Disruptive Activism and Environmental Policy Support [*]

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Abstract

Social movements may choose disruptive forms of protest to attract controversy, increasing public attention at the cost of negative sentiment toward itself and ideologically similar groups. This paper analyzes the short-term effects of such protests carried out by the *Last Generation*, a German environmental activist group known for blocking roads and covering public structures in orange paint. Combining detailed data on protests with large-scale survey responses, I exploit the timing and location of protests to identify causal effects on environmental attitudes and support for the Green Party. The results indicate no direct impact of the protests themselves. Instead, short-lived increases in Green Party support and environmental concerns emerge immediately before the protests, concentrated among politically informed respondents and accompanied by increased urban-rural polarization. These findings suggest that external news events likely shape both local attitudes and local propensities to protest.

Keywords: Protests, Environment, Climate Change, News, Information, Politics

JEL: D72, D74, L82, Q58, Z13

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1 Introduction

Attention is critical for social movements to shape the public debate, but difficult to attract even for large movements. Gethin and Pons (2024) document that most major protests in recent US history have failed to shift public opinion, pointing to a lack of media coverage as a likely explanation. One possible solution for movements seeking greater exposure is to disrupt everyday life, thereby forcing public attention and sparking controversy. Prominent recent examples include the yellow vests protests in France (2018–2020), the convoy protests in Canada (2020), and the *Last Generation* protests in Germany (2022–2023), which all attracted significant media coverage by, among other activities, repeatedly blocking major roads and disrupting traffic.

The effectiveness of these disruptive tactics in building broader support for environmental policies hinges on a delicate trade-off. On one hand, disruptive protests generate negative sentiment, potentially increasing visibility of climate issues and raising support for climate action. On the other hand, if the public perceives these protests as too extreme, these actions may backfire, undermining support not only for the movement itself but also for ideologically aligned groups. Despite the prevalence and public debate, empirical evidence on the actual impacts of disruptive protests remains scarce.

This paper addresses this gap by analyzing the short-term effects of protests carried out by the *Last Generation*, a German environmental activist group known for street blockades and covering structures of public interest with orange paint (e.g., Schuetze, 2023). I combine detailed data on protest timing and location with responses in a large-scale survey to identify causal effects on attitudes toward environmental policies and support for the Green Party.

I combine two main datasets. First, I use protest data from the *Armed Conflict Location & Event Data (ACLED)* project, which systematically records details of protests based on news reporting (Raleigh et al., 2023). The dataset provides information on date and city-level location for all protests attributed to the *Last Generation* in Germany from early 2022 through the beginning of 2024, when the group announced it would cease street blockades (Last Generation, 2024). Second, the *German Socio-Economic Panel (SOEP)* is a nationally representative longitudinal survey that covers approximately 15,000 private households per year, with interviews spread throughout most of the calendar year. My analysis focuses on two types of questions: Respondents' preferred political party, and their degree of worry

about various topics, notably climate conservation and environmental protection, measured on a four-point scale.

The empirical analysis leverages variation in protest location and timing, as well as the timing of survey interviews around protests. I implement a stacked event-study design that compares survey respondents interviewed shortly before and after protests in treated city commuting zones, relative to respondents in commuting zones without protests within the same time window. I restrict the analysis to isolated protest events, ensuring that treated localities experience no other protests in the preceding or subsequent 14 days. City–stack fixed effects absorb attitudes specific to localities in a given time window, while day–stack fixed effects control for nationwide high-frequency shocks that may be correlated with protests. Identification of the average causal effect of protests on environmental attitudes relies on two key assumptions. First, survey interview timing must be as good as random within the 28-day windows around protests, conditional on observable controls. Second, protest occurrence and timing must be uncorrelated with other local events affecting attitudes. I verify the former via balance checks on observable individual characteristics, while leveraging the high frequency of observations to assess the latter.

I find no statistically significant effect of protests themselves on the expressed preference for the Green Party or worry about climate conservation and environmental protection. This result is robust to different choices of fixed effects, geographical aggregation, and the length of time windows around protests. However, the estimates are rather imprecise due to low overlap between the timing of protests and survey responses.

Additionally, I find evidence for shifts in environmental attitudes *prior to* protests. The event studies reveal increases in Green Party support and environmental concerns around one to two days before protests take place, which decrease over the following three days. Moreover, heterogeneity analyses show that this pre-protest increase is entirely driven by individuals who consume news daily and have previously expressed a party preference. Further, this phenomenon coincides with increased polarization: Urban respondents become more supportive of environmental positions, while rural respondents become less so.

The observed shifts in attitudes prior to protests suggest that external events likely influence both local attitudes toward environmental issues and local propensities to engage in protest. The concentration of these associations among politically informed individuals points toward media coverage as a potential driver. Nationwide news stories or policy de-

bates around environmental issues may resonate more strongly or receive heightened attention in certain locations, such as student or politically left-leaning cities, thereby triggering simultaneous shifts in both opinions and activism. Moreover, the observed polarization between urban and rural respondents may reflect differences in news exposure or interpretation, shaped by regional media coverage or underlying beliefs and circumstances.

To explore these hypotheses more deeply, further research could benefit from extending the analysis using the 2023 wave of the *SOEP*, once available. This data might provide more precise estimates due to better temporal overlap with *Last Generation* protests. Additionally, to better understand the underlying mechanisms, one could instrument key variables of protest effectiveness, such as media attention using news pressure, or disruptiveness through weather-driven variation in traffic conditions.

This project contributes to a mature literature across the social sciences on the effects of political protests (e.g., Elsbach and Sutton, 1992; Meyer, 2004; Robinson and Acemoglu, 2012; Aidt and Franck, 2015; Battaglini et al., 2020; Tarrow, 2022; Cantoni et al., 2023). Scholars have studied the incentives of social movements for choosing violent versus non-violent tactics (Stephan and Chenoweth, 2008; Cornell and Grimes, 2015; Wang and Piazza, 2016; Simpson et al., 2018; Orazani and Leidner, 2019). While recent survey experiments have found mixed effects of disruptive protests on attitudes towards protesters and their demands (Feinberg et al., 2020; Saldivia Gonzatti et al., 2023; Menzies et al., 2023), Kountouris and Williams (2023) find no effects of street blockades by environmental activists in England. Instead, Fabel et al. (2025) find that participation rates in peaceful but controversial *Fridays-for-Future* protests in Germany were associated with higher vote shares for the Green Party. As one of the key mechanisms, they point toward increased media presence of the Green Party and environmental topics. I contribute to this literature by providing quasi-experimental, causal evidence on the effects of non-violent, disruptive protests. By doing so, I test whether this disruptive strategy optimized for media attention proves more effective in persuading the public.

2 Data

I combine two main data sources that allow tracing protests by the *Last Generation* as well as environmental attitudes at high geographical and temporal resolution.

