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# The power of protest in the media: examining portrayals of climate activism in UK news

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Over the last several years, the United Kingdom has seen a wave of environmental movements demanding action on the climate crisis. While aligned in their goals, the groups undertaking this activism often diverge on the question of tactics. One such divergence occurred in January 2023, when Extinction Rebellion (XR) declared “We Quit”, ending actions that were disruptive to the general public. Peer groups Just Stop Oil and Animal Rising continued disruptive actions, viewing them as the best way to gain media coverage for their causes. Despite the urgency of addressing climate change and the growing prominence of direct action in British life, little research has examined how the news media covers and reacts to different climate actions. News media plays a vital role in influencing the public’s perception of the climate crisis and “appropriate” responses. We assembled a unique dataset of British news coverage of climate actions over a 7 month period, covering both before and after XR’s “We Quit” statement. Our results reveal that conservative publications cover climate actions more unfavorably and more inaccurately than other publications. Legal actions are generally covered more favorably than illegal ones in both conservative and non-conservative outlets and receive more coverage. Actions that target industry attract more coverage than those that target other actors, while actions that target the public are covered more favorably than those that do not. These results contribute to the scholarly debates surrounding the interaction between social movements and news media, especially on how different strategies potentially influence the extent and affective nature of coverage. They have implications for strategies adopted by climate advocates, depending on whether their goal is merely to draw attention to an issue or if it is to generate positive coverage.

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## Introduction

Over the last five years, the UK climate activism scene has experienced remarkable growth with the emergence of Extinction Rebellion (XR), and similar grassroots social movements such as Just Stop Oil, Insulate Britain, and Animal Rising. Drawing inspiration from historical movements such as the Indian Independence Movement, the Suffragette movement, and the American Civil Rights Movement (Taylor and Gayle 2018), these groups have orchestrated waves of local-level grassroots activism, all centered on the principle of non-violent civil disobedience. These disruptive but peaceful tactics have included blocking roadways and gluing themselves to famous art pieces to draw public attention to the issue of political inaction on climate change. While these different groups are aligned in their desire to create political change, they are now diverging on the question of how best to mobilize new activists and put the climate crisis on the national agenda. In this article, we examine the relationship between different types of climate actions and the tenor and volume of the resulting media coverage. We focus here on media coverage because the media is a lens that shapes public perceptions of climate activism.

For instance, in January 2023, XR declared “We Quit”. They released a statement that they were temporarily shifting away from public disruption as a primary tactic due to the minimal progress made on actually slowing emissions, and a need to focus pressure on those in positions of power rather than the public (Extinction Rebellion, 2022). Specifically, the statement called out three root causes of the current climate crisis: “A financial system prioritizing profits over life, a media failing to inform the public and hold power to account, and a reckless government entrenched in corruption and suppressing the right to protest injustice.” The statement went on to declare an intent to “temporarily shift away from public disruption as a primary tactic” and instead focus their tactics on the three root causes: the financial system, the media, and the government. This was informed in part by survey research that indicated disruptive strategies may elicit negative public attitudes towards XR (Parkes et al. 2023). For example, a October 2019 YouGov poll found that just 36% of British adults supported plans to disrupt roads and public transit to draw attention to the climate crisis, while 54% were opposed (YouGov 2019). XR had a new strategy: an April 2023 London-based multi-day public, non-disruptive protest titled “The Big One” targeted towards those called out in “We Quit”: the media, the financial system, and the government. The Big One was accompanied by a series of leadup actions focused on disrupting the wealthy and powerful, especially big emitters such as fossil fuel energy providers and banks investing in fossil fuels. This shift did not mean that XR was getting less radical. Indeed, “We Quit” declared “We must be radical in response to this crisis”. Instead, the major shift was from actions that were publically disruptive to those more narrowly targeted towards members of the financial sector, media, and government.

Several of XR’s peer groups took a different approach, most prominently Just Stop Oil and Animal Rising. In the aftermath of XR’s decision to temporarily pause publicly disruptive actions, both groups reaffirmed their commitment to public disruption as a key part of their strategy (Gayle 2023). Such tactics included blocking traffic on major bridges and roadways (Just Stop Oil), throwing soup on Van Gogh’s famous Sunflowers painting (Just Stop Oil), and carrying out sit-ins at meat-heavy restaurants (Animal Rising), all aiming to draw public and political attention to their causes.

In addition to whether to target the public as a whole or a more narrow category of society (such as political or business elites), the legality of actions is another key question of protest tactics. Illegal actions can be harder to get members to volunteer for

because of the potential consequences of breaking the law, which can be an unacceptable risk for certain members of society, such as those on a visa; those who are primary caregivers; those who are breadwinners in their families; or those who are members of marginalized groups. In this way, illegal actions could potentially be seen by those members as exclusionary or off-putting. However, if they are effective at attracting public attention to the cause by generating additional news coverage about climate issues, including that others in society are concerned enough to put themselves at risk of arrest, then they may be worth it.

This divergence in tactics creates an opportunity for research into the media coverage of different types of climate actions. While there has been a wealth of research on climate activism in recent years, relatively little of it has focused on the relationship between type of protest tactics and the volume and tenor of resulting media coverage. Such research matters for two reasons. First, it determines the “return on effort” for a rapidly growing social movement that involves the time and energy of hundreds of thousands of people in the UK alone (Taylor and Watts, 2019), and second, it may have indirect implications for the pace at which Britain decarbonizes its economy.

Previous research confirms the influence of media coverage on public opinion (Mutz and Soss, 1997; Huang et al. 2021), and on climate change opinions in particular (Chinn et al. 2020). The media is a key player in determining the agenda on the climate debate, and news coverage is therefore an important outcome of climate actions. It can help to shift the “Overton Window” of what views are socially acceptable on a given issue (Vo 2019). Recent work on the efficacy of climate change protests has further confirmed the vital role of media coverage in protest efficacy (Fisher et al. 2023).

