérez-Liñán (2014), and Steinberg and Malhotra (2014)). Furthermore, for some of the public facilities considered (tax department, for example), the decision is not taken at the municipal level, but at the central level, which further reduces the possibility of such a bias.

The vector of demographic, socio-economic and structural controls specific to each municipality for the election years (each decade) is represented by $X_{m,e}$. In line with the literature cited above, demographic controls include the population aged 60 and over, the population aged 15 to 39, the proportion of women and the proportion of foreigners in the municipality. In addition,

the average age is used in some regressions as an alternative to the population aged 60 and over and the population aged 15 to 39. Furthermore, we include the unemployment rate and the percentage of secondary school graduates or higher among people aged 25 and over. Graduates of tertiary education or higher among people aged 25 and over are included as an alternative to secondary school graduates in some estimates. To take into account the local economic conditions, we include the municipal GDP per capita (as a percentage of average national GDP per capita); alternatively, this is replaced by average income per adult (as a percentage of average income per adult in France). The final set of controls covers employment categories, including farmers, the self-employed, managers, intermediate professions and workers.

Furthermore, we explicitly consider the possibility that the dissatisfaction with public facilities leads voters to shift their support from the ruling parties to the extreme parties. To address this question, rather than focusing only on the percentage of votes in each election in a municipality as the dependent variable, we define the dependent variable in as the vote gap VG, i.e. difference between the votes for anti-system parties and the votes for government parties as follows:

$$\Delta VG = [CR_{m,e} - XP_{m,e}] - [CR_{m,e-1} - XP_{m,e-1}] \tag{2}$$

where $e-1$ refers to the previous election year. CR denotes the vote share for center-right parties, which is the ruling party during the period under analysis. XP denoted the vote share for extreme parties, which are far-left and far-right parties, respectively.

4 Results

4.1 Main Results

Table 3 reports the estimated results of the baseline model in Equation 1 for the far left, while Table 4 shows those obtained for the far right. In these two tables, several specifications are presented by including different control variables in the estimation.

The first column in Table 3 includes only fixed effects and our variable of interest. There is a negative association between the variation in public facilities over the whole period and votes for far-left parties. Given that, as mentioned earlier, public facilities are in decline over the period, this implies that the loss of public facilities feeds the far-left vote. The coefficient is -0.167, and as the average variation over the period is -1.394, we can infer that the average loss of public services per 1000 inhabitants increases the vote for the extreme left by 0.233 percentage points,

an effect that is not negligible. As we can see, the coefficient is not sensitive to the inclusion of the various socio-economic controls, and its magnitude remains very constant. The reaction obtained is therefore consistent with the fear of being forgotten or neglected, as highlighted by Rodríguez-Pose et al. (2023) in the European case. Concerning the far right votes, Table 4 is structured in the same way as the previous one. There is again a negative association between the variables. The withdrawal of public facilities therefore feeds the populist vote – both the extreme left and the extreme right. While both effects are negative, the impact is slightly weaker for the extreme right (-0.113 percentage points more votes cast per loss of one public service unit per 1,000 inhabitants). As before, the coefficient is robust to the inclusion of the various controls. For this segment of the electorate too, therefore, the feeling of becoming "peripheral" translates