2.1 Protests

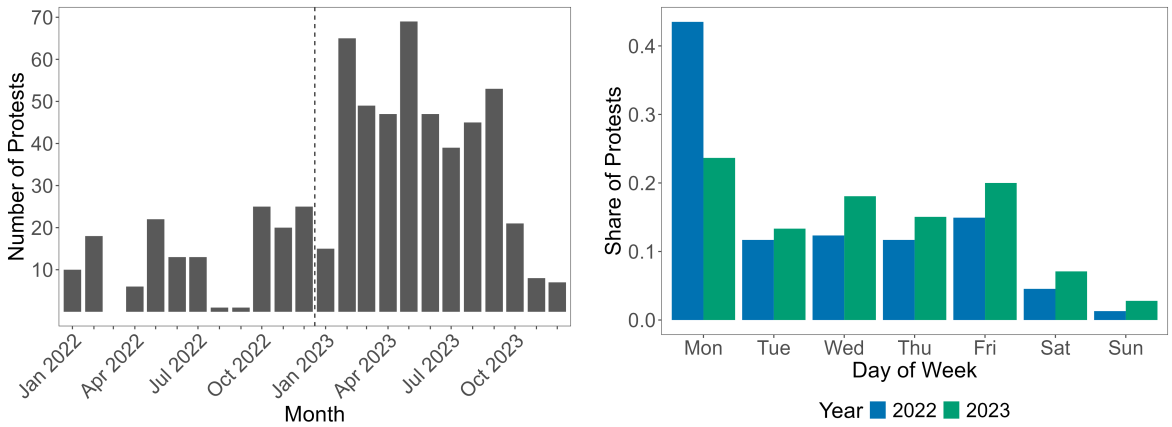
I use publicly available information on protests from the *Armed Conflict Location & Event Data (ACLED)* project (Raleigh et al., 2023), which records events of armed and non-armed political conflicts worldwide. I restrict this sample to events in Germany throughout 2022 and 2023 that name the *Last Generation* as the main actor. The result are 619 protest events, defined as unique combinations of date, city, and (where available) sub-location. Because several protests may occur in different spots of the same city on a single day, these events collapse to 494 distinct city–date pairs.

Protest activity by the *Last Generation* started in 2022 and intensified over time. Figure 1a shows the number of events per month – 154 in 2022 and 465 in 2023 – with most of them between February and September 2023. These protests usually took place on weekdays. Figure 1b displays the share of events by day of week, revealing that in both 2022 and 2023, more than eighty percent of protests happened between Monday and Friday. This pattern reflects the unconventional strategy of the Last Generation, which targets rush our traffic to cause maximal disruption.

Figure 1. Timing of protests

(a) Number of protests by month

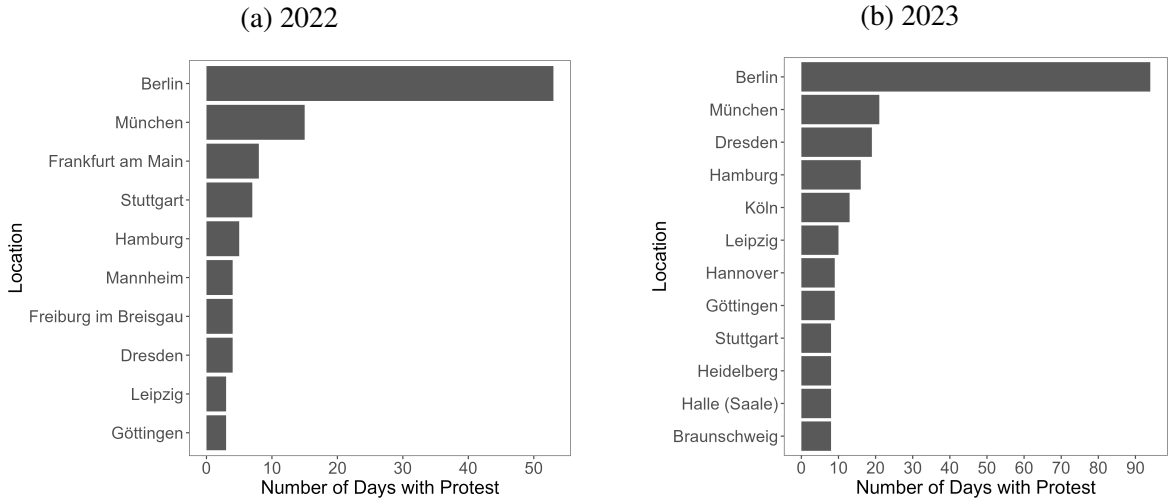
(b) Share of protests by day of week



Notes: Panel (a): Monthly number of protest events in Germany involving the *Last Generation* as recorded by *Armed Conflict Location and Events Data (ACLED)*. Panel (b): Share of *Last Generation* protests falling on specific day of week, separately for 2022 and 2023.

While the *Last Generation* was by far most active in Berlin, many other cities also experienced a considerable amount of protest activity. Figure 2 reveals that Berlin alone accounts for 53 protest days in 2022 and 94 in 2023. Munich, Dresden, Hamburg, Köln and Leipzig each faced at least ten protest days in 2023. In total, *ACLED* records events in 78 cities. Figure A1 details the geographical location of protests throughout 2022 and 2023.

Figure 2. Number of days with protest for top 10 cities



Notes: Number of days with *Last Generation* protest per city, separately for 2022 and 2023, among 10 cities with most protest days.

Table 1 reports summary statistics, revealing several additional details. First, outside of Berlin, most protests occurred in West Germany. Second, the median estimated number of protesters is 10, reflecting the strategy of creating large (media) attention with few participants. Third, keywords appearing in *ACLED*'s standardized event descriptions explicitly refer to a majority of these events as a *blockade* or *disruptive*. In particular, I label an event a *blockade* if the description mentions both (i) an verb related to interruption ("block", "interrupt", "glue", etc.) and (ii) a noun related to transport infrastructure ("highway", "bridge", "intersection", etc.). I define an event as *disruptive* if it is a blockade *or* if it refers to the common tactic of vandalizing surfaces with paint ("spray", "paint", "orange", etc.). Depending on the year, between 74% and 90% of all events meet the *disruptive* criterion.

Media outlets typically covered the protest on the day they unfolded. Traffic disruptions often triggered immediate news reports, which were followed by segments in evening television, next day's print editions, and more extensive analytical pieces in weekend sections. The *Last Generation* usually did not advertise protests in advance, ensuring that police would

take longer to disperse the blockades. Only large, multi-day campaigns were announced beforehand and received occasional ex-ante coverage.

In January 2024, the *Last Generation* announced that it would step away from blockading traffic, and instead focus on other forms of civil unrest (Last Generation, 2024).

Table 1. Summary statistics for protests of Last Generation

	Mean	Median	SD	Min	Max	N
2022						
Location: Berlin	0.50	0	0.50	0	1	154
Location: West Germany (except Berlin)	0.42	0	0.50	0	1	154
Location: East Germany (except Berlin)	0.08	0	0.27	0	1	154
Keywords: Disruptive	0.90	1	0.30	0	1	154
Keywords: Blockade	0.84	1	0.36	0	1	154
Number of Protesters	17.32	10	18.26	3	100	93
2023						
Location: Berlin	0.38	0	0.49	0	1	465
Location: West Germany (except Berlin)	0.49	0	0.50	0	1	465
Location: East Germany (except Berlin)	0.12	0	0.33	0	1	465
Keywords: Disruptive	0.74	1	0.44	0	1	465
Keywords: Blockade	0.69	1	0.46	0	1	465
Number of Protesters	50.06	10	128.74	3	1000	263

Notes: Summary statistics for protest events in Germany in 2022 and 2023 involving the *Last Generation*, as recorded by *Armed Conflict Location and Events Data (ACLED)*.

