

How to Get Coal Country to Vote for Climate Policy: The Effect of a ‘Just Transition Agreement’ on Spanish Election Results

Diane Bolet, Fergus Green and Mikel González-Eguino

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Appendix A: Context and Interview Process

A.1 Spanish coal industry—historical context

Spain has a long and proud tradition of coalmining stretching back to at least the 18th century (Del Río 2017). The sector employed close to 100,000 workers in the middle of the 20th century, though production has declined precipitously since its peak of around 35 million tons per annum in the late 1980s (Herrero and Lemkow 2015). Since 1990, the industry's decline was driven by changes in the electricity market that reduced the share of coal-fired power generation, the uncompetitive cost structure of domestic coal production relative to imports, the high costs of government subsidies to the sector, and changes in European Union (EU) regulation that sought to phase-out state aid for coal production (Del Río 2017). A 2010 EU decision required state aid for the coalmining sector to be made conditional on uncompetitive production units being closed by 31 December 2018 (Council of the European Union 2010).

Due to the declines in production, along with the gradual mechanization (a growing share of surface mining) and concentration of mining corporations, direct employment in the sector fell precipitously since the late-80s production peak (Herrero and Lemkow 2015), to below 1,700 in 2017 (Spanish Ministry of Ecological Transition 2018). While Spain does not have entrenched corporatist institutions for interest-group intermediation (Siaroff 1999), unions throughout this period opposed cuts to state production subsidies while also participating in government-led industrial planning initiatives for the sector that combined (declining) production subsidies with support for workers and regional investment (Del Río 2017). The mining unions have been historically close to PSOE, and this has tended to be reflected in PSOE's strong electoral performance in the mining regions throughout this period. Still, the sector's decline has created significant tensions between the unions and governments across the political spectrum (Del Río 2017; Herrero and Lemkow 2015).

A.2 Signatories of and Participants in the Just Transition Agreement

Signatories to the Just Transition Agreement (JTA):

- José Domínguez Abascal, Secretario de Estado de Energía, Ministerio para la Transición Ecológica

- Agustín Martín Martínez, Secretario General, Federación de Industria de CCOO
- Pedro Luis Hojas Cancho, Secretario General, UGT-FICA
- Pedro Ayllón García, Secretario General, Federación de Industria-USO
- Pedro Iglesia, Presidente, Carbunión.

Other (non-signatory) participants in the JTA negotiation process:

- Víctor Fernández Vázquez, Secretario del Sector Minero, UGT FICA
- José Luis Alperi, Secretario General SOMA UGT-FICA Asturias
- Jorge Díez González, Secretario Sector Minero UGT-FICA, Castilla y león
- Francisco Montull Fornos, Secretario del sector Minero UGT-FICA Aragón
- Jesús Ignacio Crespo Torres, Coordinador de Industria y Responsable de Sector Minero Eléctrico
- Antonio Montoya Perez, Responsable de Minería FI-CCOO en Asturias
- Omar García Álvarez, Responsable de Minería FI-CCOO en Castilla y león
- Raúl Montoya González, Secretario de Acción Sindical FI-USO.

Table A.2: Interviewees

Interviewee (Generic Description)	#
Government official responsible for the just transition in coal provinces	1
Coal industry representative	2
Union representative	3
International Labour Organization representative	4
Mayor from a coal community in Aragón (PSOE)	5
Senior journalist from Asturias	6

Podemos MP and head of coal issues for Asturias	7
Equo MP and member of the energy transition committee	8
Partido Popular politician	9
Mayor of coal community in Asturias (United Left)	10
Business association representative	11

A.3: Semi-structured interviews: process and analysis

We conducted interviews with elite participants in, and observers of, the JTA negotiations (N=11) to enrich our understanding of the relevant context, aid the interpretation of our main findings (concerning voting behavior) and explore potential causal mechanisms. Interviews were conducted in Spanish by two of the authors (one of whom is a native Spanish speaker, and the other a fluent non-native Spanish speaker¹) in March and April 2022 over Zoom, and lasted 50 minutes on average. All interviewees signed a written consent form after receiving a detailed information sheet, and understood that the information would be used for research and publication purposes. We received ethical approval from the University of Durham (reference number SGIA-2021-11-24T19_15_10-pdf182) and the Basque Centre for Climate Change (AS/B/14076/2008).

