Awareness days and environmental attitudes: The case of the "Earth Hour"

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Abstract

Environmental awareness campaigns disseminate information about the state of the natural environment, aiming to affect public attitudes and encourage pro-environmental behavior. I test the influence of awareness days on the general public's environmental and climate change attitudes and concern, focusing on the case of the Earth Hour, an international campaign organized annually by the World Wide Fund for Nature. The Earth Hour highlights environmental consequences of human activity and encourages sustainable behavior, culminating with a call to mass action. To assess the Earth Hour's effect, I use longitudinal data from Germany and the UK, exploiting the orthogonality of the Earth Hour observance to the timing of data collection, to estimate models comparing individual attitudes and concern before and after the event. I find no evidence of an Earth Hour effect on environmental and climate change attitudes and concern. Results suggest that more research is needed to assess the influence of environmental advocacy campaigns and awareness days on the general public.

Keywords: Environmental information campaigns; Activism; Climate concern; Environmental concern; Energy conservation

1 Introduction

Environmental awareness and advocacy campaigns are frequently used by governments, activists and NGOs to influence public perceptions on the state of the natural environment, increase the issue salience of environmental problems, and encourage pro-environmental behavior (Dalton, 2015), leveraging information provision (Madajewicz et al., 2007; Tu et al., 2020), imagery (Thomas-Walters et al., 2020; Gulliver et al., 2020) and appeals to the public's civic duty (Ito et al., 2018; Bolderdijk et al., 2013; Hinchliffe, 1996). Environmentally-themed awareness days commemorating diverse conservation goals at the local, national and international

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levels are common among the instruments employed by campaigners (Maibach, 1993; Chua et al., 2021). The U.N. for example in 2021 declared 12 environment-related awareness days (United Nations, 2021), while more are organized annually by national governments and independent organizations. Despite the plethora of environmental observances, little evidence exists on their effectiveness in raising awareness of contemporary environmental challenges and promoting sustainability.

In this paper, I evaluate the immediate influence of environmental awareness days on the general public's private environmental and climate change attitudes and concern. I examine the case of the global, WWF-organized Earth Hour (EH) observance (WWF, 2021; Sison, 2013) using longitudinal survey data from Germany and the UK from years 2007 to 2017, and 2009 to 2020 respectively. As the timing of individual survey participation is orthogonal to the EH date, I assess the immediate influence of the EH employing an event study approach estimating models comparing environmental attitudes, concern and behaviours between individuals surveyed before, and after the EH date.

The EH first took place in Sydney Australia in 2007 and expanded across the world in 2008[1], attracting significant attention from the media and the general public. The EH observance takes place on a date towards the end of March each year with a call to mass action, when the public are encouraged to signal their intention to reduce energy consumption by switching off unnecessary lighting for one hour in the evening. Asking for the public's engagement in a symbolic action, the EH aims to turn them from passive observers, to active participants in the pursuit of environmental goals (Chan et al., 2020). Local and national governments often support the campaign and participate in the mass action, contributing to the event's publicity with striking images of usually illuminated famous landmarks in the dark (The Irish Times, 2018; The Guardian, 2009; Deutsche Welle, 2020a). Over 17,000 landmarks have participated in recent observances (Chan et al., 2020; The Guardian, 2009; The Irish Times, 2018), influential individuals have publicly declared their support (WWF, 2015), while the EH attracts significant social media attention (Cheong and Lee, 2010; WWF, 2017). The observance is frequently supported by the private sector. Firms including Google (Google, 2009), Deutsche Telekom, UBS, HSBC and McDonalds participate by switching off lights (WWF, 2010, 2017; Deutsche Telekom, 2012). In 2016 more than German 100 cities participated in the EH, increasing to 360 by 2020 (Deutsche Welle, 2020b), while landmarks including the Brandenburg Gate and Cologne Cathedral switch off their lighting during the observance. In the UK, the Houses of Parliament have participated every year since 2010, Edinburgh Castle and Brighton Pier among others switch off lights, while the observance was also encouraged by the government (UK Deputy Prime Minister's Office, 2011).

The paper adds to the literature on the impact of awareness campaigns on pro-environmental attitudes. A growing body of research shows that targeted provision of non-pecuniary information about the environ-

[1] In 2008 35 countries participated in the EH. Participation expanded to 192 countries and territories by 2020.

mental consequences of current consumption and the availability of sustainable alternatives, can influence consumer behavior in the water and electricity markets (Tiefenbeck et al., 2013; Jaime Torres and Carlsson, 2018; Allcott and Rogers, 2014). At the same time, media attention and environmentally-themed productions can impact on pro-environmental attitudes and behaviors. Carbon offset purchases increased in US zip-codes around theaters showing Al Gore's "An Inconvenient Truth" in the late 2000s (Jacobsen, 2011), and awareness of fracking and anti-fracking sentiment increased in regions where "Gasland" was screened (Vasi et al., 2015). The release of the "Under the Dome" documentary appears to have increased willingness to pay for environmental protection among Chinese university students (Tu et al., 2020), and raised concern for air pollution (Huang and Yang, 2020; Qin et al., 2020). Similarly the BBC documentary "Blue Planet II" impacted on the public's preferences for a reef conservation program (Hynes et al., 2020), while randomized control trials suggest that it improved subjects' environmental awareness, but did not impact on their plastic consumption (Dunn et al., 2020).