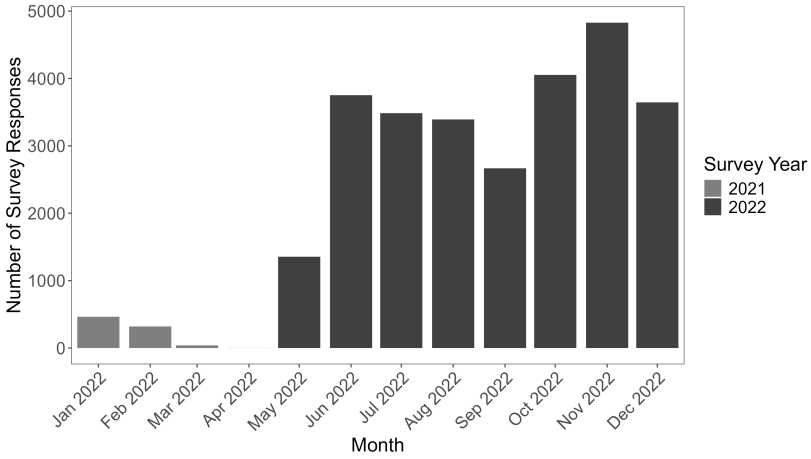
2.2 German Socio-Economic Panel

The *German Socio-Economic Panel (SOEP)*[1] is a nationally representative longitudinal survey of private households conducted by the *German Institute for Economic Research (DIW)*. I use wave 39, the most recent published version at the time of writing, which includes responses up until the 2022 round of interviews. As the *Last Generation* protests started only that year, I restrict the data to interviews conducted in 2022. The resulting sample contains 28,606 adult respondents from 21,046 households.

Interviews are collected on a continuous basis throughout most of the year. Figure 3 shows that in 2022, a small number of interviews were recorded between January and March as part of the 2021 survey wave. Instead, interviews for the 2022 wave start in May, with more than 3,000 responses per month from June onward.

[1] Socio-Economic Panel (SOEP).

Figure 3. Number of SOEP interviews per month in 2022



Notes: Number of individual survey responses collected per month of 2022 by the *German Socio-Economic Panel (SOEP)*. Bars in light grey refer to the survey wave of 2021, while dark grey denotes the 2022 wave.

The survey offers a rich set of variables on demographics and attitudes. Table 2 reports summary statistics for individual characteristics as well as my two main outcomes: First, respondents name their preferred political party, where around half express no preference at all. Interestingly, the right-populist *Alternative for Germany (AfD)* seems to be underrepresented: Merely 2 percent prefer the *AfD*, compared to their 10.4 percent vote share in the 2021 federal election, potentially reflecting sampling bias or social desirability concerns. Second, respondents rate how much they worry about several political issues, including climate change and environmental protection. On a four-point scale, around half report the highest degree of concern for both topics.

I link survey observations to protest exposure using respondents' locations, which are in principle available on street block level.[2] I aggregate protests and respondents by 96 *Raumordnungsregionen*, which correspond to commuting zones around economic centers. In the following, I will refer to these commuting zones as "cities" for brevity. Alternatively, I aggregate to 38 NUTS-2 administrative units.

[2]Restricted micro data on geographical locations of survey respondents is available for on-site access at the *DIW*.

Table 2. Summary statistics for German Socioeconomic Panel, 2022

	Mean	SD	Min	Max	N
Demographics					
Female	0.51	0.50	0	1	28,022
Birth Year	1971	16.95	1921	2004	28,042
College Degree	0.29	0.48	0	1	24,595
Vocational Degree	0.54	0.50	0	1	24,595
Employment: Full-Time	0.41	0.50	0	1	27,940
Employment: Part-Time	0.21	0.41	0	1	27,940
Employment: None	0.37	0.46	0	1	27,940
Household Income per Month (€)	3,650.19	2,397.89	0	15,000	27,877
Reads Newspaper Daily	0.50	0.50	0	1	14,813
Party preference					
Has Party Preference	0.49	0.50	0	1	25,770
CDU/CSU	0.14	0.32	0	1	25,708
Green	0.13	0.34	0	1	25,708
SPD	0.11	0.29	0	1	25,708
FDP	0.03	0.16	0	1	25,708
AfD	0.02	0.15	0	1	25,708
Left	0.02	0.16	0	1	25,708
Worry "much" about topic					
Climate Conservation	0.51	0.50	0	1	25,734
Environmental Protection	0.46	0.50	0	1	25,734

Notes: Summary statistics of selected variables in the *German Socio-Economic Panel (SOEP)* among interviews conducted in 2022. Household income is winsorized at the 99^{th} percentile. Worry about topics is rated on a four-point scale, with "much" representing the highest value. Survey weights are included.

3 Empirical strategy

I estimate the short-term causal effect of protests by exploiting variation in the exact timing and location of protests. The empirical design is a stacked event study that compares respondents interviewed shortly before a protest in a given city to those interviewed shortly after, relative to respondents in cities without protest during the same time window.

3.1 Design

To isolate the effect of individual protests, I restrict the analysis to protest-city pairs with no other recorded protest in the same city during the 14 days before or after the event. I further retain only those cities whose $\pm$14-day window contains at least one pre- and one post-interview in both treated and untreated locations. Applying these restrictions yields 29 protest–city pairs in 2022 and 1,068 unique *SOEP* observations from respondents in treated cities.[3]

The stacked event study estimates a difference-in-difference regression for each protest event, and averages ("stacks") the resulting estimates. Each difference-in-difference regression is estimated in a separate subset of the data in the $\pm$14-day window around the protest ("stack"), consisting of i) survey respondents in the treated locality, and ii) survey respondents in control localities that did not experience any protest in the time window.

I employ the following specification:

$$y_{\,i,c,t,s} = \alpha_{c,s} + \gamma_{t,s} + \sum_{\tau=-14,\tau\neq-1}^{14} \beta_\tau \; I(Days\ since\ Protest_{\,c,t} = \tau) + \delta' \, X_{i,c,t} + \varepsilon_{i,c,t,s} \tag{1}$$

$y_{\,i,c,t,s}$ is a survey outcome for participant i residing in city c, surveyed on date t, in stack s. The survey outcome is an indicator, either for supporting the Green Party or for worrying "much" about climate conservation and environmental protection, respectively. The city–stack fixed effect $\alpha_{c,s}$ absorbs time-invariant heterogeneity across cities *within each*

[3] Unfortunately, the temporal overlap between protests and survey responses is modest in 2022. Roughly half of all protests precede May, which is when most *SOEP* interviews begin. Moreover, protest activity largely pause in August and September. The amount of protests as well as the temporal overlap are higher in 2023.

protest event. In other words, it ensures that the treatment effect is obtained by comparing the change of respondents' attitudes within treated cities to the change of attitudes within control cities, all within the 28-day window of each protest. Therefore, this fixed effect controls for macro trends in attitudes within city, for example due to protest history. The date–stack fixed effect $\gamma_{t,s}$ captures daily shocks to attitudes that are common across all localities, for example due to common news shocks. Allowing this fixed effect to vary across stacks absorbs differential shocks based on the specific subset of localities used for estimating the stack-specific effect of a given protest. $\mathbf{X_{i,c,t}}$ is a vector of individual demographic control variables in the form of indicators for bins of age (6 groups), sex (2), education (7), household income (6), and employment status (4). These variables may capture different propensities across individuals to prefer a certain party or worry about the environment. Finally, $Days\ since\ Protest_{\ c,t,s}$ denotes the number of days since the protest of stack s took place in city c, if applicable. The coefficients β_τ represent event study estimates for the average effect of the protest on exposed localities, across all protests in the sample. I estimate Equation (1) by ordinary least squares (OLS), apply *SOEP* sampling weights, and cluster standard errors by city.