The main themes of the questions we asked interviewees concerned: the negotiation of the JTA (e.g., the policies that were debated and negotiated, the beneficiaries of the Agreement); their connection to the negotiation process; the level of trust between the main participating stakeholders (mining companies, unions, local and national PSOE government); whether and how they (and/or their organization) used the JTA as a campaign issue in the 2019 election campaign; how PSOE framed a narrative around the JTA to the local communities; how PSOE and the JTA were perceived by these communities during the course of the negotiations and the 2019 April election

¹ Interview 11 was conducted only by our native Spanish-speaking coauthor.

campaign; how the Agreement was communicated to the relevant local communities; how salient an issue the JTA was during the election campaign; and how it was perceived by these communities.

Interview recordings were transcribed in Spanish and manually coded by our two Spanish-speaking coauthors.² We approached the analysis of the interview transcripts by using a deductively and inductively derived coding framework. We deductively identified themes from the just transition literature, notably the political importance of individual- and community-level redistributive measures and of fair processes (with a focus on tripartite social dialogue), which informed our theorized explanations of PSOE's performance in the treated coal municipalities in the 2019 election.³ We therefore looked for observable implications of our theorized explanations by identifying key words or phrases that would support or refute each such explanation (an example is provided in the next paragraph, below).⁴ We then grouped these key words/phrases based on patterns of similarity (see Saldana 2016). Through our interview questions, we also explicitly sought to identify alternative explanations for our main findings. Some interviewees ventured alternative explanations for our main findings that, if confirmed, would contradict our theorized explanations (e.g., other contextual factors like low population density explain the increase in PSOE support). These were inductively coded. However, each of the ventured explanations was disconfirmed by our main quantitative analysis.

To illustrate these analytical steps, consider how we coded and interpreted the following quote from Interviewee 4: “a negotiation that only talks about the jobs that are going to be lost due to the closure is not the same as negotiations that also talked about the jobs as a whole in the territory, about ... the development of the territory as

² Quotations selected for use in the manuscript were translated into English by the coauthors who did the coding.

³ We were also interested in better understanding the context in which the JTA came about and its salience in the affected communities, so we inductively identified themes related to these contextual factors.

⁴ The qualitative research methods literature makes clear that using a prior theoretical framework is a valid approach to data analysis, and that the credibility (or internal validity) of qualitative data analysis can be improved by transparency about coding processes (Benaquisto, 2008; Saldana, 2016).

a whole. ... And from the point of view of the electoral results ... this is going to have its positive effects.” The mention of the significance of “the jobs as a whole in the territory” and “the development of the territory as a whole” were coded as evidence of “distributive justice” factors in explaining support for the JTA (a deductively-derived code), and interpreted specifically as (suggestive) evidence in support of the theorized explanation that the provision of community-level public goods explains PSOE’s increased vote share at the 2019 election. When we discuss this quote in the manuscript, we are careful to note that the evidence is only suggestive and that we cannot test this explanation quantitatively with the data available to us.

Appendix B: Media Analysis

To test our main hypothesis, we need to provide evidence that the just transition policy was pivotal in influencing the vote choices of coalmining municipalities by comparison to non-coalmining municipalities. We conduct a media analysis to show that the JTA was a more salient local issue in Spanish coalmining communities subject to the JTA than in the rest of the country.

The media analysis compares the coverage of just transition in coalmining and non-coalmining provinces. We use three regional newspapers (*El Diario de León*, *El Comercio: Diario de Asturias* and *El Norte de Castilla*) to observe whether the levels of issue salience for provinces affected by the JTA vary compared with Spain more generally, as observed in two national newspapers (*El Mundo* and *El País*). We first scraped all the headlines of each newspaper from 1 January 2018 to 6 June 2019, covering the year leading up to the April 2019 elections. We then built a dictionary based on just transition using the `grepl` package, which identified all sentences with a keyword related to this concept.⁵ Our final corpus has 155,022 headlines, 496 (0.32%) of which are related to the JTA.