The impact of awareness days, general environmental information campaigns and activism on attitudes has attracted less research, despite the large number of environmental grass-roots campaigns, organizations and awareness promotion events. In comparison, the effectiveness of awareness days promoting public health objectives has attracted significant interest (Vernon et al., 2021). Hungerman and Moorthy (2020) suggest a lasting effect from the original Earth Day celebration in 1970, observing that environmental attitudes up to 23 years later are lower in communities that experienced bad weather conditions on the day and organized fewer Earth-Day related activities. Chua et al. (2021) study awareness days devoted to the conservation of 16 species finding that they increase Google searches and Wikipedia page views by around 3% and 34% respectively, with charismatic species benefiting relatively less. The energy-saving impact of the EH has been explored by Olexsak and Meier (2014), who employ energy use data from 10 countries to find that the EH reduced electricity consumption on average by 4%, while Jechow (2019) show reduction of light pollution at the time of the 2018 EH in Berlin. Chan et al. (2020) study the EH in the context of the Theory of Planned Behavior, finding that environmental self-identity and humanity identity drive participation in the EH.

I do not find evidence of a systematic relationship between the EH observance and individual environmental or climate change attitudes and concern: the immediate influence of exposure to the EH's messaging on the probability of declaring concern about the state of the natural environment or the consequences of climate change is close to zero and statistically insignificant irrespective of the model specification. Similarly the influence of the EH on the willingness to pay higher prices for environmentally friendly goods, perceptions regarding the medium and long term impact of climate change, and energy saving behaviours is also small and statistically insignificant. There is some evidence to suggest that the influence of the event on environmental concern has decreased over time. Estimates add to the evidence base on the influence of awareness days on the general public's environmental attitudes and behaviors and suggest the need for more research on the mechanisms determining their relationship.

The rest of the paper proceeds as follows: Section 2 describes the data and presents the empirical approach. Section 3 reports the results while Section 4 discusses and concludes.

2 Data and empirical approach

2.1 Data

Data come from the German Socioeconomic Panel (SOEP) (SOEP, 2019) a nationally representative longitudinal survey collecting information from around 15,000 households and 20,000 individuals annually. Two SOEP variables can be used to approximate individual environmental attitudes. Since 1984 SOEP elicits participants' environmental concern asking: "How worried are you about environmental protection?". From 2009 SOEP also elicits concern about the consequences of climate change asking "How worried are you about the consequences of climate change?". Responses for both questions are on a 3 point scale: "1. Very Concerned", "2. Somewhat Concerned" and "3. Not at all Concerned". I use this information to construct a binary Environmental Concern variable, equaling 1 for respondents declaring "Very concerned" about environmental protection, and a binary Climate Concern variable, indicating respondents declaring "Very concerned" about the consequences of climate change[2].

I also show estimates when using longitudinal data from the UK Household Longitudinal Study (UKHLS). The UKHLS collected information on environmental attitudes and behaviours in waves 1, 4 and 10 that ran in 2009-2011, 2012-2014 and 2018-2020 respectively. The UKHLS assesses the public's expectations of climate change consequences asking for respondents' agreement or disagreement with the following statements: (i) "People in the UK will be affected by climate change in the next 30 years" and (ii) "People in the UK will be affected by climate change in the next 200 years". I construct two binary variables, each indicating respondents agreeing with the first and the second statements, capturing the short-term and long-term expectations of climate change impact respectively. To assess the impact of the EH on the public's willingness to incur some additional cost in exchange for improvements in environmental quality, I use information from a UKHLS question asking respondents level of agreement with the statement: "I would be prepared to pay more for environmentally-friendly products." Available responses are on a 5-point scale (strongly disagree to strongly agree), and I construct a binary "willingness to pay" variable indicating those who agree strongly, or tend to agree with the statement. Finally, the UKHLS contains two questions that can be used to examine

[2]Extending the definitions of environmental and climate concern to include those that are "Somewhat Concerned" does not change results.

the EH's influence on energy-saving behavior, the main focus of the observance. Respondents were asked: "How often you personally switch off lights in rooms that aren't being used" and "How often you personally leave your TV on standby for the night?" Responses to both questions are on a 5 point scale: "1.Always" "2. Very Often", "3.Quite Often", "4. Not Very Often" and "5. Never". Based on this information I construct two variables: first a binary variable indicating respondents who "Never" or "Not Very Often" switch off lights in unused rooms, and second a binary variable indicating respondents who "Always" or "Very Often" leave their TV on standby for the night. The willingness to pay question was asked in waves 4 and 10, while the remaining questions were asked in all waves.

Table 1 shows some descriptive statistics for the two samples, for the groups responding in the 30 days before and the 30 days after after the EH observance. Post-EH observance SOEP respondents are younger, have higher household income and are less likely to be in full employment. UKHLS respondents post-EH observance are also younger and are more likely to have higher education qualifications.