3.2 Identification

Identification of β_τ rests on two main assumptions. First, conditional on covariates, the *SOEP* interview date needs to be as-good-as random with respect to attitudes. Table A1 confirms that respondents surveyed in the 14 days before protests largely resemble those surveyed in the 14 days after protests along observable characteristics. I control for these variables in all specifications. Second, the exact protest day within the 28-day window needs to be unrelated with concurrent shocks to attitudes that are specific to the the treated city. While not directly testable, the high frequency of the design helps rule out confounders by assessing whether the timing of observed effects aligns plausibly with protest events.

On a technical note, Wing et al. (2024) shows that the OLS estimator imposes specific weights when aggregating stack-specific estimates for the treatment effect. In result, the vector of pooled coefficients β_τ does not necessarily recover any meaningful aggregation of the stack-specific estimates $\{\beta_\tau^{\mathbf{s}}\}_{\mathbf{s}\in\text{Stacks}}$. In a robustness check, I verify that in this case the results are virtually identical when using the proposed bias-corrected weights.

4 Results

4.1 Main result

I find no statistically significant effect of protests on attitudes towards the Green Party as well as concerns about climate conservation and environmental protection. Table 3 reports aggregate effects over the two weeks following protests, obtained via the static version of Equation (1). For all three outcomes, the coefficients are positive, but insignificant with p-values below 0.50.

Table 3. Effect of Protests on Green Party Support and Topic Concerns

Dependent Variable:	Support Party:	Worry Much About:	
	Green	Climate	Environment
	(1)	(2)	(3)
Protest x Post	0.013	0.032	0.027
	(0.031)	(0.046)	(0.047)
Dep. Var. Mean	0.13	0.51	0.46
Individual Controls	✓	✓	✓
Protest-ID x City FE	✓	✓	✓
Protest-ID x Days since Protest FE	✓	✓	✓
Day of Week FE	✓	✓	✓
Protests	29	29	29
Treated Observations	1,068	1,068	1,068
Control Observations	38,740	38,740	38,740

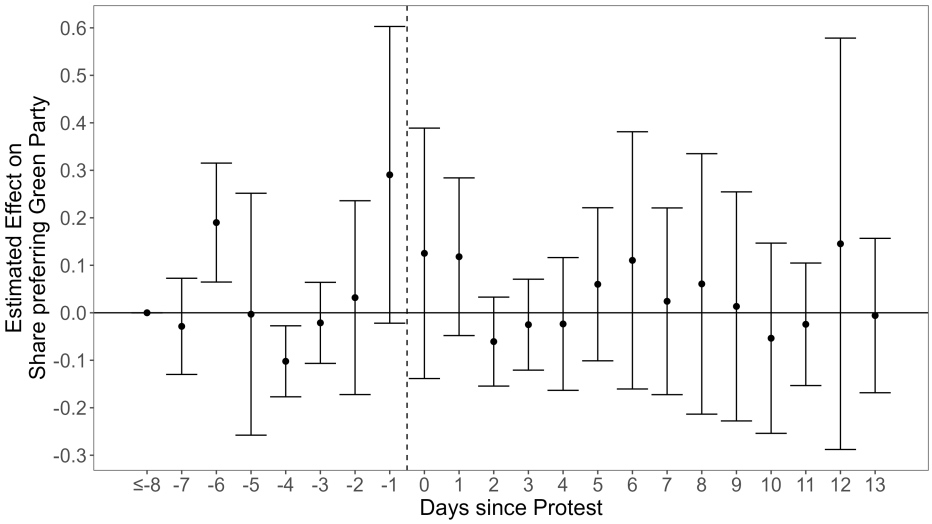
Notes: Coefficients for static (pre-post) version of Equation (1): Stacked event study around city-by-day protest events, comparing cities with exactly one protest in 28-day window to cities without any protests. Outcomes are indicators for preferring the Green Party (Column 1), and worrying about climate conservation and environmental protection to highest degree on a four-point scale, respectively (Columns 2–3). All specifications include individual controls for age, sex, education, household income, and employment status, as well as fixed effects for protest-by-city, protest-by-days-since-protest, and day of week. Standard errors in parentheses are clustered by city. Survey weights are included. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The event studies confirm that the protests themselves do not affect these environmental attitudes, even over shorter time frames. Figure 4 plots event study estimates for Green Party support obtained from estimating Equation (1). To facilitate interpretation, I choose the second week before the protest as the reference period, instead of the more commonly used day before. In other words, I omit days -14 to -8 relative to the protest rather than -1. This choice yields a more precise baseline by averaging more estimates, and reports the standard error for the -1 coefficient, allowing to better interpret the point estimate. The estimates

reveal no clear effect. Both pre- and post-treatment coefficients largely fluctuate around zero and show neither a consistent trend nor an increase after the protest.[4] The same is true for for concerns about climate change (Figure A2) and environmental protection (Figure A3), which display qualitatively similar patterns.

However, all three figures show an increase in environmental attitudes on the day *before* the protest. In each case, a single (marginally significant) spike stands out, vanishing over the following two to three days. Thus, while the protests studied in this analysis by themselves seem not to affect attitudes, they are appear with higher likelihood in cities that experience a *prior* increase in Green Party support as well as concerns about climate and environment.

Figure 4. Effect of protest on probability of preferring Green Party



Notes: Daily estimates for Green Party support around *Last Generation* protests in 2022, based on Equation (1). Coefficients from a stacked event study that compares city commuting zones experiencing exactly one protest within a 28-day window to those without any protests in the same period. The outcome is an indicator for survey respondents preferring the Green Party. The treatment variable measures days relative to protest, omitting days -14 to -8 as the reference period. Specification includes fixed effects for city-by-stack and day-by-stack, along with individual controls for age, sex, education, household income, and employment status. Sample includes 29 city-protest pairs, yielding 54,797 observations including 1,068 unique respondents in treated cities. Error bars denote pointwise 95 percent confidence intervals, clustered at the city level.

[4]Because the error bars report pointwise rather than uniform confidence intervals, isolated significant coefficients do not necessarily imply robust effects.

4.2 Robustness checks

The findings are robust to varying the design of the empirical analysis in several ways. Figure A4 reports the respective event studies for Green Party support. Panel (a) varies the degree of saturation with fixed effects. Estimates in orange represent a basic specification that includes only treatment status and event time. Green additionally controls for day of week, and blue replicates Equation (1), including city–stack and date–stack fixed effects. Point estimates and inference remain virtually unchanged. Panel (b) aggregates protests and survey respondents on 38 administrative (NUTS-2) regions, instead of 98 city commuting zones, and Panel (d) chooses 14-day instead of 28-day windows around protests. In both cases, the main results remain unchanged. Panel (c) varies weighting. Estimates in orange report results without any sample weights, showing considerably less variation while retaining the spike on day -1. Estimates in green report baseline results obtained using only *SOEP* sample weights, while those in blue apply weights that multiply *SOEP* sample weights with Wing et al. (2024) bias-correcting weights. The correction makes little difference, suggesting that in this case, the aggregation performed by OLS produces close-to-correct inference.