Table 3: Estimated effects on votes for far-left parties

Δ Share of votes for the far left	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ Public facilities (per 1000 inhab.)	-0.167***	-0.165***	-0.165***	-0.165***	-0.165***	-0.165***	-0.165***	-0.161***
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Δ Young people (15-39 years)		-0.003		-0.003	-0.003	-0.003	-0.002	-0.004
		(0.004)		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Δ Senior people (aged 60+)		-0.007*		-0.008**	-0.007*	-0.008**	-0.007*	-0.007*
		(0.004)		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Δ Women		-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Δ Foreigners		0.041**	0.041**	0.041**	0.041**	0.041**	0.041**	0.039**
		(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Δ Average age			-0.000***					
			(0.000)					
Δ Unemployed				-0.004	-0.004	-0.004	-0.004	-0.005
				(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Δ Graduates from secondary +				-0.005*		-0.005*	-0.005**	-0.003
				(0.003)		(0.003)	(0.003)	(0.003)
Δ Graduates from higher education					-0.002			
					(0.003)			
Δ Municipal GDP per capita						-0.000		-0.001
						(0.002)		(0.002)
Δ Average income per adult							0.003*	
							(0.002)	
Δ Farmers								-0.018***
								(0.004)
Δ Self-employed								-0.009**
								(0.004)
Δ Managers								-0.005
								(0.003)
Δ Intermediate professions								-0.004*
								(0.002)
Constant	-1.728***	-1.737***	-1.711***	-1.678***	-1.724***	-1.680***	-1.685***	-1.733***
	(0.032)	(0.036)	(0.034)	(0.048)	(0.043)	(0.049)	(0.048)	(0.050)
Observation	62966	62966	62966	62966	62966	62966	62966	62966
Demographic controls	✗	✓	ALT.	✓	✓	✓	✓	✓
Socio-economic controls	✗	✗	✗	✓	ALT.	✓	✓	✓
Communal structure controls	✗	✗	✗	✗	✗	✓	ALT.	✓
Work category controls	✗	✗	✗	✗	✗	✗	✗	✓

Notes: The dependent variable is the change in vote share for far-left parties in percentage terms. Vote share is defined as the proportion of valid votes for the declared party relative to total votes in the municipality. Independent variables are defined as the variation in public facilities per 1000 inhabitants in the municipality. "ALT." indicates the inclusion of an alternative control variable. All control variables are in terms of percentage. Clustered standard errors at commune level are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Table 4: Estimated effects on votes for far-right parties

Δ Share of votes for the far right	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ Public facilities (per 1000 inhab.)	-0.119***	-0.113***	-0.113***	-0.113***	-0.113***	-0.113***	-0.113***	-0.110***
	(0.024)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Δ Young people (15-39 years)		0.003		0.003	0.003	0.003	0.003	0.002
		(0.005)		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Δ Senior people (aged 60+)		-0.008*		-0.008*	-0.008*	-0.008*	-0.007	-0.008*
		(0.004)		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Δ Women		0.011*	0.011*	0.011*	0.011*	0.011*	0.011*	0.010*
		(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Δ Foreigners		0.145***	0.144***	0.144***	0.144***	0.144***	0.143***	0.142***
		(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Δ Average age			-0.000**					
			(0.000)					
Δ Unemployed				0.001	0.001	0.001	0.001	0.000
				(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Δ Graduates from secondary +				0.003		0.002	0.002	0.004
				(0.003)		(0.003)	(0.003)	(0.003)
Δ Graduates from higher education					0.000			
					(0.004)			
Δ Municipal GDP per capita						0.007***		0.007***
						(0.003)		(0.003)
Δ Average income per adult							0.005**	
							(0.002)	
Δ Farmers								-0.014***
								(0.005)
Δ Self-employed								0.001
								(0.004)
Δ Managers								-0.010**
								(0.004)
Δ Intermediate professions								0.002
								(0.003)
Constant	3.421***	3.407***	3.403***	3.372***	3.404***	3.393***	3.361***	3.349***
	(0.038)	(0.042)	(0.041)	(0.057)	(0.051)	(0.058)	(0.057)	(0.060)
Observation	62966	62966	62966	62966	62966	62966	62966	62966
Demographic controls	✗	✓	ALT.	✓	✓	✓	✓	✓
Socio-economic controls	✗	✗	✗	✓	ALT.	✓	✓	✓
Communal structure controls	✗	✗	✗	✗	✗	✓	ALT.	✓
Work category controls	✗	✗	✗	✗	✗	✗	✗	✓

Notes: The dependent variable is the change in vote share for far-right parties in percentage terms. Vote share is defined as the proportion of valid votes for the declared party relative to total votes in the municipality. Independent variables are defined as the variation in public facilities per 1000 inhabitants in the municipality. "ALT." indicates the inclusion of an alternative control variable. All control variables are in terms of percentage. Clustered standard errors at commune level are in parentheses. *p<0.1, ** p<0.05, *** p<0.01

into a protest vote. Perhaps surprisingly, the proportion of foreigners in the municipality has a positive association with the extreme votes, both left and right: the voters respond to the presence of foreigners by voting for extreme parties. Furthermore, some of the foreigners, measured here as those born outside of France, are not French citizens and therefore are unable to vote in national elections: the preferences of such non-citizens are therefore not reflected in the election results. The proportion of farmers, by contrast, shows a negative association. On the other hand, the output per person only correlated (positively) with the extreme right-wing vote, with no significant impact on the extreme left-wing vote.