Further the media is rarely neutral, with certain news sources playing a key role in spreading disinformation and furthering climate obstruction (Painter and Gavin 2016). The presence of climate skepticism in UK newspapers is increasing each year and is often offered without a pro-climate counter-perspective (Painter and Gavin 2016). This is not contained to just right-wing outlets - even “quality” outlets often get basic facts wrong about climate change (Lewandowsky 2021). Media coverage was explicitly called out in XR’s own “We Quit” statement, which recognized “a media failing to inform the public and hold power to account” as a “root cause” of our current climate crisis.

We contribute to this discussion by analyzing coverage of XR over a 7 month period that spans both the “We Quit” statement and “The Big One” protest. Using an original dataset, we measure how press coverage, including volume (article length, number of articles), and sentiment (positivity) vary according to the tactics of the action and the news source in question. Our study offers several contributions to the ongoing debate about protest tactics and media coverage. We offer a case study in line with suggestions from Elliot et al. (2016) on the best ways to build evidence in the ongoing debate over protest tactics and media coverage. We have expanded the evidence base on this topic along two dimensions: first, offering a within-organization, before-and-after study of the relationship between a significant tactical shift and the corresponding media coverage, while also offering a side-by-side comparison of several major direct actions. We also offer an empirical analysis of the “activist’s dilemma” outlined by (Feinberg et al. 2020), who find that extreme protest actions that can be useful for generating pressure on institutions may also reduce public support for movements.

## Literature review of the evidence around media and activism

Social movement scholars have long inquired into the relationship between movements, news media coverage, and political

outcomes. Although media ecosystems and social movement organizing have transformed due to the advent and widespread adoption of social media (see Billard 2021; Tufekci 2017; Hunt and Gruszczynski 2019; and Caren et al. 2020) news media coverage remains a critical lever and pathway of social movement influence (Corrigan-Brown 2016). While the relationship between news organizations and social movements may be less “asymmetrical” (Gamson and Wolsfeld 1993) than it once was when traditional media institutions largely had a monopoly on information flows, news media coverage remains a central factor in how social movements are able to translate their objectives into tangible social change, communicate their issue framings to publics, obtain legitimacy and spread tactics and messages across different geographies (e.g. Andrews and Biggs 2006; Andrews and Caren 2010; Stoddart et al. 2015; Amenta et al. 2017). In certain cases, advocacy organizations and activist networks have been able to exercise outsized influence on the actions of corporate and state actors through strategically shifting media attention and generating public pressure (Hein and Chaudri 2018).

Yet, there is substantial debate within social movement organizing scholarship regarding the relationship between a movement’s tactics and the volume and favorability of the resultant media coverage. It is critical to bear in mind that only a small fraction of social change efforts obtain media coverage in the first place, and those that do represent somewhat novel cases in the context of the larger social field (Smith et al. 2001; McCarthy et al. 1996). Movements’ influence on media coverage is “at best indirect” (Amenta et al. 2017), and therefore careful case studies are necessary to understand the contextual interrelationships of tactics, coverage, political context, media environment and other factors (Elliot et al. 2016). Examining the relationship between tactical approach and local news media coverage of environmental movements in North Carolina, Andrews and Caren (2010) found that social movement groups that deployed insider tactics (e.g. lobbying, and non-confrontational approaches) drew more substantial local media coverage, challenging perspectives which pointed to more confrontational approaches as successful in achieving coverage. Meanwhile, Feinberg et al. (2020) through experimental data determined that “extreme protest actions” generally lead to negative perceptions of social movements. They identified an “activists dilemma” whereby the types of actions which attract greater media attention also tend to reduce public support or negatively affect public perception, identifying a potential tradeoff between extent and favorability of coverage (Feinberg et al. 2020). While more confrontational tactics may be more likely to achieve coverage, this coverage may not necessarily favor the movement’s issue framings or objectives (Caren et al. 2020).

Others such as Thomas-Walters and Young (2023) have argued that metrics such as public support for activists are less significant than the extent to which elite decision makers experience sustained, significant, and costly disruptions to their interests and objectives stemming from disruptive tactics. This perspective suggests that the role of news coverage of movements may be negligible in driving political outcomes, and shifts attention away from the extent and favorability of coverage that many studies emphasize.

XR is an organization that, since its founding, has consciously reflected on its tactics and strategy in collaboration with scholars and in conversation with academic research and through its own Data Analysis and Insights Circle that conducts research on topics like mobilizing climate activists and evaluating action outcomes (see Matthews 2020). For instance, XR activists have repeatedly cited the “3.5%” figure, purported to be an important population mobilization threshold in certain contexts (Chenoweth and Stephan 2011). Yet, Matthews (2020) argues that this

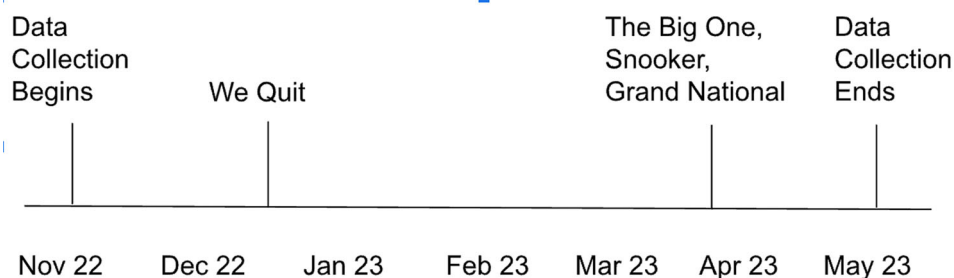
number is primarily derived from studying social change movements in autocratic contexts and likely represents a misuse of research findings by XR. At its emergence, XR was centered on disruptive actions which were highly visible in nature (Matthews 2020), a tactic which itself was a break from earlier cycles of climate activism defined by opposition to the fossil fuel industry around pipeline infrastructure and investments (de Moor et al. 2021). “We Quit” is the latest step in this process of organizational evolution, a reorganization centered on the recognition that more positive and extensive coverage would be required to catalyze change of the desired scale (Hudson 2023).