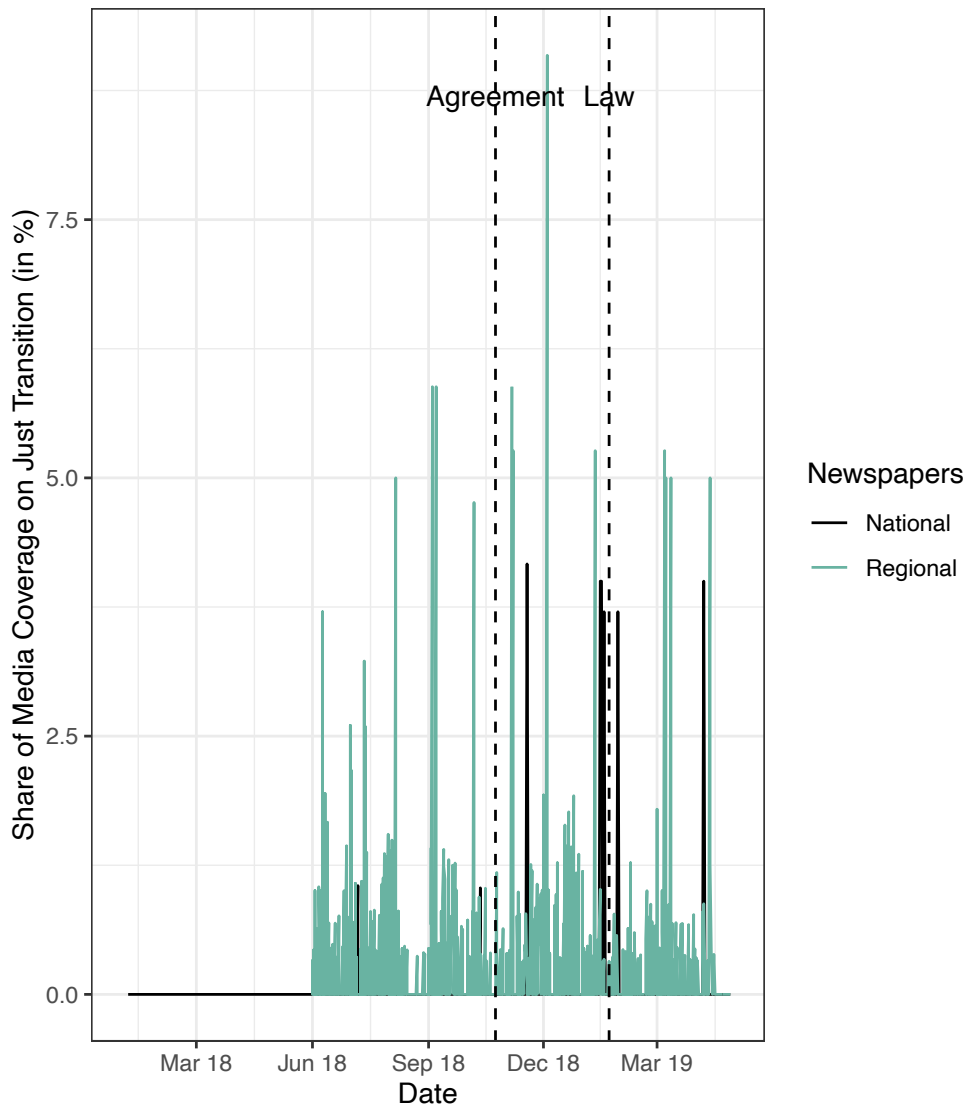
⁵ All terms that were included in this search were the following: “transición justa”, “transición ecológica”, “minas”, “Teresa Ribera”, “minería del carbon”, “ley de Cambio Climático”, “centrales de carbon”, “Hunosa”, “acuerdo minero”, “cuencas mineras”, “transición energética”, “carbón”, “comarcas mineras”, “acuerdo minería”, “acuerdo marco”, “SOMA”, “sindicato de los obreros mineros de Asturias”, “descarbonización”, “térmicas de carbon”, “plantas de carbón”.

Figure 1 shows the total share of news articles for regional versus national newspapers from 1 January 2018 until 6 June 2019. It shows that newspapers from coalmining provinces had many more articles on just transition than national newspapers. Regional newspapers contained, on average, five times more articles about just transition than national newspapers (0.35%⁶ vs 0.07% respectively). Residents in coalmining regions therefore received more articles about just transition than the rest of the population. We also find that 18.8% of all articles on just transition mention PSOE and related terms (cabinet, prime minister, Minister for Ecological Transition), whereas only 2% of such articles are associated with the main opposition (PP) and only 1.8% with Podemos or Equo (Green Party). This shows that just transition received greater visibility in coalmining provinces (i.e., the JTA was more salient there than elsewhere), and that PSOE was identified as the party responsible for it.