4.2 Effect on the governing party

Table 5 presents the results to analyze the effects on the vote distance, as defined in Equation 2. The results show that an increase in public facilities does indeed lead to an increase in the relative distance between the parties. In other words, support for extreme parties appears to come at the expense of government parties. These findings align with the reactionary voting hypothesis. In the case of declining public facilities, residents may feel that the current political system does not serve their interests. This dissatisfaction is crucial in determining which party to support in elections, particularly when it comes to voting for anti-system parties. The negative effect of public goods on the share of votes, found in the main results, is confirmed by a positive effect on the relative distance between populist parties and the center-right party.

Table 5: Vote gap between center-right parties and extreme parties

ΔVG between center-right and far-left	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ Public facilities (per 1000 inhab.)	0.361***	0.347***	0.347***	0.346***	0.346***	0.346***	0.346***	0.333***
	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)
ΔVG between center-right and far-right	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ Public facilities (per 1000 inhab.)	0.313***	0.295***	0.296***	0.294***	0.294***	0.294***	0.294***	0.283***
	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)	(0.053)
Observation	62966	62966	62966	62966	62966	62966	62966	62966
Demographic controls	✗	✓	ALT.	✓	✓	✓	✓	✓
Socio-economic controls	✗	✗	✗	✓	ALT.	✓	✓	✓
Communal structure controls	✗	✗	✗	✗	✗	✓	ALT.	✓
Work category controls	✗	✗	✗	✗	✗	✗	✗	✓

Notes: The dependent variable, vote gap VG, is the variation in the distance between the far-left vote share and the center-right vote share in terms of percentage.. The independent variable is the variation in the number of publicly funded facilities per 1000 inhabitant. "ALT." indicates the inclusion of an alternative control variable. Clustered standard errors at municipality level are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

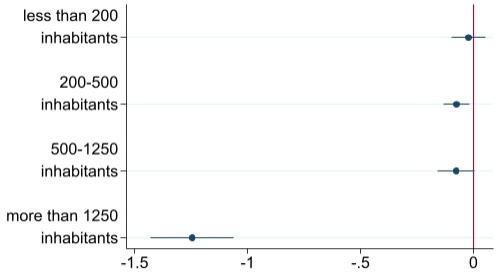
4.3 Analysis by municipality size

The feeling of becoming “peripheral” may depend on the size of the municipality in which the voters express themselves. It could be that the smaller the size of the municipality, the greater the likelihood that the loss of a facility will be strongly felt. Small municipalities are also more likely to find themselves in a situation where they are left no public facility of a given type, such as a school or post office. In this subsection, we explore the effect on the variation in the share of votes when municipalities are classified by demographic stratum, i.e. when the population distribution is used to define demographic thresholds. Table A.3 in appendix shows

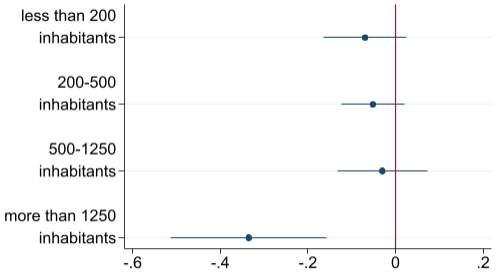
the distribution of the municipalities grouped according to the number of inhabitants, in the following categories: under 200, 200-500, 500-1250 and over 1250. Figure 4 shows the results for the extreme left and right. While in the smallest municipalities (fewer than 200 inhabitants), the effect is not significant for the extreme left, we find that the effect becomes increasingly significant as the population of the municipalities increases. In a way that is non-intuitive to the public debate that surrounded the publications of Fourquet (2019) and Guilluy (2014), this analysis shows that the larger the municipality, the more the withdrawal of public services feeds the far-left vote. This municipality size effect is even more important in the case of the extreme right, as it is only significant for the largest municipalities in this case. The associated coefficient is also greater for the extreme left than for the extreme right. In Table A.4 and Table A.5 in the Appendix, we also show results incorporating the urban/rural dimension, so as to address this aspect of the question as well (Tricaud, 2023).

