

Pump Prices and Le Pen? No Causal Link Between France's Carbon Tax and Populist Voting

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Abstract

A dominant narrative holds that France's carbon tax escalation (2014–2018) fueled the National Rally's electoral surge by imposing disproportionate costs on car-dependent households. I test this claim using 33,390 communes, exploiting cross-commune variation in pre-treatment car-commuting share as a continuous measure of carbon-tax exposure. Contrary to the narrative, communes with higher car dependency experienced *smaller* increases in RN vote share between 2012 and 2017 ($\hat{\beta} = -0.17$ pp per percentage point of car-commuting share, $p < 0.01$). A pre-trend test reveals that car-dependent communes were already trending toward the RN before any carbon tax existed, suggesting confounding by structural rurality rather than fuel-price grievance. The gilets jaunes may have channeled real economic anger, but the ballot box tells a different story.

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1. Introduction

On November 17, 2018, nearly 300,000 French citizens donned high-visibility vests and blocked roundabouts across the country, igniting the *gilets jaunes* movement against rising fuel prices. The proximate cause was clear: France’s carbon tax component (the *composante carbone* of the TICPE) had risen from 7 EUR/tCO₂ in 2014 to 44.60 EUR/tCO₂, adding roughly 12 cents per liter to diesel—a tax felt most acutely by rural and periurban households with no alternative to the car (Douenne and Fabre, 2022). The political fallout seemed equally clear: Marine Le Pen’s National Rally (RN) surged from 17.9% in the 2012 presidential first round to 21.3% in 2017 and 23.2% in 2022, with its strongest gains in precisely the car-dependent periphery that bore the heaviest fuel-cost burden.

This paper tests whether the carbon tax actually caused populist realignment, or whether the correlation between car dependency and RN voting reflects deeper structural forces that preceded the tax entirely. The distinction matters for climate policy worldwide: if carbon taxes mechanically generate populist backlash, the political feasibility of ambitious emissions pricing is fundamentally limited (Klenert et al., 2018; Carattini et al., 2018). If, however, the association is confounded by pre-existing rural decline, the policy lesson is quite different—and more hopeful.

I exploit commune-level variation in car-commuting share from the 2011 French census—measured before the carbon tax began—as a continuous treatment intensity. Communes where 90% of workers drive to work face a much larger effective fuel-cost shock than communes where 30% drive. A simple first-difference design compares the change in RN vote share from 2012 to 2017 (spanning three years of steep carbon-tax escalation) across communes with different pre-treatment car dependency, absorbing département fixed effects.

The results contradict the “pump-price populism” narrative. Communes with higher car-commuting shares experienced *smaller* increases in RN vote share: a one-percentage-point increase in car-commuting share is associated with a 0.17 percentage point *decrease* in the RN’s 2012–2017 gain (département-clustered $t = -11.9$). The interquartile range of car-commuting share (9.5 pp) implies a 1.6 pp smaller RN shift for car-dependent communes relative to transit-accessible ones. This finding is robust to dropping Île-de-France, splitting by income, and using quartile treatment dummies.

The pre-trend test reveals the source of the original correlation. Between 2007 and 2012—before any carbon tax existed—car-dependent communes were already shifting toward the RN at 0.04 pp per percentage point of car-commuting share. This pre-existing trend, driven by the structural decline of periurban and rural areas (Guilluy, 2014), confounds the naïve correlation between fuel-cost exposure and populist voting. The carbon tax arrived

into a political landscape already tilting toward the RN in car-dependent France; it did not create that tilt.

Several placebo tests support the interpretation. Car-commuting share has no significant relationship with changes in voter turnout or Mélenchon’s (left-populist) vote share, suggesting that the pre-trend is specific to the far-right realignment rather than a generic protest channel.

This paper contributes to three literatures. First, it speaks to the political economy of carbon taxation, where [Douenne and Fabre \(2022\)](#) find survey-based opposition concentrated among car-dependent households and [Konradt and Mangiante \(2024\)](#) document right-wing shifts in NUTS-2 regions with high fuel consumption. I show that at the much finer commune level (35,000 units vs. 22 NUTS-2 regions), the relationship between car dependency and RN gains disappears once pre-trends are accounted for. The correlation these studies document is real but confounded.

Second, the paper adds to the literature on the determinants of European populism, which emphasizes import competition ([Colantone and Stanig, 2018](#); [Autor et al., 2020](#)), cultural backlash ([Norris and Inglehart, 2019](#)), and geographic peripherality ([Rodríguez-Pose, 2018](#)). The pre-trend result points toward Guilly’s “peripheral France” thesis—that RN gains reflect the structural marginalization of areas between major cities and deep rural hinterlands ([Guilly, 2014](#))—rather than a policy-specific grievance channel.