Since the just-transition strategy was more salient in coalmining municipalities and PSOE “owned” the issue, we can indeed test if this strategy was pivotal in influencing PSOE’s vote share in coalmining municipalities, compared with demographically similar, non-coalmining municipalities.

⁶ The share of reports is similar to the share of articles on climate change found in studies covering ten other countries. The most recent study by Hase et al. (2021) finds that only 0.53% of all articles per month focus on climate change.

Figure B.1: Share of media coverage on just transition in national vs regional newspapers



Appendix C: Descriptive Statistics and Placebo Test

Table C.1: Summary Statistics

Variables	Observations	Mean	SD	Min	Max
PSOE Vote Share	2,625	31.826	11.931	0	80.224
Year 2019	2,625	.2	.400	0	1
Coalmines	2,625	.208	.406	0	1
Population Share (Log)	2,625	6.175	1.633	1.609	12.526
Primary Education	2,625	11.996	7.583	0	60
Unemployment Growth	2,465	-1.319	1.874	-10.559	5.604
Share of men over 50 years old	2,615	32.796	9.443	10.064	73.347
Immigration Rate	2,615	6.252	6.956	0	47.042
Share of Coalminers	2,625	.128	.721	0	9.884
Union Density	2,625	.149	.356	0	1

Table C.2: Placebo test

	(1)
<hr/>	
PSOE Vote Share	
<hr/>	
Coalmines	5.783
	[2.328]
Year 2011	-11.441**
	[1.999]
Year 2015	-16.578**
	[1.849]
Year 2016	-16.995**
	[1.861]
Year 2019	-11.385**
	[2.044]
Baseline Category (Year 2008)	
Coalmines x Year 2011	0.229
	[0.953]
Coalmines x Year 2015	-0.623
	[0.418]
Colamines x Year 2016	-0.204
	[0.580]
Colamines x Year 2019	1.668***
	[0.114]
<hr/>	
Constant	41.860***
	[1.268]
Province FE	✓
Observations	2,625
R-squared	0.319
<hr/>	

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table C.3: Covariates adjustment via entropy balancing

Covariates	Treated Municipalities			Control Municipalities			Diff
	Mean	Variance	Skewness	Mean	Variance	Skewness	
Before weighting							
Population Share (Log)	6.495	3.573	.02464	6.139	2.461	.805	-.209***
Primary Education	13.94	64.53	.5196	11.66	56.95	2.24	1.572***
Unemployment Growth	-1.533	3.102	.7552	1.286	3.587	-.5525	.255**
Share of Men Over 50							
Years Old	31.31	92.32	.8072	33.13	89.52	.6399	1.621***
Immigration Rate	6.617	76.65	2.356	6.063	41.16	2.087	.976***
After weighting							
Population Share (Log)	6.495	3.573	.02464	6.495	3.201	.8297	
Primary Education	13.94	64.53	.5196	13.94	108.6	2.344	
Unemployment Growth	-1.533	3.102	.7552	-1.533	3.286	.5742	
Share of Men Over 50							
Years Old	31.31	92.32	.8072	31.31	85.35	.5145	
Immigration Rate	6.617	76.65	2.356	6.617	46.14	1.825	