Figure 4: Analysis by municipality size

(a) Far-left parties



(b) Far-right parties



Notes: The dependent variable is the variation in the share of votes for extreme right-wing parties in terms of percentage. The independent variable is defined as the variation in public facilities per capita in the municipality. Demographic, socio-economic and municipal structure controls are included, corresponding to column (6) of Table 3 and Table 4, respectively. Clustered standard errors at municipal level are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

4.4 Heterogeneity in the variation of public facilities

Although the number of public facilities declines, on average, over the period under review, this is not the case in every French municipality. Some municipalities experience no change in their service provision, while others gain additional services. We therefore subdivide the sample and analyze municipalities according to the variation in public facilities (distinguishing between municipalities with a negative variation and the others). This categorization is based

on the assumption that "forgotten" municipalities are more likely to experience an increase in the populist vote.

Table 6: Analysis by variation in facilities

	Δ Share of votes for far-left	Δ Share of votes for far-right
Variation in public facilities	(1)	(2)
Negative		
Δ Public facilities (per 1000 inhab.)	-0.239*	-0.032
	(0.128)	(0.148)
Observation	18319	18319
Positive or zero		
Δ Public facilities (per 1000 inhab.)	-0.320**	-0.450***
	(0.133)	(0.134)
Observation	44647	44647

Notes: All models include demographic, socio-economic and communal structure controls. Clustered standard errors at municipality level are given in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

The baseline model is thus tested for the two samples separately: municipalities losing public services and municipalities with rising or stagnating services, in order to verify whether the withdrawal of public services is indeed able to account for populist electoral expression. The results, presented in Table 6, show firstly that, in municipalities where public services were withdrawn, the variation in public services has little influence on the vote for extreme parties: we obtain negative coefficient, but the one for left-wing parties is only significant at the 10% level and the one for the right wing is not significant. In contrast, municipalities experiencing an improvement in the quantity of public services record a significant decrease in the extreme vote, and the effect is stronger for extreme right-wing parties than for extreme left-wing parties[2].

4.5 Analysis by type of facility

Do voters care more about the loss of certain public facilities than others? To shed light on this question, we disaggregate our public facilities indicator into its component items.

The results in Table 7 indicate that a significant part of the effects derives from the presence of postal services and educational institutions (kindergartens and primary schools). As part of sensitivity analysis, we exclude one public facility at a time from the model. Note that the results in Table A.6 in the Appendix show how removing each facility individually impacts the

[2]This result is symmetrical to that obtained by Rodríguez-Pose (2020). The latter shows that the rise in votes for anti-system parties is linked to the long-term economic decline of regions that have been disadvantaged over time.

overall estimate of the remaining facilities. In all cases, the effects remain concentrated on postal services and educational institutions. In particular, postal and educational services seem to have the same effect on both types of party. However, the coefficients do not have the same magnitude: the loss of postal services affects more the extreme right-wing voters, and the loss of educational institutions more the extreme left-wing voters. Although an understanding of these differential effects can be linked to history, and in particular to the importance of education for left-wing forces, further analysis is beyond the scope of this study. Similarly, even if the coefficients are not significant, we find that public security services (police and gendarmerie) are negatively associated with the far-left vote, and positively with the far-right vote. While this effect could be linked to the rhetoric of each party type (with a different emphasis on "law and order"), the analysis is beyond the scope of this study.

5 Robustness

Although different specifications have been presented in the previous sections, we provide additional evidence on the impact of public facilities on electoral outcomes by making a few modifications to the model specification in order to check the robustness of the results.