4.3 Mechanism

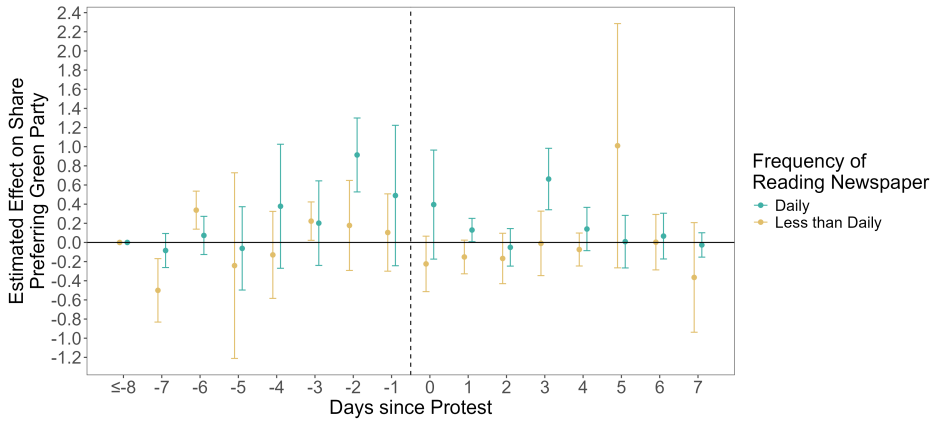
Heterogeneity checks help clarify the results and suggest mechanisms driving these findings. I split the sample by individual characteristics and estimate Equation (1) in each subsample.

First, I consider variables that indicate to what degree respondents are politically informed. Figure 5 reports results for Green Party support, dividing respondents by whether they report reading news daily. It reveals that the positive pre-treatment coefficient is driven entirely by daily readers, starting two days before the protest. Instead, those who follow the news less frequently experience similar trends before, but show no discernible difference in Green Party support around protests. Figure 6 separates respondents by whether they have ever declared any party preference in previous years. Again, the uptick appears only among politically engaged individuals, and two days before the protest. Respondents without a past party preference show no change.

Figure 7 displays outcomes among urban and rural residents, respectively. Interestingly, while pre-trends are very similar, attitudes diverge considerably on the day before the protest: Respondents in urban areas show significantly increased preference for the Green Party, while those in rural areas show significantly lower preference, compared to their respective pre-period levels. Equivalent splits for the outcomes on environmental concerns (Figures A5–A7) largely confirm the results, but with less clarity.

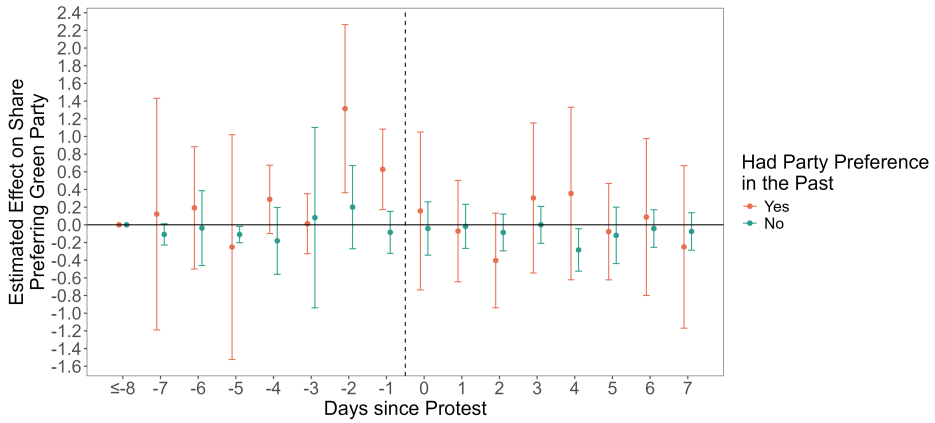
Together, these findings reveal three insights. First, the transient shift in Green Party preference *precedes* the protests included in my sample. Second, these increases are driven by urban, highly informed individuals. Third, the protests are associated with short-term political polarization across residents of urban and rural regions.

Figure 5. Effect of protest on probability of preferring Green Party - by news consumption



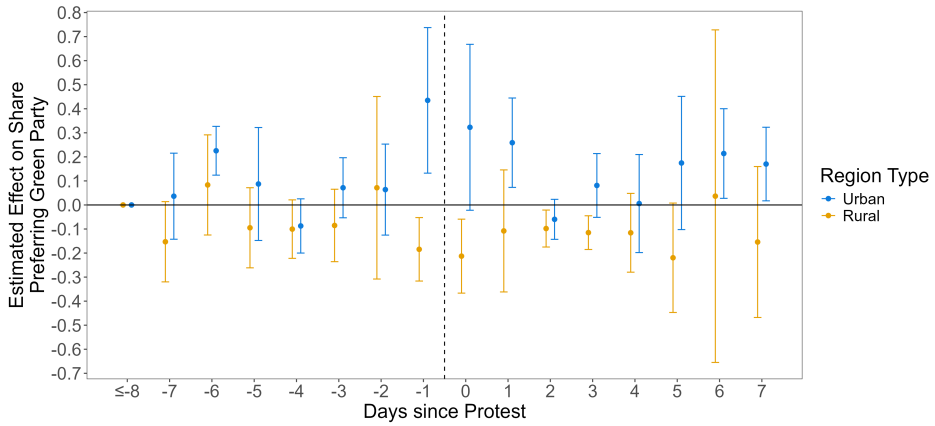
Notes: Daily estimates for Green Party support around *Last Generation* protests in 2022, based on Equation (1). Separate regressions for individuals reading news daily and less than daily, respectively. Coefficients from a stacked event study that compares city commuting zones experiencing exactly one protest within a 28-day window to those without any protests in the same period. The outcome is an indicator for survey respondents preferring the Green Party. The treatment variable measures days relative to protest, omitting days -14 to -8 as the reference period. Specification includes fixed effects for city-by-stack and day-by-stack, along with individual controls for age, sex, education, household income, and employment status. Original estimation sample includes 29 city-protest pairs, yielding 54,797 observations including 1,068 unique respondents in treated cities. Error bars denote pointwise 95 percent confidence intervals, clustered at the city level.

Figure 6. Effect of protest on probability of preferring Green Party - by having party preference in the past



Notes: Daily estimates for Green Party support around *Last Generation* protests in 2022, based on Equation (1). Separate regressions by whether individuals report any party preference in the past. Coefficients from a stacked event study that compares city commuting zones experiencing exactly one protest within a 28-day window to those without any protests in the same period. The outcome is an indicator for survey respondents preferring the Green Party. The treatment variable measures days relative to protest, omitting days -14 to -8 as the reference period. Specification includes fixed effects for city-by-stack and day-by-stack, along with individual controls for age, sex, education, household income, and employment status. Original estimation sample includes 29 city-protest pairs, yielding 54,797 observations including 1,068 unique respondents in treated cities. Error bars denote pointwise 95 percent confidence intervals, clustered at the city level.

Figure 7. Effect of protest on probability of preferring Green Party - by urban/rural



Notes: Daily estimates for Green Party support around *Last Generation* protests in 2022, based on Equation (1). Separate regressions for individuals residing in urban and rural areas, respectively. Coefficients from a stacked event study that compares city commuting zones experiencing exactly one protest within a 28-day window to those without any protests in the same period. The outcome is an indicator for survey respondents preferring the Green Party. The treatment variable measures days relative to protest, omitting days -14 to -8 as the reference period. Specification includes fixed effects for city-by-stack and day-by-stack, along with individual controls for age, sex, education, household income, and employment status. Original estimation sample includes 29 city-protest pairs, yielding 54,797 observations including 1,068 unique respondents in treated cities. Error bars denote pointwise 95 percent confidence intervals, clustered at the city level.

4.4 Interpretation

The observation that attitudes shift before a protest and only among the most informed respondents may suggest that external news shocks related to environmental topics jointly drive environmental attitudes and increase the likelihood of protest. Two types of news shocks, such as stories or policy debates, are plausible. First, local news shocks might receive attention only in their respective city. Second, nation-wide shocks could receive disproportionate coverage, or resonate more strongly, in places with a higher latent propensity to mobilize, such as in student or otherwise left-leaning towns.