*** p<0.01, ** p<0.05, * p<0.1

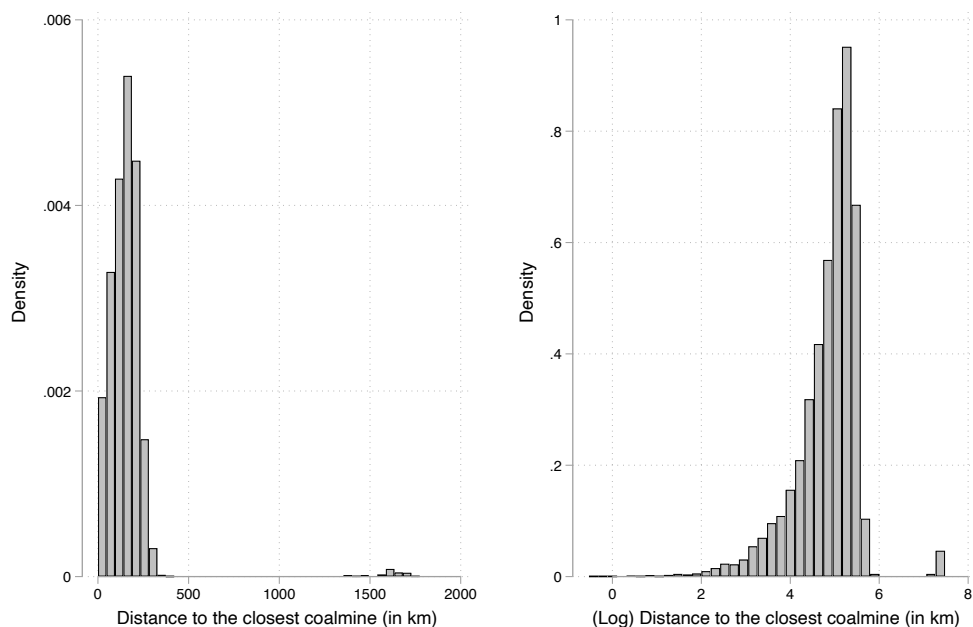
Appendix D: Analysis with the Distance to Coalmines

Empirical strategy

In this section, we use additional information on the distance of municipalities to coalmines slated for closure to assess if the change in PSOE vote shares is related to proximity to those coalmines. This analysis also helps us to control for potential geographic spillovers, because we can expect the effects of the JTA to extend beyond coalmining municipalities into neighboring municipalities which are not considered *cuencas mineras*.

To investigate the specific effect of coalmine closures and spillover effects, we use the geographical coordinates of all coalmines slated for closure pursuant to the JTA⁷ to obtain the shortest distance to each municipality, calculated as the distance between the polygon's centroid of a given municipality and the closest coalmine (in kilometers) using the Haversine formula. We use the logarithm of the shortest distance to coalmines, since the variable skews heavily left. Figure D.1 shows the distribution of distances to the nearest coalmine and the log of the distances.

Figure D.1: Distribution between a municipality's centroid and the closest coalmine



⁷ Coalmines that are not covered by the JTA and are already closed are not included.

Since we do not compare treated and control municipalities, we use an OLS regression⁸ where we consider the following equation:

$$\Delta PSOE_m = \alpha_m + \beta \text{Distance to coalmines}_m + L_m + Z_m + \epsilon_m \quad (1)$$

where $\Delta PSOE$ is the change in vote shares of PSOE from 2016 to 2019 for each municipality_m. $\beta \text{Distance to coalmines}_m$ denotes the main variable of interest, the (log of the) distance to the closest coalmines for each municipality_m. L_m is the lagged dependent variable of vote support in 2015, as the PSOE vote share is highly determined by the previous vote. Z_m refers to contextual controls that could mitigate the risk of geographic sorting bias. We use the controls that were used in the main analysis: unemployment growth among men over 50, population share (log), share of people with primary education, and immigration share. We use the whole sample of the Spanish municipalities and province fixed effects to control for province-level heterogeneity. Following our main hypothesis, we expect the change in PSOE support from 2016 to 2019 to decrease as the distance from the closest coalmines increases.

Results

Table D.1 reports the effect of the shortest distance to coalmines on PSOE vote change from 2016 to 2019 using no controls (model 1), combining vote share in 2015 and contextual controls that could have influenced the PSOE vote share (model 2), and excluding outliers (model 3). Model 3 excludes municipalities not in mainland Spain (e.g., Mallorca, Canary Islands). All models show that an increase in distance from the closest coalmine has a negative and marginally significant effect on the PSOE vote change from 2016 to 2019. This means the margin of increase in PSOE support is larger in municipalities closer to coalmines. This effect is substantial: model 3 suggests that, at the sample average distance, an extra 10 km reduces the vote share by 0.05 percentage point (see Appendix F). These findings are further evidence that the increased support for PSOE in 2019 is linked to coalmine closures. Coal communities reward the incumbent for the JTA.

⁸ We used a log-linear model because this model fits the data better than distance. We include the marginal plot of the change in PSOE vote share by the distance to the closest coalmine (in km) in Appendix F.