Firstly, as previously indicated, the classification of political parties used in the study is that of Edo et al. (2019). To check the robustness of the results, we vary this typology, successively using different definitions of extreme parties (see Table 8). Given the difficulty

Table 7: Disaggregated estimation of facility on extreme parties

	Δ Share of votes for far-left		Δ Share of votes for far-right	
Δ Police (per 1000 inhab.)	-0.322	-0.319	0.026	0.021
	(0.234)	(0.234)	(0.279)	(0.282)
Δ Treasury (per 1000 inhab.)	0.007	0.011	-0.185	-0.179
	(0.130)	(0.131)	(0.174)	(0.175)
Δ Employment office (per 1000 inhab.)	-0.206	-0.209	-0.264	-0.273
	(0.159)	(0.157)	(0.226)	(0.228)
Δ Post office (per 1000 inhab.)	-0.096**	-0.092**	-0.147***	-0.146***
	(0.046)	(0.046)	(0.052)	(0.052)
Δ Educational institutions (per 1000 inhab.)	-0.183***	-0.179***	-0.102***	-0.099***
	(0.022)	(0.022)	(0.029)	(0.030)
Observation	62966	62966	62966	62966
Work category controls	✗	✓	✗	✓

Notes: All models include demographic, socio-economic and municipal structure controls. The inclusion of work category controls is indicated. Clustered standard errors at commune level are in parentheses. * p<0,1, ** p<0,05, *** p<0,01.

of defining and categorizing left-wing parties in France, different classifications are tested. To begin with, specification (1) includes the following parties: Lutte ouvrière, Ligue Communiste Révolutionnaire, Nouveau Parti Anticapitaliste, Parti Communiste Français, Parti de gauche and La France Insoumise. If we break this group down a little further, in specification (2), the Lutte ouvrière party is treated as the only extremist party. In specifications (3) and (4), the various communist parties are grouped together. Columns (5) and (6) present analyses based on the candidates Jean-Luc Melenchon and Jean-Marie Le Pen / Marine Le Pen, respectively. The results in Table 8 show that variation in public facilities has a significant negative effect on election results, even if different definitions are used in the definitions of parties described as populist or extreme. The results are therefore robust to the different groupings. However, it should be noted that the effect of left-wing parties is concentrated on the presence of La France Insoumise: when this party is included in the chosen definition, the coefficient increases significantly.

Table 8: Estimation of populist party votes - variable definition

ΔVotes for populist parties	(1)	(2)	(3)	(4)	(5)	(6)
Δ Public facilities (per 1000 inhab.)	-0.168***	-0.021***	-0.010	-0.137***	-0.108***	-0.106***
	(0.019)	(0.008)	(0.008)	(0.017)	(0.019)	(0.022)
Observation	62966	62966	62966	62966	62966	62966

Notes: The dependent variable is the variation in vote share as a percentage for the following parties: (1) Far Left (Lutte ouvrière, Ligue communiste révolutionnaire Nouveau parti anticapitaliste and Parti de gauche / La France Insoumise). (2) Lutte ouvrière (Arlette Laguiller and Nathalie Arthaud). (3) Olivier Besancenot (Ligue communiste révolutionnaire) and Philippe Poutou (Nouveau parti anticapitaliste). (4) Parti communiste français (Robert Hue and Fabien Roussel) and Parti de gauche / La France Insoumise (Jean-Luc Mélenchon). (5) Jean-Luc Mélenchon (Parti de gauche / La France Insoumise). (6) Jean-Marie Le Pen (Front national) and Marine Le Pen (Front national / Rassemblement national). Standard errors clustered at municipal level are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

On the other hand, it is possible that the voters'displeasure with the withdrawal of public services will be exercised not through a protest vote, but through a refusal to vote. Declining voter turnout is a concern, as abstention can be interpreted as a lack of democratic representation. It not only reduces the democratic legitimacy of those in power, but also affects public acceptance of political decisions. As a result, abstention itself can fuel the rise of political extremism.

We thus take this phenomenon into account in Table 9, which shows the effect of a change in the number of public facilities on the variation in the voter turnout and the rate of blank and invalid votes during the first round of the presidential elections. The presence of a greater number of facilities does indeed lead to a drop in the abstention rate. This result confirms those obtained previously: the withdrawal of public services is strongly felt by voters, who either

Table 9: Estimation on abstentions and blank votes

	Δ Turnout		Δ Blank votes	
Δ Public facilities (per 1000 inhab.)	-8.944***	-8.831***	-0.528***	-0.522***
	(2.115)	(2.069)	(0.096)	(0.095)
Observation	62983	62983	62983	62983
Work category controls	✗	✓	✗	✓

Notes: The dependent variable is the voter turnout and blank votes in terms of percentage, respectively. Demographic, socio-economic and communal structure controls are included in all models. The inclusion of work category controls is indicated. Clustered standard errors at the municipality level are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

withdraw from political life (in any case, no longer express themselves through the ballot box), or turn to the more protest-oriented and extreme parties.