Either scenario violates the exogeneity of protest timing: The empirical design no longer identifies the causal effect of protest on attitudes, but instead captures the correlation induced by the omitted news shock. Accordingly, the findings should not be interpreted as evidence for a treatment effect of the protest itself, but may hint at the existence of an information shock that is either received or interpreted differently among different populations.

5 Conclusion

This paper explores whether disruptive climate protests conducted 2022 by the *Last Generation* in Germany influenced environmental attitudes. I find little evidence that protests themselves had an effect. Instead, the timing of effects suggests that protests respond to external news shocks, which coincided with increased support for the Green Party as well as heightened worry about climate conservation and environmental protection. These effects emerge over a span of approximately three days and primarily affect politically informed individuals. Additionally, these events are associated with increased polarization, with urban and rural respondents exhibiting opposite attitudinal shifts.

A key limitation of the analysis are relatively imprecise estimates due to sparse temporal overlap between protest activity and survey interviews. Future research could benefit from extending the analysis to 2023, when protest timing aligns more closely with the *SOEP* fieldwork.

Such follow-up research should accomplish two key goals. First, it should pinpoint the types of news events that simultaneously trigger protests and attitude changes. Second, it could exploit additional variation to clarify mechanisms. For instance, researchers could instrument media attention using news pressure, for example using the *Global Database of Events, Language, and Tone (GDELT) Frontpage Graph*, which collects front-page content from news websites at high frequency. Alternatively, disruptiveness of protests could be instrumented by weather-induced traffic shocks: Rainy weather leads to increased car use, causing protests to generate larger disruptions, likely without significantly affecting protester turnout given the already substantial personal risks involved in protest participation.

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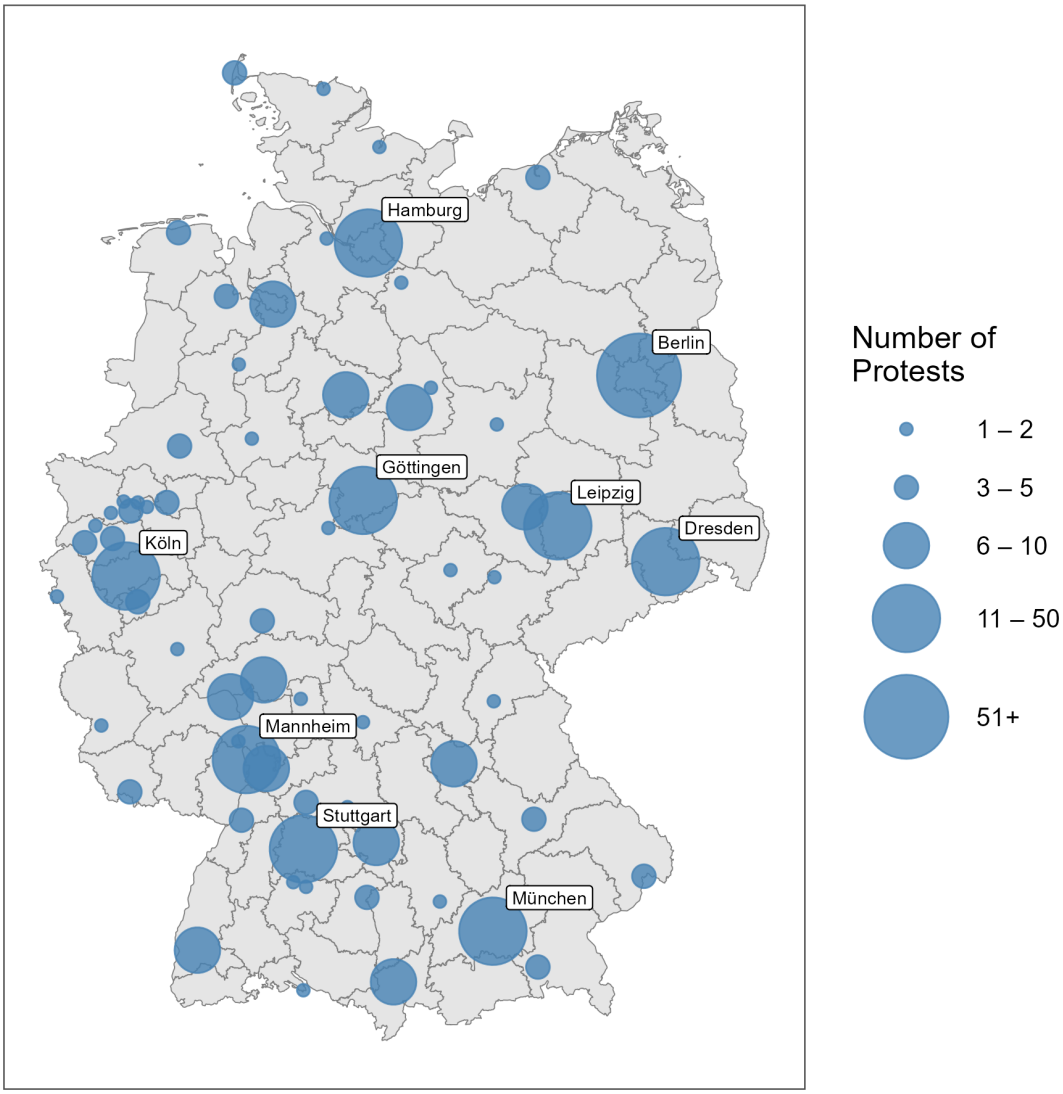
A Appendix

Appendix Figure A1. Number of days with protests by city, 2022–2023



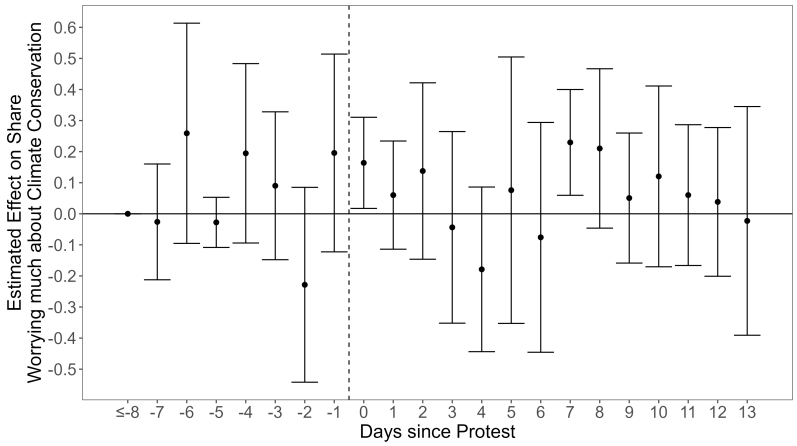
Notes: Number of days with *Last Generation* protest per city throughout 2022 and 2023. Areas indicate the 96 city commuting zones (*Raumordungsregionen*).