Given XR’s new orientation outlined in the “We Quit” statement and exemplified in The Big One, some involved with XR would point to the “radical flank effect” related to its offshoot organizations Insulate Britain and Just Stop Oil as a key factor behind the choice to shift approaches. The “radical flank effect” refers to the comparative effect that occurs when more radical factions of a movement – for instance the climate movement – operate in the same arena as more moderate or less confrontational sections of that movement (Simpson et al. 2022). XR does not exist alone, but in relation to these more radical flanks and their disruptive tactical choices and some would suggest that this positions XR to benefit from a more moderate stance in terms of influencing policy. According to reporting, several involved with the creation of XR, including Rupert Read, have used the language of “radical flank” suggesting that XR in its newest iteration represents a “moderate flank” in relation to its more radical offshoot organizations. However the effectiveness of this moderate repositioning is a subject of much inter-movement debate (Bland 2023). According to Read, XR in its original form “didn’t succeed in its ultimate aim of provoking meaningful climate action from the UK government” (Read and Rumbelow 2022).

The radical flank effect has been a central mechanism of interest in scholarship on climate activism and a key interest of climate activists themselves. Key debates within the literature on radical flank effects generally concern the direction of the radical flank effect, with a positive radical flank effect generating more positive views of moderate networks through comparison and a negative radical flank effect generating more negative views via assimilation. Schifeling and Hoffman (2019) for instance argue that activist Bill McKibben and 350.org through their fossil fuel divestment campaigns had a net positive “discursive radical flank” effect on U.S. climate change debates, making moderate policies like carbon taxes appear more frequently and favorably in political discussions.

The already uncertain landscape of movement-media relations is made more complicated by an issue like climate change. A large-scale analysis of news media coverage of climate change in ten countries over a twelve year timespan found that protests have a significant impact on total media coverage, but that media mentions of protests comprise a relatively small proportion of total climate coverage (Hase et al. 2021). There is strong experimental evidence that links news coverage of climate protests to public environmental attitudes, with positive coverage increasing pro-climate attitudes and negative coverage decreasing pro-climate attitudes (Kenward and Brick 2023). The influence of media coverage on political elites has also been demonstrated experimentally (Wouters and Walgrave 2017) and through process tracing (Hutter and Vliegencourt 2018).

There is also evidence that climate protesters in the UK’s YouthStrike4Climate movement chose the tactics that they thought would generate the most media coverage (Cammaerts 2023). For XR itself, one potential benefit of media coverage is the ability to reach a broader audience and build a broader movement, given that the organization has, at times, been critiqued for its tactics being exclusionary (Morris 2023). Finally researchers



**Fig. 1** Timeline of major events mentioned in this paper.

have also examined the types of images used in media coverage of climate activism. Visual coverage has shifted dramatically in the last several years, partly in response to the changing conceptions of what a “protester” looks like: the “Greta Effect” (Hayes and O’Neill 2021). The “Greta Effect” involved a shifting modal image of what a climate protester looked like: from generic protest images to those that emphasize young women and girls.

Our research contributes to these scholarly debates by examining the media coverage of different climate actions over 7 months. In particular, our analysis offers preliminary reflections on how a movement’s shift to less confrontational tactics may influence its resultant media coverage and the favorability of that coverage in traditional media. We also offer insights into the non-tactical factors that predict different aspects of coverage of climate activism in traditional media, including a paper’s political stances.

## Methods

To analyze what factors predict the sentiment and volume of news coverage of climate activism, we assembled a unique dataset of 412 articles from November 1, 2022 to May 4, 2023. This covers two months of coverage prior to, and four months of coverage after, the “We Quit” statement. While we focused on coverage of XR, we also captured articles that mention XR but were primarily about actions by other groups. We also collected articles that cover Just Stop Oil and Animal Rebellion for two specific events during the time period, for a case study discussed further in the Results section. A timeline of major events in our study is indicated in Fig. 1.

Our analysis centers on two pre-registered hypotheses, which can be viewed along with our pre-registered research design and procedures at: <https://archive.org/details/osf-registrations-yku47-v1>. Namely:

**H1.** Liberal newspapers will report more positively on actions compared to conservative newspapers

**H2.** Illegal actions will get more press coverage, but this coverage will be more negative

We also have several exploratory analyses outlined in the “deviations from pre-registration” section.

## Data collection

We assembled this dataset by collecting all online articles from the BBC and the 15 most popular newspapers in the United Kingdom (based on YouGov 2023) that mention the words “Extinction Rebellion”, “XR”, or derivatives of such (full details in Supplementary Appendix A). We collected the articles after they were published, using the search function on each newspaper’s website (if available) or the search engine Lexis Newsdesk. Table 1 shows the variables that we collected for each article, including what they were designed to capture, how they were calculated, and how we coded them. All coding was performed by ES. Secondary coding of any article covering an XR-specific event was recoded by an XR member for accuracy of event variables

including target and legality. Correlation of agreement between coders was  $>0.9$  for the variables in question.

## Data analysis

We used OLS linear regressions to assess the association between media coverage and/or sentiment, and various predictors. As a robustness check we ran additional models controlling for the month and day of the week of publication to account for potential seasonal and weekly changes in the publication cycle. Generally we report these results in the manuscript, but all regressions can be found in Supplementary Appendix B. All data analyses were conducted in R version 4.0.0.

To test Hypothesis 1 (i.e., liberal newspapers will report more positively on actions compared to conservative newspapers), we used the following OLS linear regression specification:

$$\text{Sentiment} = \beta_0 + \beta_1 \text{Partisanship} + \beta_2 \text{Month} + \beta_3 \text{Day} + \epsilon_i$$

To test Hypothesis 2 (illegal actions will get more press coverage, but it will be more negative) we calculated “Press Coverage” as an interaction term between the number of words in each article and the percentage of the article dedicated to XR. We evaluated the first part of H2 “illegal actions will get more press coverage” through the following regression specification:

$$\text{Press Coverage} = \beta_0 + \beta_1 \text{Legality} + \beta_2 \text{Scale} + \beta_3 \text{Target} + \beta_4 \text{NE} + \beta_5 \text{Cons} + \beta_6 \text{Month} + \beta_6 \text{Day} + \epsilon_i$$

Where  $\beta_1$  is a categorical variable indicating the legality of the action. We evaluated the second part of H2 “illegal actions will get more negative coverage” by examining the “Legality” coefficient in the following regression specification:

$$\text{Sentiment} = \beta_0 + \beta_1 \text{Legality} + \beta_2 \text{Scale} + \beta_3 \text{Target} + \beta_4 \text{NE} + \beta_5 \text{Cons} + \beta_6 \text{Month} + \beta_6 \text{Day} + \epsilon_i$$

In addition to helping evaluate both parts of H2, the specifications give us additional insights into the other predictors of article sentiment and press coverage, thereby shedding additional insight on the core question of what aspects of actions might influence the volume and tenor of press coverage.