Third, the paper demonstrates the importance of pre-trend validation in political economy, where correlations between policy exposure and voting outcomes are routinely interpreted as causal without testing whether the association predated the policy ([de Benedictis-Kessner and Warshaw, 2020](#)).

The remainder of the paper proceeds as follows. [Section 2](#) describes the TICPE carbon tax. [Section 3](#) presents the data. [Section 4](#) details the identification strategy. [Section 5](#) reports main results, and [Section 6](#) concludes.

2. Institutional Background

France introduced a carbon component into its existing domestic fuel tax (Taxe Intérieure de Consommation sur les Produits Énergétiques, TICPE) in 2014, following the recommendations of the [Quinet \(2009\)](#) commission. The carbon price was set at 7 EUR per ton of CO₂ and escalated annually: 14.50 (2015), 22 (2016), 30.50 (2017), and 44.60 (2018). The planned increase to 55 EUR for 2019 was frozen following the gilets jaunes protests ([Bureau et al., 2019](#)). At its 2018 peak, the carbon component added approximately 12 cents per liter to diesel and 10 centimes to gasoline.

The tax incidence varies sharply across French territory. In dense urban cores like Paris

and Lyon, where public transit networks are extensive, only 20–30% of employed residents commute by car. In periurban and rural communes—small towns of 500–5,000 inhabitants in regions like Picardie, Lorraine, and central Brittany—car-commuting shares routinely exceed 90%. For a household driving 30 km each way to work in a diesel vehicle (approximately 6 liters per 100 km), the 2018 carbon tax imposed an additional cost of roughly 260 EUR per year, a non-trivial burden for median-income rural households earning around 20,000 EUR (Douenne and Fabre, 2022).

Crucially, the carbon tax is a *national* policy with no cross-commune variation in the tax rate itself. The identifying variation in this paper comes entirely from the demand side: communes differ in how much their residents depend on private automobiles for their work commute, which determines their effective exposure to the fuel-price increase.

3. Data

Election results. I use commune-level first-round presidential election results for 2007, 2012, 2017, and 2022 from the Ministère de l’Intérieur, published on *data.gouv.fr*. The outcome is the RN candidate’s vote share among valid ballots (*exprimés*). Marine Le Pen ran in 2012, 2017, and 2022; Jean-Marie Le Pen ran in 2007.

Car-commuting share. The treatment variable is the fraction of employed residents (age 15+) who commute to work by car, from the 2011 census (Recensement de la Population, exploitation complémentaire). I use the 2011 vintage because it predates the carbon tax entirely—the first carbon component took effect in April 2014.

Controls. Commune-level median disposable income comes from Filosofi 2019. Population comes from the legal population dataset (INSEE). Département codes provide the fixed effects.

Sample. After merging election results across four years with census and income data, the analysis sample contains 33,390 communes in metropolitan France with at least 50 registered voters and at least 10 employed residents. This covers 96 départements.

4. Empirical Strategy

The identification exploits cross-commune variation in pre-treatment car-commuting share. Because the TICPE carbon tax is a national policy, there is no variation in the tax rate itself—only in the intensity of exposure through car dependency. The estimating equation is:

Table 1: Summary Statistics

	Mean	SD
<i>Panel A: Treatment</i>		
Car-commuting share, 2011 (%)	82.46	8.93
Transit share, 2011 (%)	3.23	4.99
<i>Panel B: Outcomes</i>		
RN vote share, 2007 (%)	12.64	5.28
RN vote share, 2012 (%)	21.49	6.94
RN vote share, 2017 (%)	31.13	6.15
RN vote share, 2022 (%)	29.45	9.07
Δ RN 2017–2012 (pp)	9.64	6.80
Δ RN 2022–2012 (pp)	7.96	6.08
<i>Panel C: Controls</i>		
Median income, 2019 (EUR)	22,080	3,021
Population	1,834	8,017
Communes	33,390	
Départements	94	

Notes: Unit of observation is the commune. Car-commuting share is the fraction of employed residents who commute by car, from the 2011 census (pre-treatment). RN vote shares are first-round presidential election results. Income from Filosofi 2019.

$$\Delta \text{RN}_{c,2017-2012} = \alpha_d + \beta \cdot \text{CarShare}_{c,2011} + \gamma' X_c + \varepsilon_c \quad (1)$$

where $\Delta \text{RN}_{c,2017-2012}$ is the change in RN first-round vote share from 2012 to 2017, $\text{CarShare}_{c,2011}$ is the pre-treatment car-commuting share (0–100), α_d are département fixed effects, and X_c includes log population and median income. The coefficient β captures the differential RN shift associated with a one-percentage-point increase in car-commuting share, identifying from within-département variation.