Appendix Table A1. Covariate balance: Stacked event studies

	Before Protest		After Protest			P-Value	
Variable	**Mean**	**SD**	**Mean**	**SD**	**Mean Diff.**	**Conventional**	**Bonferroni**
Sex							
Male	0.50	0.50	0.50	0.50	-0.00	0.923	1
Birth year							
1950–1959	0.14	0.35	0.14	0.35	-0.00	0.912	1
1960–1969	0.21	0.40	0.19	0.39	-0.01	0.006^{***}	0.138
1970–1979	0.15	0.36	0.16	0.36	0.01	0.199	1
1980–1989	0.17	0.38	0.18	0.38	0.00	0.734	1
1990+	0.23	0.42	0.23	0.42	-0.00	0.573	1
Education							
None	0.02	0.14	0.02	0.15	0.00	0.435	1
Hauptschule	0.04	0.18	0.04	0.19	0.00	0.836	1
Realschule	0.02	0.13	0.02	0.14	0.00	0.253	1
Vocational	0.43	0.50	0.41	0.49	-0.02	0.003^{***}	0.069^{*}
Abitur	0.05	0.21	0.04	0.20	-0.00	0.224	1
College	0.23	0.42	0.22	0.42	-0.01	0.194	1
Other	0.02	0.15	0.02	0.15	0.00	0.47	1
Employment							
None	0.31	0.46	0.31	0.46	0.00	0.612	1
Training	0.02	0.15	0.02	0.15	0.00	0.208	1
Part-time	0.23	0.42	0.21	0.41	-0.01	0.011^{**}	0.253
Full-time	0.43	0.50	0.45	0.50	0.01	0.103	1
Household income							
< 1500	0.11	0.32	0.12	0.33	0.01	0.044^{**}	1
1500–2500	0.20	0.40	0.20	0.40	0.01	0.304	1
2500–3500	0.20	0.40	0.20	0.40	-0.00	0.345	1
3500–4500	0.20	0.40	0.18	0.38	-0.02	0.001^{***}	0.023^{**}
4500–5500	0.14	0.34	0.14	0.34	0.00	0.835	1
> 5500	0.16	0.36	0.16	0.37	0.01	0.177	1

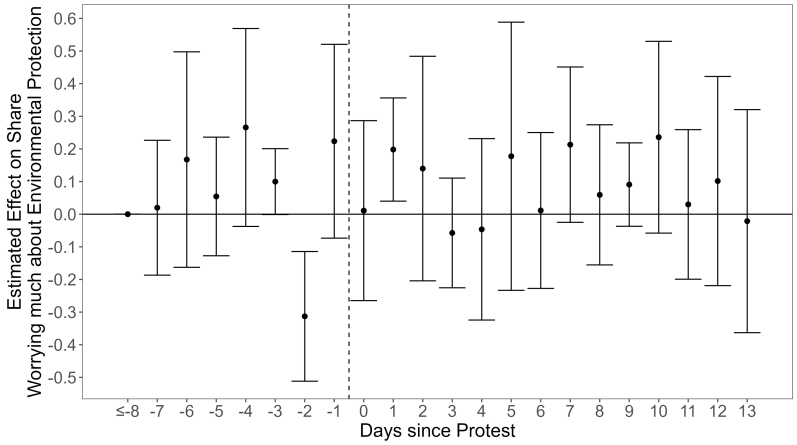
Notes: Mean difference of individual characteristics among survey respondents interviewed in two weeks before versus two weeks after protests, within the stacked event study estimation sample. Conventional as well as Bonferroni-adjusted p-values are reported. Survey weights are included. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Appendix Figure A2. Effect of protest on worrying about climate conservation



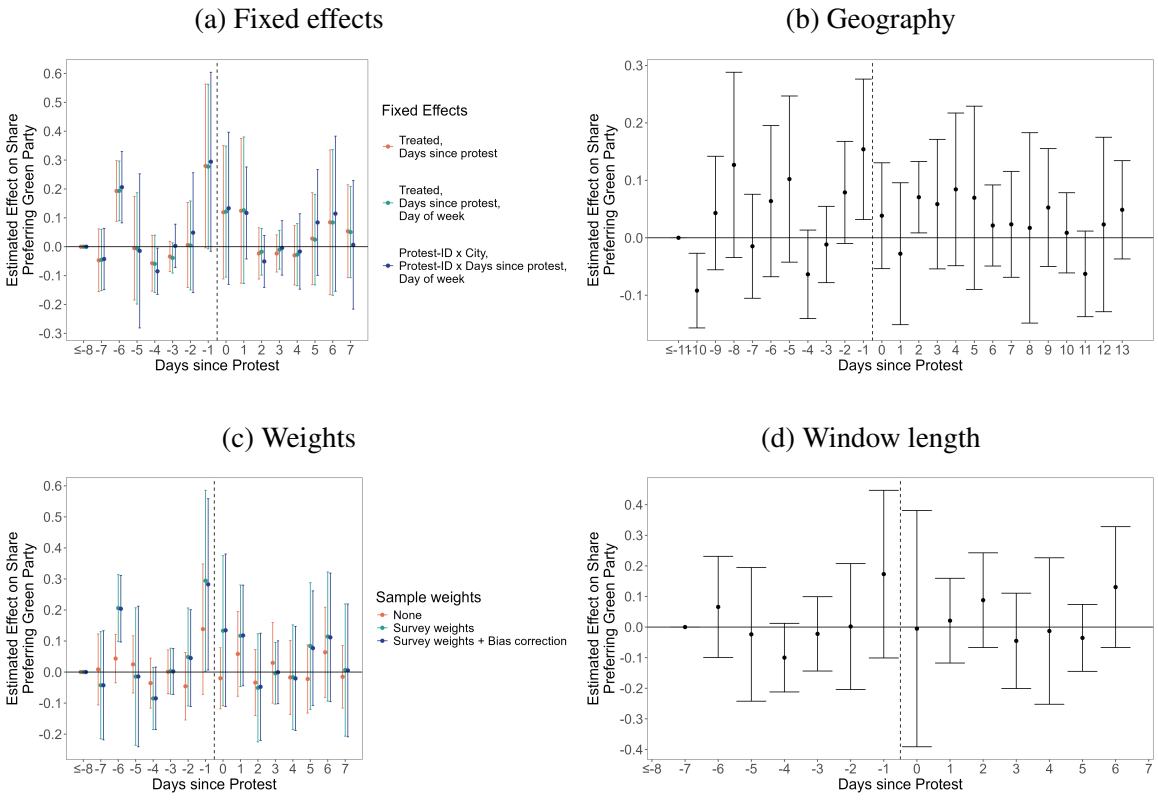
Notes: Daily estimates for reported worry about climate conservation around *Last Generation* protests in 2022, based on Equation (1). Coefficients from a stacked event study that compares city commuting zones experiencing exactly one protest within a 28-day window to those without any protests in the same period. The outcome is an indicator for survey respondents reporting maximum worrying about climate conservation on a four-point scale. The treatment variable measures days relative to protest, omitting days -14 to -8 as the reference period. Specification includes fixed effects for city-by-stack and day-by-stack, along with individual controls for age, sex, education, household income, and employment status. Sample includes 29 city-protest pairs, yielding 54,797 observations including 1,068 unique respondents in treated cities. Error bars denote pointwise 95 percent confidence intervals, clustered at the city level.

Appendix Figure A3. Effect of protest on worrying about environmental protection



Notes: Daily estimates for reported worry about environmental protection around *Last Generation* protests in 2022, based on Equation (1). Coefficients from a stacked event study that compares city commuting zones experiencing exactly one protest within a 28-day window to those without any protests in the same period. The outcome is an indicator for survey respondents reporting maximum worrying about environmental protection on a four-point scale. The treatment variable measures days relative to protest, omitting days -14 to -8 as the reference period. Specification includes fixed effects for city-by-stack and day-by-stack, along with individual controls for age, sex, education, household income, and employment status. Sample includes 29 city-protest pairs, yielding 54,797 observations including 1,068 unique respondents in treated cities. Error bars denote pointwise 95 percent confidence intervals, clustered at the city level.