Table D.1: Distance to coalmines

	(1)	(2)	(3)
PSOE 2016-2019			Without Outliers
Distance to coalmines (Log)	-0.373** [0.159]	-0.292* [0.175]	-0.294* [0.175]
2015 PSOE vote share		-0.039*** [0.007]	-0.040*** [0.007]
Population Share (Log)		0.431*** [0.061]	0.433*** [0.061]
Primary Education		-0.024*** [0.009]	-0.024*** [0.009]
Unemployment Growth		-0.279*** [0.067]	-0.279*** [0.067]
Share of Men Over 50 Years Old		0.031*** [0.009]	0.031*** [0.009]
Immigration Share		-0.005 [0.010]	-0.003 [0.010]
Constant	6.483*** [0.770]	3.562*** [1.064]	3.561*** [1.066]
Province FE	✓	✓	✓
Observations	7,758	6,070	6,008
R-squared	0.001	0.018	0.018

Robust standard errors in brackets

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Appendix E: Robustness Tests

In this section, we report a series of sensitivity analyses that test the plausibility of alternative mechanisms and the robustness of our findings.

We first tested whether our results remain consistent when including municipality fixed effects. Using municipality fixed effects would allow us to control for any other municipality-specific, time-invariant characteristics. The results, which are reported in Table E.1, are comparable to the main analysis. Second, we conducted a model with the lagged dependent variable to control for the differences in the initial PSOE vote shares between the treated and the control groups. We matched on the 2016 PSOE

vote shares and contextual variables to test the average treatment effect of the JTA on the 2019 PSOE vote share (we dropped the previous years). The results, which are shown in Table E.2, are consistent with the main analysis conducted using entropy balancing, with the effects showing similar magnitudes, even though the statistical significance level is at 0.1. conventional significance. Third, we ran the same models as in the main analysis using the remaining sample of municipalities as the control group in Table E.3. Re-estimating the DiD models does not change our findings, even though the effects are slightly stronger in magnitude when we include the full sample with all municipalities. The PSOE vote share increases by around 2.25-2.3 percentage points in treated municipalities (compared with the rest of the municipalities) in the full sample. These findings confirm that the main analysis is not affected by different modelling strategies.

Table E.1: With municipality fixed effects

	(1)
PSOE Vote Share	
Year 2019	-0.131 [0.248]
Coalmines	
Year 2019 x Coalmines	1.818*** [0.659]
Constant	31.776*** [0.047]
Municipality FE	✓
Year FE	✓
Observations	2,625
Number of municipality	525
R-squared	0.002

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Column 1 shows the OLS regression for treated and control municipalities in coalmine provinces with municipality fixed effects and standard errors clustered at the municipality level in parentheses.

Table E.2: With the Lagged Dependent Variable (and entropy balancing)

	(1)
2019 PSOE Vote Share	
Coalmines	1.739* [1.034]
Population Share (Log)	0.516* [0.292]
Primary Education	0.087* [0.052]
Unemployment in 2016	-0.117 [0.143]
Share of Men Over 50 Years Old	-0.022 [0.050]
Immigration Rate	0.044 [0.068]
2016 PSOE Vote Share	0.908*** [0.042]
Constant	6.285* [3.523]
Province FE	✓
Entropy Balancing	✓
Observations	491
R-squared	0.735

*** p<0.01, ** p<0.05, * p<0.1

Column 1 shows the OLS regression with entropy balancing for treated and control municipalities in coalmine provinces with province fixed effects and standard errors clustered at the municipality level in parentheses.

Table E.3: With the full sample of municipalities

	(1)	(2)	(3)	(4)
PSOE Vote Share		Full Sample (All Provinces)		
Year 2019	-0.606*** [0.057]	-11.691*** [0.095]	-11.820*** [0.106]	-0.751*** [0.064]
Coalmines	7.409*** [1.029]	5.710*** [1.076]	5.882*** [1.184]	189.411*** [71.052]
Year 2019 x Coalmines	2.247*** [0.612]	2.248*** [0.612]	2.365*** [0.722]	2.365*** [0.722]
Population Share (Log)			1.111*** [0.107]	1.597*** [0.206]
Primary Education			0.193*** [0.025]	0.265*** [0.037]
Unemployment Growth			-0.307*** [0.071]	-0.290*** [0.071]
Share of Men Over 50 Years Old			0.023 [0.019]	0.117*** [0.038]
Immigration Rate			0.001 [0.016]	-0.002 [0.016]
Constant	28.784*** [0.140]	38.114*** [0.543]	37.367*** [1.451]	21.878*** [2.091]
Observations	39,719	39,719	32,129	32,129
Province FE		✓	✓	✓
Year FE		✓	✓	✓
Entropy Balancing				✓
R-squared	0.004	0.559	0.589	0.426