We also conducted several sub-analyses of the dataset, to see whether the findings were supported by different subsets of the data. All regressions were conducted on a) the whole dataset, b) articles that focused only on XR (to see if the factors predicting coverage of XR were unique from factors predicting coverage of other groups), and c) all articles except those that discussed “The Big One” (as this was a unique event and it could be difficult to replicate all aspects of the press coverage). Sub-analyses from this third subset are presented in the Supplementary Information.

Finally, we conducted three exploratory analyses that were not outlined in our initial pre-registration. First we tested if papers of different political affiliations differed in the accuracy of their coverage, by examining the “Partisanship” coefficient in the

**Table 1 Variable information.**

Variable	Definition (example)	Coding
Partisanship	Is the paper politically conservative (Daily Mail), neutral (BBC), or liberal (The Guardian)?	<p>−1 to 1, with −1 representing liberal (e.g. The Guardian) and 1 representing conservative (e.g. The Daily Mail)</p> <p>We selected newspaper partisanship based on the ratings of an Oxford study detailing the endorsements that the party makes in general elections (Black and White, 2023) which we cross referenced with YouGov audience ratings by party registration for each source. For example, The Daily Mail both endorses a majority of Conservative candidates in general elections and has a majority of its voters identify as Conservative.</p> <p>Integer</p> <p>Coded 1-4, where 1 = 0-25%. and 4 = 76-100%.</p>
Word Count	Numeric word count of the article	Integer
Length XR	Length of coverage devoted to XR	Coded 1-4, where 1 = 0-25%. and 4 = 76-100%.
	What percentage of the article is devoted to XR, rounded to the nearest percentile?	
Shares	Number of times the article has been shared on social media.	Integer
Comments	Number of comments the article has received 1+ weeks after publication	Integer
Word Count	Numeric word count of the article	Coded in integer form, equaling the number of words in the article
Sentiment	What is the overall sentiment of the article?	<p>Coded −1-1, where −1 is negative, 0 is neutral, and 1 is positive.</p> <p>Calculated using hand dictionary coding based on the language used in the article. We used manual coding following findings from (Van Atteveldt et al. 2021) that manual coding of media coverage specifically is more reliable than automated or ML coding systems. The author assembled his codebook (specific to coverage of environmental protest in the UK) based on best practices from (Van Atteveldt et al. 2021) and especially (Boukes et al. 2020), who find off-the-shelf sentiment analysis tools wanting and urge the usage of smaller lexicons specialized to the context, language, and domain of the research project at hand. The codebook is available upon request from ES.</p> <p>0 = illegal (e.g., throwing paint on trade union buildings, which violated laws against vandalism)</p> <p>1 = legal (e.g. The Big One, which did not break any laws at the time as it was coordinated with the government in advance)</p> <p>Internal information of XR actions, cross-listed with public court documents/legal resources when necessary.</p> <p>Categories: Public, Elite, Government, Industry.</p> <p>Categories: National (coordinated), Local, London.</p>
Legality	Was the action legal or illegal at the time it was performed?	<p>0 = illegal (e.g., throwing paint on trade union buildings, which violated laws against vandalism)</p> <p>1 = legal (e.g. The Big One, which did not break any laws at the time as it was coordinated with the government in advance)</p> <p>Internal information of XR actions, cross-listed with public court documents/legal resources when necessary.</p>
Target	Who was the action targeting?	Categories: Public, Elite, Government, Industry.
Scale	Where did the action take place?	Categories: National (coordinated), Local, London.
	How many sites was the action taking place at and where were those sites?	
Accuracy	How accurate was the article?	Measured 0 and up, with a higher score being more inaccurate, 1 point awarded per major factual error
	How many major factual errors did the article make (who, what, when, where, why). Measured against internal XR documents which outlined details for each action carried out.	
Action	Was the article covering an action or something else such as a press release? "Action" here defined as an act of protest or disruption carried out by one or more people against a target.	<p>Action = 1</p> <p>Not an action = 0</p>
Action Code	A unique numeric code assigned randomly by action	Integer
Category Code	A code classifying each action into a category by target and legality.	<p>Press Releases = 1</p> <p>Legal Government = 2</p> <p>Illegal Government = 3</p> <p>Illegal, Elite = 4</p> <p>Legal Public = 5</p> <p>Illegal Public = 6</p> <p>Illegal Industry = 7</p> <p>Legal Industry = 8</p>
Day of Week	What day of the week was the article published on?	Used as a control variable to account for possible variations in the publishing cycle
Month	What month was the article published in?	Used as a control variable to account for changes in coverage over time
National Event	If targeting a sporting event, was the event in question broadcast nationally or not?	<p>National Event = 1</p> <p>Non-national event = 0</p>
Is.Xr	Was XR officially included in the action?	1 = yes, 2 = no
	Internal Documents	
mention.xr	Does the article mention XR?	<p>Yes = 1</p> <p>No = 0</p>

**Table 1 (continued)**

Variable	Definition (example)	Coding
after.we.quit	Did the article come out before or after the Jan 1 2023 “We Quit” statement from XR?	Yes = 1 No = 0
Source	Which news source published the article?	Categorical variable
Press Coverage	What percentage of the article is devoted to XR? Multiply the amount of the article, in percentage terms, that is about XR by the number of words in the article.	Decimal, from 0-1, where 100% = 1 and 0% = 0

following regression specification:

$$Accuracy = \beta_0 + \beta_1 Partisanship + \beta_2 Month + \beta_3 Day + \epsilon_i$$

Second, we tested if the mean sentiment of articles about XR became more positive in the aftermath of the “We Quit” statement. We did this through a Welch’s two-sample t-test, conducted at our standard  $p < 0.05$  significance level.