Table 10: Estimated votes for government parties

	ΔVotes partis centre-droit		ΔVotes partis centre gauche-écologistes	
Δ Équipement public par 1000 habitants	0.181***	0.172***	0.096***	0.099***
	(0.035)	(0.035)	(0.030)	(0.030)
Observation	62966	62966	62966	62966
Contrôle pour les catégories de travail	✗	✓	✗	✓

Notes: The dependent variable is the share of votes for the center-right and left-green parties in terms of percentage, respectively. Demographic, socio-economic and municipal structure controls are included in all models. The inclusion of work category controls is indicated. Clustered standard errors at commune level are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Finally, we take consider the possibility that extreme votes come at the expense of support for government parties (see Table A.7 for the distribution of communes by vote gap between the center-right and extreme parties). Table 10 integrates the effects of variations in public facilities on votes cast for parties other than the extreme ones, still using the Edo et al. (2019) classification. The results confirm that the effect is the opposite of that observed for extreme parties (see Table 10). Furthermore, the effect of variations in the quantity of public facilities is more marked for center-right parties than for left-wing and green parties. The results are also robust to the inclusion of controls for the different work categories.

6 Conclusion

In this study, we have identified the reduction of public facilities as one of the determinants of the success of anti-system parties in France. The public sector is defined on the basis of data from the inventory (1998) and the Base Permanente des Equipements (BPE, 2008 and 2018) concerning the following categories: police (and gendarmerie), treasury, employment office, post office and educational institutions. We use the results of the first round of the 2002, 2012 and 2022 presidential elections.

The results show that the withdrawal of public facilities over the period feeds the votes of extreme parties. This fact reveals voters' reaction to being "forgotten", and creates a new national divide. This discontent translates into a shift in votes towards extreme parties. More precisely, the effect is due to votes received by the Front National (now Rassemblement National) for the far right and by La France Insoumise for the far left. Furthermore, the withdrawal of public services also reduces turnout. Voters who feel dissatisfied with political decisions sometimes refuse to vote, the simplest way of expressing themselves. Even abstention can therefore accentuate the phenomenon of political extremism. When considering the different categories of public facilities, we find that these effects of hte withdrawas of public services are primarily driven by the decline in postal services and educational institutions. The effect is increasingly significant for larger municipalities, especially for extreme left-wing parties. Furthermore, although there was an average decline in public facilities over the period under study, not all municipalities experienced the same level of withdrawal of public services. Given the heterogeneity between municipalities, we can see that the impact is concentrated on municipalities whose public facilities have seen positive or zero evolution over time, in line with Rodríguez-Pose (2020)'s analysis.

Our results show that policymakers should recognize that the decline in public goods and services makes them less equally available to all, and that this has consequences in terms of the sense of belonging to the national community. Curbing the rise of extreme parties implies greater attention to local dynamism, and to that of public services in particular.[3]

[3]It's worth noting, however, that Voigtländer and Voth (2024) find that the provision of public goods reinforced the Nazi vote, which draws attention to the importance of context in empirical analyses.

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A Appendix

Table A.1: Classification of candidates in the first round of the presidential elections