*** p<0.01, ** p<0.05, * p<0.1

Column 1 shows the OLS regression for treated and control municipalities in coalmine provinces with province fixed effects and standard errors clustered at the municipality level in parentheses. Column 4 presents OLS regression with entropy balancing and standard errors clustered at municipal level in parentheses.

We also test alternative hypotheses in this section. We first considered whether the results presented so far could be connected to changing turnout rates. One might speculate that the increase in support for PSOE could be due to a general increase in turnout in the coalmining municipalities, since coalmining communities may be going

to the ballot box in greater numbers than other communities: the closure of coalmines may trigger these communities to mobilize. It would be problematic to our results if only inhabitants in coalmining municipalities changed their behavior and voted in greater numbers compared with other, unaffected communities (in the control group). We therefore replicate the main analysis,⁹ and substitute the dependent variable with turnout rates in 2016 and 2019. Turnout rate is calculated as the percentage of eligible voters who cast a vote in the 2016 and 2019 elections. This placebo test is shown in Table E.4 (model 1). It shows no significant effect between coalmining and non-coalmining municipalities in the sub-sample of coalmining provinces, confirming that turnout is not affected by coalmining closures in these coalmining municipalities. It also suggests that the increase in PSOE support resulted primarily from a shift among voters who previously voted for other parties, not from engaging non-voters.

Another placebo test compares voting support for Podemos in treated and control municipalities. Although Podemos focused on Green New Deal policy at national level during the election campaign in April 2019,¹⁰ its MPs did not vote in favor of the Royal Decree Law 25/2018 (which enshrined the JTA in Spanish law) in the Spanish Parliament in January 2019. We replicate our analysis and change our dependent variable to the change of support for Podemos from 2016 to 2019. Table E.4 (model 2) reports the results. We see the lack of significant effect among coalmining provinces, which confirms that Podemos does not appeal to these mining communities. Many reasons may explain why these communities do not support Podemos, but it seems that Podemos' national support for an ecological transition but lack of support for the JTA did not attract local voters. This corroborates our argument that the just-transition strategy motivated coalmining communities to support PSOE.

⁹ We include only the 2016 and 2019 election years in these robustness checks. Standard errors are clustered at the municipality level.

¹⁰ This includes calling for the creation of public companies, including a bank and a public energy company, to transition Spain to 100 percent renewable electricity in 20 years.

Table E.4: Placebo tests

	(1)	(2)
	Turnout	Podemos
Year 2019	2.996***	-4.522***
	[0.228]	[0.180]
Coalmines	-0.632	0.929
	[0.945]	[2.270]
Year 2019 x Coalmines	0.503	-0.832
	[0.564]	[0.520]
Constant	72.957***	14.106***
	[0.330]	[0.463]
Observations	1,055	1,055

Standard errors are clustered at the municipality level in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Finally, one potential concern with these analyses is that our OLS models may not correctly account for the potential presence of spatial autocorrelation, or may not be the best way to model spatial dependence. To address this, we run spatial models that estimate spatial effects for panel data. In particular, we show results for a spatial lag model (SLM), which controls for spatially endogenous interactions, a spatial error model (SEM), which accounts for spatial autocorrelation in the error term, and a spatial Durbin model (SDM), which includes spatially dependent and explanatory variables. We include a spatial weight based on the inverse distance criteria. This matrix involves an element of distance between the municipalities whose value is continuous in building the weighting matrix so that each municipality receives a weighted matrix according to that distance. We use this matrix because it is the most appropriate matrix with continuous data and with features close in space (here municipalities). We focus on the sample of our coalmining provinces, since it is where spatial autocorrelation is most likely to be. We use similar OLS models as in previous regressions with municipality and year fixed effects.