Finally, we also conducted an exploratory side by side case study of three major climate actions that all happened in April 2023, put on by each of the groups in our study. These were XR’s “Big One” campaign of peaceful protest in Central London, Just Stop Oil’s disruption of the national snooker finals, and Animal Rising’s disruption of the Grand National Horse Race. These events differed widely in scale (from tens of thousands of people to just two) and strategy. By comparing those specific actions on a number of factors, we shed additional insight on how different actions may generate different patterns of media coverage.

**Deviations from pre-registration**

We deviated from the preregistration in several ways. First, we initially intended to evaluate H2 by comparing the mean of an interaction term between sentiment and comments for legal and illegal actions—a variable we termed the “Cumulative Event Impact Score” (CEIS). Unfortunately, only about 15% of the articles in our dataset reported reaction data (in terms of number of comments or shares), and those that did overwhelmingly came from a handful of publications. Rather than use an underpowered and nonrepresentative subset of our data, we instead used “Press Coverage”, an interaction term between the number of words in each article and the percentage of the article dedicated to XR.

Second, the inclusion of the month and day controls were made after our preregistration on the suggestion of a colleague with experience in the publishing industry. Third, this article includes two exploratory analyses that was not outlined in our initial preregistration, testing if papers of different political affiliations differed in the accuracy of their coverage and if the mean sentiment of articles about XR became more positive in the aftermath of the “We Quit” statement.

Third, we initially intended to evaluate a third hypothesis, “Public reaction (in terms of sharing/comments) will be greater for a) illegal, b) national, and c) public-facing actions”, using comment and share data, but were unable to do so due to the underpowered and non-representative subsample of articles that provided reaction data.

We also added two pieces of exploratory analysis not included in the preregistration. First, our side by side comparison of three major climate actions that all happened after our pre-registration (and therefore could not have been included in it). Second, we conducted a mean sentiment analysis of the coverage of XR before and after “We Quit”.

**Results**

**Hypothesis 1: Conservative papers produce more negative coverage.** We collected a total of 412 articles (see Supplementary Appendix A for the distribution across newspapers). We found

**Table 2 Summary of the OLS regression modeling the relationship between newspaper partisanship and sentiment of coverage for 1) all coverage of climate actions and 2) coverage of XR actions, including effect sizes and unconditional robust standard errors in parentheses.**

Variable	All coverage	Focused on XR
Partisanship (Neutral)		
conservative	<b>-0.247*</b> (0.080)	-0.167 (0.103)
liberal	<b>0.274*</b> (0.095)	<b>0.346*</b> (0.129)
Month	0.040 (0.024)	0.062 (0.036)x
Day of the week (Sunday)		
Monday	-0.060 (0.125)	0.216 (0.217)
Tuesday	-0.043 (0.108)	0.005 (0.148)
Wednesday	0.043 (0.109)	0.138 (0.148)
Thursday	0.030 (0.179)	0.028 (0.214)
Friday	-0.059 (0.132)	-0.108 (0.215)
Saturday	-0.011 (0.119)	0.111 (0.193)
Intercept	-0.242 (0.135)	-0.297 (0.183)
Observations	319	130

Left column is all articles that mention XR, right is all articles that are focused (>50% of coverage) on XR. For categorical variables, the reference category is indicated in parentheses. Bold terms denotes  $p < 0.05$ , bold terms with a \* denotes  $p < 0.01$ .

clear and significant evidence that news sources of different partisan affiliations differ in the sentiment of their coverage of climate activism (Table 2). In the full sample, on a three point (-1-1) scale, conservative newspapers produced coverage -0.247 points more negative than neutral sources and -0.521 points more negative than liberal sources. In the subsample of coverage just focused on XR our results are largely consistent, with conservative sources producing coverage -0.513 points more negative than liberal sources, although the difference between conservative and Neutral sources loses its significance. In neither case do the month or day controls have significant predictive power. Both regressions provide clear evidence that conservative sources, on average, produce significantly more negative coverage of climate activism.

**Hypothesis 2: Predictors of press coverage and sentiment.**

When it comes to predictors of press coverage our patterns are generally consistent across datasets, but on certain results, our “Focused on XR” dataset is underpowered and loses significance. Across both subsets of data, legal actions attract more press coverage than illegal actions, but only in the whole sample are the differences significant. In both models, actions that occur in London attract significantly more coverage than actions that occur elsewhere in the UK. Similarly, in all three models actions that target industry attract more press coverage than those that do not, with that result holding significant in two models. Finally, we have some evidence that on average, publications of either partisan affiliation (liberal or conservative) write more about climate activism than neutral publications.

Similar to the first part of H2, the predictors of sentiment vary somewhat in significance based on the subset of data (Tables 1

**Table 3 Predictors of press coverage - summary of the OLS regression modeling the relationship between legality, scale, target, NE, partisanship and newspaper coverage for 1) all coverage of climate actions and 2) coverage of XR actions, including effect sizes and unconditional robust standard errors in parentheses.**

Variable	All coverage	Focused on XR
Legal (Illegal)	<b>157.145</b> (74.319)	164.376 (107.325)
Scale (Local)		
London	<b>99.411</b> (50.283)	<b>246.481</b> (109.615)
National, Coordinated	− <b>180.955</b> (73.613)	−72.842 (200.270)
Target (Public)		
Government	−1.307 (93.219)	−163.488 (125.769)
Elite	−16.808 (75.015)	223.284 (137.159)
Industry	<b>375.710</b> (165.326)	173.053 (103.270)
National Event (not targeting a sporting event)		
National	−45.579 (61.527)	− <b>171.236</b> (79.323)
Non-National	136.161 (186.196)	NA
Partisanship (Neutral)		
conservative	<b>129.668</b> (50.456)	129.773 (84.731)
liberal	<b>124.830</b> (58.947)	156.666 (90.134)
Month	49.901 (26.048)	29.114 (46.123)
Intercept	−93.437 (131.012)	−140.878 (208.902)
Observations	192	103

Left column is all articles that mention XR, right is all articles that are focused (>50% of coverage) on XR. For categorical variables, the reference category is indicated in parentheses. Bold terms denotes  $p < 0.05$ , bold terms with a \* denotes  $p < 0.01$ .  
 Regression specification:  $Press\ Coverage = \beta_0 + \beta_1 Legality + \beta_2 Scale + \beta_3 Target + \beta_4 NE + \beta_5 Cons + \beta_6 Month + \beta_7 Day + \epsilon_i$ .