	Extreme-left	Left-green	Center-right	Extreme-right
2002	Arlette Laguiller (Lutte ouvrière) Olivier Besancenot (Ligue communiste révolutionnaire) Robert Hue (Parti communiste français) Daniel Gluckstein (Parti des travailleurs)	Lionel Jospin (Parti socialiste) Jean-Pierre Chevènement (Mouvement des citoyens) Christiane Taubira (Parti radical de gauche) Noël Mamère (Les Verts) Corinne Lepage (Citoyenneté, action, participation pour le xxie siècle	Jacques Chirac (Rassemblement pour la République) François Bayrou (Union pour la démocratie française) Jean Saint-Josse (Chasse, pêche, nature et traditions) Alain Madelin (Démocratie Libérale) Christine Boutin (Forum des Républicains Sociaux)	Jean-Marie Le Pen (Front national) Bruno Mégret (Mouvement national républicain)
2012	Jean-Luc Mélenchon (Parti de gauche) Philippe Poutou (Nouveau parti anticapitaliste) Nathalie Arthaud (Lutte Ouvrière)	François Hollande (Parti socialiste) Jacques Cheminade (Solidarité et Progrès) Eva Joly (Europe Écologie & les Verts)	Nicolas Sarkozy (Union pour un mouvement populaire) François Bayrou (Mouvement démocrate)	Marine Le Pen (Front national) Nicolas Dupont-Aignan (Debout la République)
2022	Jean-Luc Mélenchon (La France Insoumise) Philippe Poutou (Nouveau parti anticapitaliste) Nathalie Arthaud (Lutte ouvrière) Fabien Roussel (Parti communiste français)	Anne Hidalgo (Parti socialiste) Yannick Jadot (Europe Écologie & les Verts)	Emmanuel Macron (En Marche!) Jean Lassalle (Résistons!) Valérie Pécresse (Soyons Libres)	Marine Le Pen (Rassemblement national) Nicolas Dupont-Aignan (Debout la France) Éric Zemmour (Reconquête)

Notes: The categorization for 2022 is created from the categorization of parties in previous years by the authors.
Source: Edo et al. (2019)

Table A.2: Descriptive statistics of election results by party

	2002	2012	2022
Principal Extreme Left	0.14	0.13	0.20
	(0.05)	(0.05)	(0.07)
Lutte ouvrière	0.06	0.01	0.01
	(0.03)	(0.01)	(0.01)
Communiste-Anticapitaliste	0.05	0.01	0.01
	(0.02)	(0.01)	(0.01)
Parti communiste français	0.03	0.11	0.19
	(0.03)	(0.05)	(0.07)
Mélenchon	0.00	0.11	0.16
	(0.00)	(0.05)	(0.06)
Le Pen	0.17	0.21	0.29
	(0.07)	(0.07)	(0.09)
Observations	31535	31530	31460

Notes: Average election results are displayed in the table. Standard deviations are shown in parentheses. Paris, Lyon, Marseille and municipalities subject to territorial reform are not included. (1) The extreme left is defined as Lutte ouvrière, Ligue communiste révolutionnaire, Nouveau parti anticapitaliste and Parti de gauche. (2) Lutte ouvrière is supported by Arlette Laguiller and Nathalie Arthaud. (3) Olivier Besancenot (Ligue communiste révolutionnaire) and Philippe Poutou (Nouveau Parti anticapitaliste) are part of the French Left. (4) Parti communiste français (Robert Hue and Fabien Roussel) and Front de gauche (Jean-Luc Mélenchon). Jean-Luc Mélenchon presents the Front de gauche. (6) Jean-Marie Le Pen (Front national) and Marine Le Pen (Rassemblement national) belong to the extreme right.
Source: Ministry of the Interior and Overseas.

Table A.3: Descriptive statistics for municipalities by strata

	2002	2012	2022
Number of municipalities			
Less than 200 inhabitants	6798	6052	5560
200-500 inhabitants	9847	9508	9449
500-1250 inhabitants	7987	8374	8401
Plus de 1250 inhabitants	6903	7598	8063
Total	31535	31532	31473

Notes: The table shows the distribution of the municipalities by population stratum
Source: INSEE.