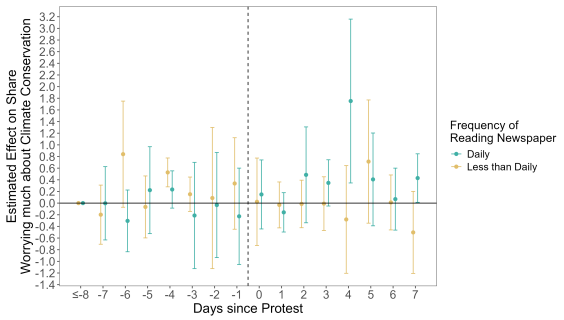
Appendix Figure A4. Effect of protest on probability of worrying - by urban/rural



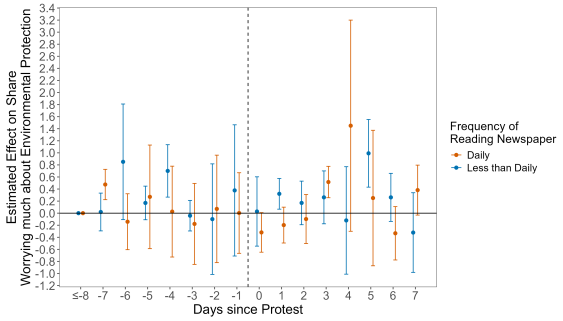
Notes: Daily estimates for Green Party support around *Last Generation* protests in 2022, based on stacked event studies following Equation (1). Panel (a) varies fixed effects. Panel (b) aggregates protests and survey respondents on the 38 NUTS-2 administrative regions instead of 96 city commuting zones. Panel (c) shows sensitivity to survey weights as well as Wing et al. (2024) bias-correcting weights for stacked event studies. Panel (d) focuses on unique protests within 14-day instead of 28-day windows.
The baseline specification reports coefficients from a stacked event study that compares city commuting zones experiencing exactly one protest within a 28-day window to those without any protests in the same period. The outcome is an indicator for survey respondents preferring the Green Party. The treatment variable measures days relative to protest. Specification includes fixed effects for city-by-stack and day-by-stack, along with individual controls for age, sex, education, household income, and employment status. Original estimation sample includes 29 city-protest pairs, yielding 54,797 observations including 1,068 unique respondents in treated cities. Error bars denote pointwise 95 percent confidence intervals, clustered at the city level.

Appendix Figure A5. Effect of protest on worrying - by news consumption

(a) Climate conservation



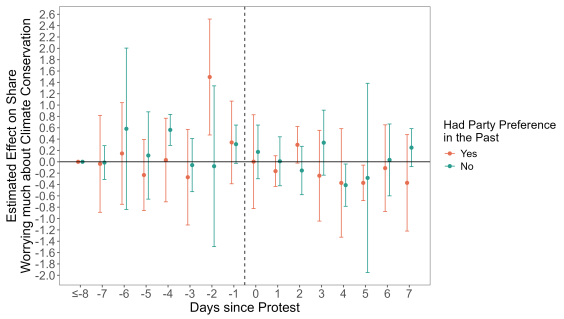
(b) Environmental protection



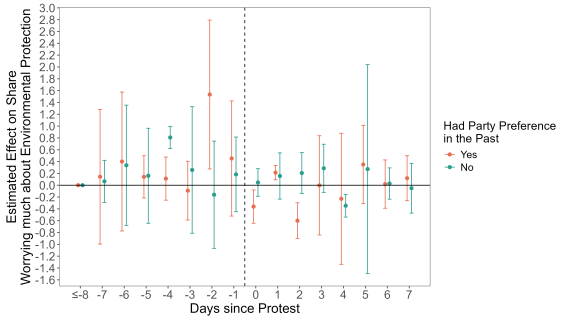
Notes: Daily estimates for worrying about environmental topics around *Last Generation* protests in 2022, based on Equation (1). Separate regressions for individuals reading news daily and less than daily, respectively. Coefficients from a stacked event study that compares city commuting zones experiencing exactly one protest within a 28-day window to those without any protests in the same period. The outcome is an indicator for maximal worrying on a four-point scale, about climate conservation in Panel (a) and environmental protection in Panel (b). The treatment variable measures days relative to protest, omitting days -14 to -8 as the reference period. Specification includes fixed effects for city-by-stack and day-by-stack, along with individual controls for age, sex, education, household income, and employment status. Original estimation sample includes 29 city-protest pairs, yielding 54,797 observations including 1,068 unique respondents in treated cities. Error bars denote pointwise 95 percent confidence intervals, clustered at the city level.

Appendix Figure A6. Effect of protest on worrying - by having party preference in the past

(a) Climate conservation



(b) Environmental protection

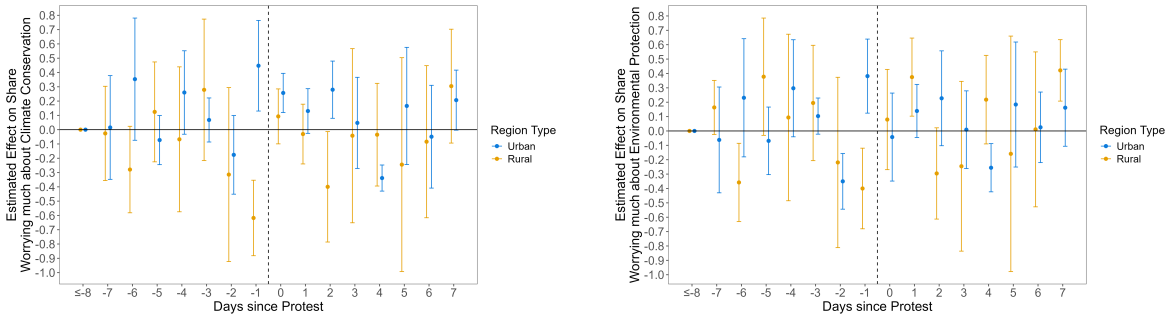


Notes: Daily estimates for worrying about environmental topics around *Last Generation* protests in 2022, based on Equation (1). Separate regressions by whether individuals report any party preference in the past. Coefficients from a stacked event study that compares city commuting zones experiencing exactly one protest within a 28-day window to those without any protests in the same period. The outcome is an indicator for maximal worrying on a four-point scale, about climate conservation in Panel (a) and environmental protection in Panel (b). The treatment variable measures days relative to protest, omitting days -14 to -8 as the reference period. Specification includes fixed effects for city-by-stack and day-by-stack, along with individual controls for age, sex, education, household income, and employment status. Original estimation sample includes 29 city-protest pairs, yielding 54,797 observations including 1,068 unique respondents in treated cities. Error bars denote pointwise 95 percent confidence intervals, clustered at the city level.

Appendix Figure A7. Effect of protest on probability of worrying - by urban/rural

(a) Climate conservation

(b) Environmental protection



Notes: Daily estimates for worrying about environmental topics around *Last Generation* protests in 2022, based on Equation (1). Separate regressions for individuals residing in urban and rural areas, respectively. Coefficients from a stacked event study that compares city commuting zones experiencing exactly one protest within a 28-day window to those without any protests in the same period. The outcome is an indicator for maximal worrying on a four-point scale, about climate conservation in Panel (a) and environmental protection in Panel (b). The treatment variable measures days relative to protest, omitting days -14 to -8 as the reference period. Specification includes fixed effects for city-by-stack and day-by-stack, along with individual controls for age, sex, education, household income, and employment status. Original estimation sample includes 29 city-protest pairs, yielding 54,797 observations including 1,068 unique respondents in treated cities. Error bars denote pointwise 95 percent confidence intervals, clustered at the city level.