**Table 4 Predictors of sentiment - summary of the OLS regression modeling the relationship between legality, scale, target, NE, partisanship and sentiment for 1) all coverage of climate actions and 2) coverage of XR actions, including effect sizes and unconditional robust standard errors in parentheses.**

Variable	All coverage	Focused on XR
Legal (Illegal)	<b>0.259*</b> (0.093)	0.015 (0.179)
Scale (Local)		
London	0.157 (0.093)	−0.155 (0.224)
National, Coordinated	0.132 (0.117)	−0.183 (0.363)
Target (Public)		
Government	− <b>0.407*</b> (0.154)	−0.471 (0.305)
Elite	−0.187 (0.128)	−0.616 (0.325)
Industry	0.020 (0.141)	−0.296 (0.266)
National Event (not targeting a sporting event)		
National	<b>0.252</b> (0.115)	<b>0.455</b> (0.188) NA
Non-National	−0.233 (0.206)	
Partisanship (Neutral)		
conservative	− <b>0.188</b> (0.089)	−0.067 (0.141)
liberal	0.120 (0.095)	0.219 (0.141)
Month	− <b>0.118</b> (0.047)	−0.108 (0.120)
Intercept	0.142 (0.202)	−0.108 (0.120)
Observations	264	114

Left column is all articles that mention XR, right is all articles that are focused (>50% of coverage) on XR. For categorical variables, the reference category is indicated in parentheses. Day controls are not displayed due to space constraints but are accounted for in the model in question and do not produce significant results. Bold terms denotes  $p < 0.05$ , bold terms with a \* denotes  $p < 0.01$ .  
 Regression specification:  $Sentiment = \beta_0 + \beta_1 Legality + \beta_2 Scale + \beta_3 Target + \beta_4 NE + \beta_5 Cons + \beta_6 Month + \beta_7 Day + \epsilon_i$ .

and 3), but the overall patterns are consistent (Table 4). Across both datasets, legal actions attract more positive coverage than illegal ones in line with our second hypothesis, although only in the full sample is the difference significant. By examining the coefficient for the categories of  $\beta_3$ , “Target”, compared to the reference category of “public”, we have evidence that actions that target the public are covered more favorably than those that are not. We also have evidence that actions that occur on a national scale attract more positive coverage than those that do not occur on a national scale, however that significance disappears when “The Big One” is removed (see Supplementary Appendix C),

indicating that effect may have been largely driven by unusually positive coverage surrounding TBO.

**Exploratory analysis 1: Partisanship and accuracy**

In both models, we have significant evidence that Conservative newspapers make more mistakes, on average, than neutral or liberal ones (between 0.2 and 0.315 more mistakes depending on the model), although there is no significant difference in mean number of mistakes between liberal newspapers and those without a partisan affiliation.

**Exploratory analysis 2: Sentiment change after “We Quit”**

Depending on the subset of the data analyzed (articles that mention XR, or articles that are focused exclusively on XR), the mean sentiment of articles after “We Quit” was either statistically indistinguishable from the sentiment of articles before (before = -0.125, after = -0.2064, *p* = 0.25) or actually slightly lower (before = -0.125, after -0.271, *p* = 0.033).

**A case study of disruptiveness**

The three climate actions analyzed in more depth here collectively accounted for more than 1/3 of the articles in our dataset. They offer a useful comparison of a small scale event highly disruptive to the public (the national Snooker protest), a larger scale event highly disruptive to the public (the Grand National horse race protest), and a very large scale event that was not disruptive to the public (The Big One), while holding the time period of the events relatively constant. It also allows us to empirically assess a claim that was regularly repeated in the British activist space in the aftermath of all three actions, that the media had attached outsized attention to the more disruptive protests, summed up well by an article in *The Conversation* titled “A single radical gets more media coverage than thousands of marchers” (Macdonald 2023). We compare the Snooker and Grand National protests to each other and two sets of coverage of The Big One: all articles, and all articles that were not focused on the coinciding of The Big One and the London Marathon, which occurred the same weekend. This allows us to isolate coverage of The Big One itself, simulating as if it had not occurred the same weekend as a globally-covered sporting event. We compare these events on 1. The total number of articles that covered them 2. The total word count of those articles and 3. The mean sentiment of those articles. The results are laid out in Table 5.

The primary takeaway from this case study is that the more disruptive protests (National and Snooker) drew as much or more coverage, in both article and percentage terms, than either set of coverage of The Big One, despite the latter being far more resource intensive to put on. However, coverage of the disruptive events was consistently and significantly more negative, although the mean sentiment of all four events was still negative - echoing a pattern that persisted across nearly all of the actions in our dataset (Table 6).

**Discussion**

Our findings offer several contributions to the ongoing debate about protest tactics and media coverage. We offer a case study in line with suggestions from Elliot et al. (2016) on the best ways to build evidence in the ongoing debate over protest tactics and media coverage. We have expanded the evidence base on this topic along two dimensions: first, offering a within-organization, before-and-after study of the relationship between a significant tactical shift and the corresponding media coverage, while also offering a side-by-side comparison of several major direct actions.

We found that both liberal and conservative papers write more about climate actions than neutral ones, suggesting that climate activism may activate more coverage in partisan media spaces than nonpartisan ones. Legal actions, and those based in London, gain the most news coverage. Furthermore, legal actions and national events are both written about more positively, while conservative papers are more negative about climate activism overall. Targeting industry seems to lead to the most coverage, compared to other audiences. Targeting the government seems to lead to the most negative coverage, compared to other audiences.