Table E.5 presents the results for the three models. We see evidence of spatial diffusion, with significant effects of the spatial lag of coalmines and the spatial error term on PSOE support. Nevertheless, we find a significant and positive effect on PSOE vote share in 2019 in mining municipalities affected by the JTA as opposed to those that are not, albeit only at 0.1 confidence levels for the SEM and SDM models (the effect size is similar to the main analysis an increase of 1.16–1.29 percentage points). These findings confirm that the main models are not sensitive to the presence of spatial autocorrelation.

Table E.5: Spatial models with the spatial weighting matrix W

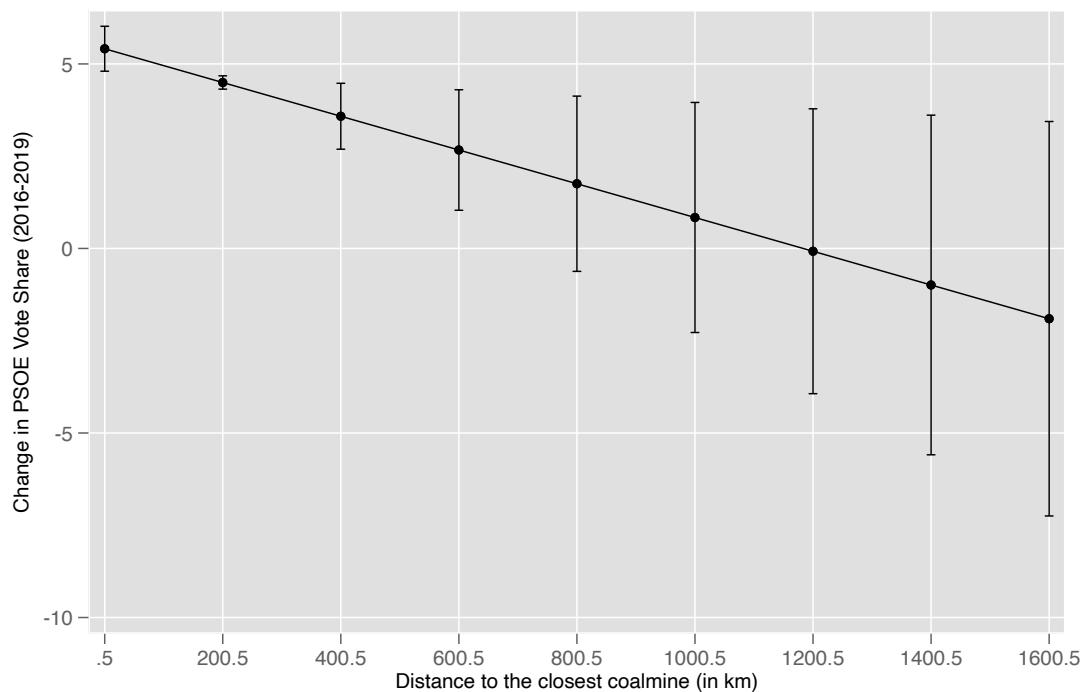
	(1)	(2)	(3)
	SLM	SEM	SDM
Year 2019	-0.021	2.353**	3.172
	[0.253]	[1.065]	[1.990]
Coalmines	-2.460	-0.416	-1.825
	[5.163]	[5.027]	[5.086]
Year 2019 x Coalmines	1.238**	1.164*	1.345*
	[0.557]	[0.613]	[0.724]
W * PSOE	1.043***	0.900***	0.948***
	[0.012]	[0.045]	[0.017]
W * Year 2019			-2.762
			[2.340]
W * Coalmines			-309.739**
			[135.963]
W * Year 2019 × Coalmines			-2.878
			[5.957]
W * Error Term		0.920***	
		[0.036]	
Constant	4.614***	4.502***	4.435***
	[0.071]	[0.070]	[0.069]
Observations	2,620	2,620	2,620
Number of Municipality	524	524	524
Municipality FE	✓	✓	✓

Robust Standard errors in brackets

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Appendix F: Marginal Plot

Figure F.1: Marginal plot of the distance to the closest coalmine on the change in PSOE Vote Share (2016-2019)



Note : This marginal plot refers to the model specification of Table F.1.

Table F.1 : Decrease of PSOE vote share (2016-2019) as the distance to the closest coalmines increases

(1)	
PSOE 2016-2019	
Distance to the closest coalmines (in km)	-0.005** [0.002]
Constant	5.414*** [0.312]
Province FE	✓
Observations	7,758
R-squared	0.001

Standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

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