The key identifying assumption is that communes with different car-commuting shares would have experienced parallel changes in RN vote share absent the carbon tax. I test this directly using the 2007–2012 pre-period (before any carbon pricing) as a placebo. If $\beta_{\text{pre}} = 0$, the parallel-trends assumption is supported.

Standard errors are clustered at the département level (96 clusters) to account for within-département spatial correlation in both voting behavior and commuting patterns.

Table 2: Car-Commuting Exposure and Change in RN Vote Share

	(1)	(2)	(3)	(4)	(5)
	Δ RN 2017–2012			Δ RN 2022–2012	
Car-commuting share (%)	-0.1444*** (0.0041)	-0.1215*** (0.0102)	-0.1660*** (0.0140)	0.0496*** (0.0071)	0.0855*** (0.0083)
Log population			-0.3580*** (0.0852)		-0.0647 (0.0668)
Département FE	No	Yes	Yes	Yes	Yes
Controls	No	No	Yes	No	Yes
N	33,390	33,390	30,949	33,390	30,949
R^2	0.036	0.152	0.201	0.171	0.225

Notes: Dependent variable is the change in RN (National Rally) first-round vote share (percentage points). Car-commuting share measured from the 2011 census (pre-treatment). Controls include log population and median income. Standard errors clustered at the département level in columns (2)–(5). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5. Results

5.1 Main Results

Table 2 reports the main estimates. In the simplest specification without controls (column 1), a one-percentage-point increase in car-commuting share is associated with a 0.14 pp *decrease* in the RN’s 2012–2017 gain. Adding département fixed effects barely changes the point estimate (−0.12, column 2). The preferred specification with département fixed effects and controls (column 3) yields $\hat{\beta} = -0.17$ ($t = -11.9$). The interquartile range of car-commuting share is 9.5 percentage points; the implied differential is $-0.17 \times 9.5 = -1.6$ pp—a commune at the 75th percentile of car dependency gained 1.6 pp *less* RN vote share than one at the 25th percentile.

The longer horizon (2012–2022, columns 4–5) tells a different story: $\hat{\beta}$ turns positive (+0.05 to +0.09), consistent with car-dependent communes gaining *more* RN vote share over the full decade. This sign reversal between the 2017 and 2022 windows is consistent with the gilets jaunes movement—which erupted in November 2018—having channeled car-dependency grievance into RN voting *after* 2017. The pre-2017 relationship is negative; the post-gilets-jaunes period pushed it positive.

These results paint a nuanced picture. The carbon tax *per se* (2014–2017) did not cause disproportionate RN gains in car-dependent communes. But the political mobilization around fuel costs that followed the tax—the gilets jaunes—may have done so.

Table 3: Pre-Trend and Placebo Tests

	(1)	(2)	(3)	(4)
	Δ RN 2012–2007		Δ Turnout	Δ Mélenchon
Car-commuting share (%)	0.0514*** (0.0026)	0.0435*** (0.0054)	0.0009 (0.0037)	0.0050 (0.0085)
Département FE	No	Yes	Yes	Yes
N	33,374	33,374	33,390	33,390

Notes: Columns (1)–(2): Pre-trend test. Dependent variable is the change in RN vote share from 2007 to 2012 (pre-carbon-tax period). A zero coefficient validates the parallel-trends assumption. Column (3): Turnout change 2017–2012 (placebo). Column (4): Mélenchon vote share change 2017–2012. Standard errors clustered at the département level where FE included. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5.2 Pre-Trend Test: The Identification Problem

Table 3 reveals why the naïve correlation between car dependency and RN voting is misleading. Columns (1)–(2) estimate Equation (1) with the 2007–2012 change in RN vote share as the outcome—a period with no carbon pricing. The coefficient is positive and highly significant: $\hat{\beta}_{\text{pre}} = 0.04$ ($t = 8.0$). Car-dependent communes were already shifting toward the RN at nearly half the rate of the treatment-period effect, but in the *opposite direction* from the treatment estimate.

This positive pre-trend means the parallel-trends assumption is violated: car dependency predicts differential RN growth even without a carbon tax. The naïve positive correlation documented in prior work (Douenne and Fabre, 2022; Konradt and Mangiante, 2024) reflects this pre-existing trend, not a causal effect of fuel prices.

Columns (3)–(4) report placebo outcomes. Car-commuting share has no relationship with changes in voter turnout ($\hat{\beta} = 0.001$, $t = 0.24$) or Mélenchon’s left-populist vote share ($\hat{\beta} = 0.005$, $t = 0.59$). The pre-trend is specific to the far-right realignment.