Based on seven months of media coverage, our findings depend to an extent on which subset of the data is analyzed but several patterns stand out. In line with our first hypothesis, conservative publications cover climate activism more unfavorably and more inaccurately than other publications. Our further analysis shows conservative publications cover climate activism more inaccurately. This is consistent with evidence from, inter alia, (Painter and Ashe 2012) that demonstrates a link between news source political affiliation and the accuracy of coverage of climate science, although ours is the first study to extend this finding to the coverage of climate activism. This is a challenge because in a media landscape dominated by conservative media, public understandings of climate science, policy, and activism may be informed by low-quality information.

In line with the first part of our second hypothesis, legal actions are generally covered more favorably than illegal ones. However, contrary to the second part of hypothesis 2, they also attract more press coverage than illegal actions on average. This offers evidence against the “activist’s dilemma” described by Feinberg et al. (2020), and should give some encouragement to those in the activist community who argue in favor of legal actions as a favorable media strategy, given that they seem to attract both more coverage and more favorable coverage than illegal actions. It is important to note, however, that this is only in terms of affective tenor of media coverage, which may not be an accurate proxy for achieving long run political change or systems transformations.

**Table 5 Predictors of accuracy - summary of the OLS regression modeling the relationship between partisanship and accuracy for 1) all coverage of climate actions and 2) coverage of XR actions, including effect sizes and unconditional robust standard errors in parentheses.**

Variable	All coverage	Focused on XR
Partisanship (Neutral)		
Conservative	<b>0.315*</b> (0.074)	0.193 (0.099)
liberal	-0.006 (0.066)	0.035 (0.091)
Month	<b>-0.100*</b> (0.033)	-0.054 (0.031)
Day of the week (Sunday)		
Monday	-0.020 (0.168)	<b>-0.340 (0.161)</b>
Tuesday	0.218 (0.125)	-0.275 (0.172)
Wednesday	-0.049 (0.124)	-0.271 (0.160)
Thursday	0.003 (0.157)	-0.087 (0.223)
Friday	-0.174 (0.125)	-0.153 (0.198)
Saturday	-0.115 (0.145)	-0.183 (0.180)
Intercept	<b>0.369*</b> (0.131)	0.342 (0.190)
Observations	267	134

Left column is all articles that mention XR, right is all articles that are focused (>50% of coverage) on XR. For categorical variables, the reference category is indicated in parentheses. Bold terms denotes *p* < 0.05, bold terms with a \* denotes *p* < 0.01. Regression specification:  $Accuracy = \beta_0 + \beta_1 Partisanship + \beta_2 Month + \beta_3 Day + \epsilon_i$ .

**Table 6 Case study comparison of radical climate actions occurring in April 2023.**

	Grand National	Snooker	TBO (no marathon)	TBO (with marathon)
Total # of articles	57	44	40	53
Total word count of articles	43,109	29,755	24,852	32,068
Mean sentiment of articles	-0.214	-0.364	-0.175	-0.038



In terms of targets, actions that target industry attract more coverage than those that target other actors, while actions that target the public are covered more favorably than those that do not. The popularity of industry actions in media coverage may be due to industry actions in our dataset often falling into two camps: those that targeted large industries that attracted extensive press coverage anyway (such as the newspaper industry or fossil fuel industry) and industry actions targeting “easy villains”, such as oil companies polluting water sources, which we know from previous research can make effective targets (e.g. Hein and Chaudri 2018).

On the question of scale, we have evidence that events centered around London attract more coverage, on average, than those that are local or nationally-coordinated across the country, pointing to a London-centric bias in the media sources we study (for more on the relationship between journalist proximity to protests and coverage, see Brown and Harlow 2019). This makes sense, given that most of the sources we study (and much of their staff) are headquartered in or around London, but could point to a challenge for activists looking to attract coverage for actions outside of London or reach members of the public living outside of London, since voters might be inclined to discount actions that occur outside of their immediate area. Local news media and social media may be especially important to analyze to assess how generalizable this “London Bias” is in future work.

We analyzed subsets of the data both to validate the robustness of our results, and to pinpoint specific lessons for climate activists. For example, removing coverage of The Big One from our analysis allowed us to test how a single overshadowing event can influence news coverage far beyond the news cycle in which it occurs. 89 articles in our dataset mentioned The Big One, spanning from “We Quit” in January to when article collection stopped in May. Supplementary Appendix C shows the results of our regressions run on a sample that excludes coverage of The Big One. Our major findings largely persist across regressions, in direction if not always in significance. It is worth noting, however, that the mean sentiment of articles excluding The Big One, both all other articles in our dataset and those just focused on XR, was lower than when The Big One was included: indicating that it did generate a wealth of relatively positive coverage, at least compared to the overall negative tilt of coverage across our database. Our case study analysis indicates that this might have been due at least in part to The Big One overlapping with the London marathon, and the much-publicized refutation of fears that The Big One would cause disruption to the marathon. As an indication, coverage focused on The Big One was 0.137 points more positive including coverage of the marathon than excluding, and the subset of articles focused on The Big One *and* the marathon was one of the only subsets of our data to obtain an average positive rating.

We also offer a case study of three major actions, which between them accounted for 1/3 of the coverage in the dataset. In this comparison, the actions that were more disruptive to the general public drew more press coverage (both in terms of the number of articles, and overall word count). However, that coverage was more negative. The greater coverage might have been due to the fact that the sporting events in question were heavily televised anyway, with the Grand National attracting 7.5 million viewers on TV alone (Racing Post 2023). The negative tenor of that coverage, compared to The Big One, is in line with the theories that actions that disrupt the lives of ordinary Britons, as well as those without a clear connection to the climate crisis, will draw more backlash. By targeting and disruptive major sporting events, both the Grand National and Snooker protests arguably met both those criteria, while the peaceful The Big One protests, targeting parliament and government officials, did not.

Our within organization study examined how news coverage changed after XR’s shift to non-publicly disruptive tactics on Jan 1, 2023. One might reasonably have expected that the sentiment of such coverage would have improved, yet we found no evidence to support this hypothesis. Our results suggest that the media is inelastic in the tenor of its coverage of climate activism. One potential explanation for this, as well as the overall negative tilt of coverage in our dataset, is the fact that conservative outlets outnumber liberal outlets among the largest news providers in the UK, and that conservative outlets generally publish more articles that are critical and inaccurate about climate activism than liberal or neutral outlets. This can be seen in our case study, where all four events had a negative mean sentiment score. Such conservative dominance of climate change coverage is not a uniquely UK phenomenon: recent evidence from Cooper (2023) found that conservative television channels in the US publish far more coverage of climate protests than their liberal or neutral counterparts. These findings, coupled with the overall negative sentiment of coverage across XR and non-XR events alike, speak to the uphill challenge that activists face in driving positive coverage of their cause.