Table A.4: Effects in rural areas

Δ Votes for far-left parties	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ Public facilities (per 1000 inhab.)	-0.050*	-0.050*	-0.050*	-0.050*	-0.050*	-0.050*	-0.050*	-0.048*
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Δ Votes for far-right parties								
Δ Public facilities (per 1000 inhab.)	-0.088***	-0.089***	-0.090***	-0.089***	-0.089***	-0.089***	-0.090***	-0.091***
	(0.033)	(0.034)	(0.034)	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
Observation	25492	25492	25492	25492	25492	25492	25492	25492

Notes: The dependent variable is the share of votes for the far-left and far-right parties (in %), respectively. Demographic, socio-economic and municipal structure controls are included in all models. Using data from INSEE's 2010 urban area zoning, the effects of communes on the territory as a whole were defined. If more than 60% of the population share is in the rural part, we have classified the communes as rural: crown of small/medium poles, other multi-polarized communes and isolated communes outside the influence of poles. Clustered standard errors at commune level are shown in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Table A.5: Effects in urban areas

Δ Votes for far-left parties	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ Public facilities (per 1000 inhab.)	-0.268***	-0.256***	-0.257***	-0.254***	-0.255***	-0.255***	-0.254***	-0.247***
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Δ Votes for far-right parties								
Δ Public facilities (per 1000 inhab.)	-0.093***	-0.082**	-0.084**	-0.082**	-0.082**	-0.081**	-0.081**	-0.073**
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
Observation	37474	37474	37474	37474	37474	37474	37474	37474

Notes: The dependent variable is the share of votes for far-left and far-right parties expressed in terms of percentage, respectively. Demographic, socio-economic and municipal structure controls are included in all models. Using data from INSEE's 2010 urban area zoning, the effects of communes on the territory as a whole were defined. If more than 40% of the population share is in the urban part, we have classified communes as urban: large/medium/small poles, corona of large poles and multipolarized communes of large areas. Clustered standard errors at commune level are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Table A.6: The leave-one-out test for public facilities

Δ **Votes for far-left parties**	(1)	(2)	(3)	(4)	(5)
Δ Police (per 1000 inhab.)		-0.322	-0.322	-0.330	-0.353
		(0.234)	(0.234)	(0.231)	(0.235)
Δ Treasury (per 1000 inhab.)	-0.005		-0.007	0.000	-0.009
	(0.137)		(0.137)	(0.132)	(0.135)
Δ Employment office (per 1000 inhab.)	-0.206	-0.205		-0.195	-0.225
	(0.161)	(0.158)		(0.156)	(0.170)
Δ Post office (per 1000 inhab.)	-0.097**	-0.096**	-0.094**		-0.106**
	(0.047)	(0.046)	(0.046)		(0.046)
Δ Educational institutions (per 1000 inhab.)	-0.184***	-0.183***	-0.183***	-0.185***	
	(0.022)	(0.022)	(0.022)	(0.022)	
Δ **Votes for far-right parties**	(1)	(2)	(3)	(4)	(5)
Δ Police (per 1000 inhab.)		0.017	0.026	0.014	0.009
		(0.277)	(0.279)	(0.273)	(0.288)
Δ Treasury (per 1000 inhab.)	-0.184		-0.203	-0.196	-0.194
	(0.175)		(0.177)	(0.170)	(0.177)
Δ Employment office (per 1000 inhab.)	-0.264	-0.276		-0.247	-0.275
	(0.226)	(0.226)		(0.227)	(0.227)
Δ Post office (per 1000 inhab.)	-0.147***	-0.148***	-0.145***		-0.153***
	(0.052)	(0.052)	(0.052)		(0.052)
Δ Educational institutions (per 1000 inhab.)	-0.102***	-0.102***	-0.102***	-0.104***	
	(0.029)	(0.029)	(0.029)	(0.029)	
Observation	62966	62966	62966	62966	62966

Notes: The dependent variable is the share of votes for far-left and far-right parties in terms of percentage, respectively. Demographic, socio-economic and municipal structure controls are included in all models. One public facility at a time is removed. Clustered standard errors at municipal level are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Table A.7: Descriptive statistics for communes by vote gap between Centre-Right and extreme parties

Vote gap between Centre-Right and	**2002**	**2012**	**2022**
Far-left			
positive	31535	15566	4625
negative or null	-	15966	26848
Far-right			
positive	31535	9898	2224
negative or null	-	21634	29249
Municipalities where the centre-right vote is			
higher	30765	30558	28669
lower	770	974	2804
than far-left votes			
higher	29055	27214	12895
lower	2480	4318	18578
than far-right votes			

Notes: The distribution of the variation in "ΔVG" and the municipalities with center-right votes compared with the extreme parties votes is presented.
Source: Ministry of the Interior and Overseas.