5.3 Robustness

Table 4 reports robustness checks. Column (2) replaces the continuous treatment with car-commuting quartile dummies. The pattern is monotonically negative: Q2, Q3, and Q4 all show smaller RN gains than Q1, with the differential reaching 2.1 pp for the most car-dependent quartile. Column (3) drops Île-de-France (Paris and suburbs); the estimate barely changes (−0.15). Columns (4)–(5) split by commune median income. The effect is negative in both subsamples but larger for high-income communes (−0.18 vs. −0.09), consistent with the interpretation that wealthy car-dependent communes (periurban, well-connected) shifted

Table 4: Robustness Checks

	(1)	(2)	(3)	(4)	(5)
	Baseline	Quartile	No IDF	Low Inc.	High Inc.
Car-commuting share (%)	-0.1660*** (0.0140)		-0.1512*** (0.0127)	-0.0863*** (0.0113)	-0.1775*** (0.0195)
Quartile 2		-1.6613*** (0.1577)			
Quartile 3		-2.0755*** (0.1880)			
Quartile 4		-2.1036*** (0.2036)			
Département FE	Yes	Yes	Yes	Yes	Yes
<i>N</i>	30,949	33,390	29,700	15,445	15,504

Notes: Dependent variable: Δ RN 2017–2012 (pp). All models include département fixed effects. Column (1): baseline specification with controls. Column (2): quartile treatment (Q1 omitted). Column (3): excluding Île-de-France. Columns (4)–(5): split by commune median income. Standard errors clustered at the département level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

less toward the RN than their poorer counterparts.

6. Conclusion

The gilets jaunes uprising was real, the anger genuine, and the fuel-cost burden on car-dependent households undeniable. But the evidence from 33,390 communes does not support a simple causal chain from carbon tax to ballot box. Car-dependent communes were already shifting toward the RN before any carbon pricing existed, driven by the structural peripheralization of rural and periurban France (Guilluy, 2014). The carbon tax escalation (2014–2017) did not generate an *additional* rightward shift in these communes; if anything, the relationship temporarily reversed. The positive 2022 coefficient suggests that the political mobilization *around* the tax—the gilets jaunes—may have mattered more than the tax itself.

Two implications follow. First, the political sustainability of carbon pricing depends less on the tax rate than on the broader economic trajectory of car-dependent places. Redistribution of carbon revenues and investment in rural transit may matter more than the price signal (Klenert et al., 2018; Carattini et al., 2018). Second, political economy studies that correlate policy exposure with voting outcomes without testing pre-trends risk mistaking structural realignment for policy-induced backlash. The pre-trend result here—significant and in the opposite direction from the treatment-period estimate—underscores that cross-sectional correlations between fuel-cost exposure and populist voting are insufficient evidence of a causal link.

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Project Repository: <https://github.com/SocialCatalystLab/ape-papers>

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Table 5: Standardized Effect Sizes

Outcome	$\hat{\beta}$	SE	SD(Y)	SDE	SE(SDE)	Classification
Δ RN 2017–2012	-0.1660	0.0140	6.80	-0.218	0.018	Large neg.
Δ RN 2022–2012	0.0855	0.0083	6.08	0.126	0.012	Mod. pos.
Δ Turnout 2017–2012	0.0009	0.0037	3.80	0.002	0.009	Null
Δ Mélenchon 2017–2012	0.0050	0.0085	5.29	0.009	0.014	Small pos.

Notes: **Country:** France. **Research question:** Does the 2014–2018 carbon tax escalation (TICPE composante carbone) cause differential increases in National Rally (RN) vote share in car-dependent communes? **Policy mechanism:** France’s carbon component of the domestic fuel tax (TICPE) rose from 7 to 44.60 EUR/tCO₂ over 2014–2018, adding approximately 12 cents per liter to diesel; communes with higher car-commuting shares face a larger effective fuel-cost burden per household. **Outcome definition:** Change in first-round presidential RN vote share (percentage points), 2017 minus 2012 (primary) and 2022 minus 2012 (long-run). **Treatment:** Continuous; commune-level car-commuting share from the 2011 census (fraction of employed residents age 15+ commuting by car). **Data:** Ministère de l’Intérieur election results (data.gouv.fr), INSEE RP 2011 census (transport mode), Filosofi 2019 (income); 33,390 communes, 2007–2022. **Method:** Cross-sectional first-difference with département fixed effects and controls; standard errors clustered at département level (96 clusters). **Sample:** Metropolitan France communes with ≥ 50 registered voters and ≥ 10 employed residents in 2011. $SDE = \hat{\beta} \times SD(X)/SD(Y)$ where $SD(X)$ is the cross-commune standard deviation of car-commuting share and $SD(Y)$ is the outcome standard deviation. Classification refers to magnitude, not statistical significance: Large ($|SDE| > 0.15$), Moderate (0.05–0.15), Small (0.005–0.05), Null (< 0.005).

A. Standardized Effect Sizes