**Limitations.** Given the overall decline of legacy media in recent years, one might reasonably question whether such newspapers are a relevant conduit between activists and voters. We believe they are, for two reasons. First, a sizable percentage of the population still consumes news coverage from either a major newspaper (38%) or the BBC (53%) on a regular basis (Ofcom 2022). Among adults who regularly follow news, and who the literature tells us are more likely to be politically active (Wen et al. 2013), the numbers were even higher. Ofcom, the UK’s communications regulator, has also found that while consumption of BBC TV coverage and print coverage have both been declining, consumption of *online* newspapers and BBC coverage (the type we study here) remains constant and influential. There is also evidence from both Ofcom’s and our own findings that legacy media organizations are a major driver of news discussions on social media (Ofcom 2022). According to Ofcom, among those who use social media for news consumption, 53% follow the BBC, and 24% the Daily Mail. Additionally, the articles in our dataset were frequently shared on social media, some of them over a thousand times.

Finally, it is worth noting that the legacy press has been shown to have a direct influence on the British political elite’s climate change policy, that goes beyond what one would expect given the influence of media on the population (Carter and Clements 2015). This makes news media especially important to study, given recent scholarship arguing that the most effective path to political change runs through influencing political elites rather than the mass public (Thomas-Walters and Young 2023). The influence of media coverage of climate activism on political elites has also been shown by Wouters and Walgrave (2017) and Hutter and Vliegencourt (2018). However, that is not to say that our study should not be extended further to social media, to account for users who consume news directly through social platforms, bypassing legacy media entirely. Indeed, we believe that such an extension of this study would be a logical next step in the study of what factors predict coverage, or even discussion, of climate activism.

One thing we have not fully explored in this dataset is the “disruptiveness” of an action, which may differ from legality. An action can still be disruptive even if legal (such as mass flyering outside a bank). However, we had no objective system for rating the disruptiveness of an action, and therefore did not include it as a predictor of volume and sentiment of coverage.

Of course, press coverage is not the only way to evaluate the outcome of an action. Indeed, there has been a wealth of work on climate activism in the United Kingdom and elsewhere, using measures other than press coverage to evaluate the outcome of a protest or action, such as public opinion polling and electoral results. For example, Kenward and Brick (2023) found that the 2019 Extinction Rebellion protests increased pro-environmental attitudes among members of the general public. Meanwhile significant polling by the UK-based Social Change Lab has found that disruptive actions can increase support for more moderate groups, that climate action can increase the likelihood of members of the public to engage in climate action, and that the Grand National protests led to simultaneous positive and negative outcomes (from Animal Rising's point of view; Ozden and Glover 2022, Ozden and Ostarek 2022, Ozden 2023). There have also been attempts to connect exposure to environmental protests with election results, including by Valentim (2023) who found that repeated exposure to environmental protests increases voting for pro-environmental candidates. By being the first to study the link between modern British climate activism tactics and press coverage, we aim to give activists and scholars of activism another tool, alongside public opinion polling and election results, to evaluate the outcomes of their actions and adjust their strategy accordingly.

Our findings offer a strong addition to recent work on the coverage of climate change protests in the media. Cammaerts (2023) found that the coverage of another UK climate movement, YouthStrike4Climate, was largely positive but sentiment declined over time between February and October 2019. However, we found that coverage of XR and related groups was *negative*, on average, suggesting the media has become more negative towards climate activists. Fisher et al. (2023) have suggested that more disruptive actions lead to greater likelihood of coverage, (in line with "the activists' dilemma"). More broadly, our findings paint a portrait of just how many factors matter in these conversations, e.g. the geography of protest (London centrality), partisanship of media outlets, target (industry vs. government), and legality. This in itself worth noting in a public conversation on climate activism which has tended to focus fairly narrowly on the links between level of disruption and shape/scope of coverage. Indeed, Amenta and Elliott (2017) made the case that combinations of movement characteristics and various elements of political context set the stage for political influence.

There are several worthwhile directions future work on this topic should take. Given the proportion of voters, especially young voters, who get their news from social media (Ofcom 2022), it would be worth tracking how different types of protest tactics affect engagement and reactions on social media. Emotion-based reactions data on platforms such as Facebook offer one potential way to catalog sentiment. It would also be worth expanding this study to other countries. Given the similarity between media environments (e.g. the dominance of conservative outlets, the presence of a robust climate action movement, and the continued reliance of political elites on legacy media) between the United Kingdom and the United States, the U.S. would be a likely candidate. Cross country comparison would also allow for a better examination of how country context shapes the debates to which we contribute.

## Conclusion

We anticipate that the broad takeaways from this study will depend on if the goal is to drive the most *overall* media coverage possible, or the most *positive* media coverage possible. If their goal is to attract the most attention and drive the greatest possible volume of media coverage, our case study and regressions suggest

that disruptive protests that occur in London may hold the most promise. If their goal is to attract the most positive coverage, on the other hand, then legal actions that target the public on a national scale offer a plausible path to doing so.

## Data availability

Data and all materials needed for replication from this paper are available on the OSF dataverse at <https://osf.io/8mwpb/>.

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## Author contributions

Eric G. Scheuch is first author and corresponding author (eric.scheuch@yale.edu). Laura Thomas-Walters conceptualized the work and sought funding. Eric G. Scheuch collected the data and analyzed the results. Eric G. Scheuch also led on the writing of the manuscript in close collaboration with Laura Thomas-Walters. All authors provided feedback throughout the process and signed off on the final draft.

## Competing interests

The authors declare no competing interests. LTW is an (unpaid) member of Extinction Rebellion.

## Ethical approval

No ethical approval was needed for this study as it did not involve human subjects.

## Informed consent

No informed consent was needed for this study as it did not involve human subjects.

## Additional information

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