Table 1: Descriptive Statistics

	(1)	(2)	(3)	(4)	(5)	(6)
	SOEP			UKHLS		
	Pre-EH	Post-EH	t-stat	Pre-EH	Post-EH	t-stat
Employed	0.63	0.58	8.57	0.56	0.57	0.30
	(0.48)	(0.49)		(0.50)	(0.50)	
Age (Years)	53.06	50.99	-17.48	50.31	49.90	7.02
	(16.73)	(16.42)		(17.40)	(17.47)	
Education (Years)	12.57	12.49	-1.43			
	(2.72)	(2.78)				
Higher Education				0.35	0.37	2.65
				(0.48)	(0.48)	
Children in Household	0.25	0.27	-1.15	0.28	0.28	0.06
	(0.43)	(0.45)		(0.45)	(0.45)	
Female	0.53	0.53	-0.13	0.56	0.57	0.18
	(0.50)	(0.50)		(0.50)	(0.49)	
Urban	0.63	0.66	1.10	0.75	0.75	0.92
	(0.48)	(0 .47)		(0.43)	(0.43)	
Household Income (Euros & GBP)	3072.43	3178.31	-1.68	3640.37	3813.86	1.21
	(2001.38)	(2015.65)		(5697.98)	(4021.57)	
Observations	52,209	27,912		5,207	3,448	

NOTE: The table shows means and standard deviations (in parentheses) of variables included in the analysis for SOEP (columns 1-3) and UKHLS (columns 4-6) respondents within 30 days on either side of the EH observance.

2.2 Empirical Approach

To assess the influence of the EH I employ an event study approach estimating:

$$Y_{it} = \alpha_i + \delta_s + \beta_1 Eh_{rit} + \beta_2 X_{it} + \beta_3 C_{st} + T_t + I_{it} + \epsilon_{it} \quad (1)$$

where Y_{it} is the outcome of interest for individual i on year t. Eh_{rit} is the treatment variable, indicating respondents that were interviewed in the thirty days following the EH observance in year t. To minimize the possibility that other events confound the EH's immediate influence, I restrict the sample to those individuals responding in the 30 days on either side of the event. To assess the result's sensitivity to the choice of the time window, I also show estimates when focusing on the sample of individuals responding in the 15 and 7 days on either side of the observance. The coefficient of interest β_1 captures the effect of the Earth Hour observance on outcomes. α_i are individual fixed effects accounting for time-invariant respondent-specific characteristics and δ_s are region effects capturing region-specific characteristics including climate, topography and local environmental conditions that may influence environmental attitudes. I_{it} contains month-of-interview and day-of-the-week effects to control for possible seasonality and cyclicality in environmental attitudes, and T_t are year dummies flexibly capturing the evolution of environmental and climate concern over time. In the Appendix, I also show estimates from models accounting for region by year, and region by year by month effects. Matrix X_{it} controls for a series of demographic and economic characteristics that may influence environmental attitudes (Torgler and García-Valiñas, 2007; Franzen and Vogl, 2013; Poortinga et al., 2019), including respondent's age in 10-year bands to avoid imposing a functional form in the relationship between outcomes and age, years of education, the presence of children in the household, indicators for household income deciles, and indicators for employment status[3]. Finally, X_{it} controls for respondents' urban status to account for differences in attitudes, concern and behaviors between urban and rural residents. Matrix C flexibly controls for daily maximum temperature in region s in $5°C$ bands, accounting for the influence of ambient temperature in public perceptions (Lasarov et al., 2021; Deryugina, 2013). Finally ϵ is an error term. Models for environmental and climate change concern use data from SOEP 2008-2017 and 2009-2017 respectively. Models for the remaining indicators are estimated using data from the waves 1, 4 and 10 of the UKHLS collected from 2009 to 2020. Coefficients are estimated using within variation remaining after removing the influence of individual time invariant characteristics and the rest of the control variables. I report standard errors clustered at the survey participant level. Clustering at the level of the response date relative to the EH does not affect the results. The identifying assumption requires that the timing of survey participation is orthogonal to the timing of the Earth Hour. As it is implausible that households would systematically arrange their survey participation around the EH date, this is likely to hold. The analysis implies that the timing of survey participation introduces exogenous variation in the public's awareness of the EH. As the data do not report respondents' EH awareness, equation 1 can be interpreted as estimating the reduced form effect from an IV model assessing the impact of EH awareness on environmental and

[3]Employment status categories include: Full Time Employment, Regular Part-Time Employment, Vocational Training, Irregular Part-Time Employment, and Sheltered Workshop. The omitted category is Not in Employment.

climate attitudes, when instrumenting awareness with the timing of survey response relative to the EH. Equation 1 is a two-way fixed effects model, where treatment can switch on and off over time. Recent research in econometrics shows that the treatment effect recovered by two-way fixed effects models is a weighted average of all possible pairwise difference-in-differences estimators, with some receiving negative weights (de Chaisemartin and D'Haultfœuille, 2020; Imai and Kim, 2020). To account for this, I also show estimates when using the estimator proposed by de Chaisemartin and D'Haultfœuille (2020) in the Appendix with no change to the results.

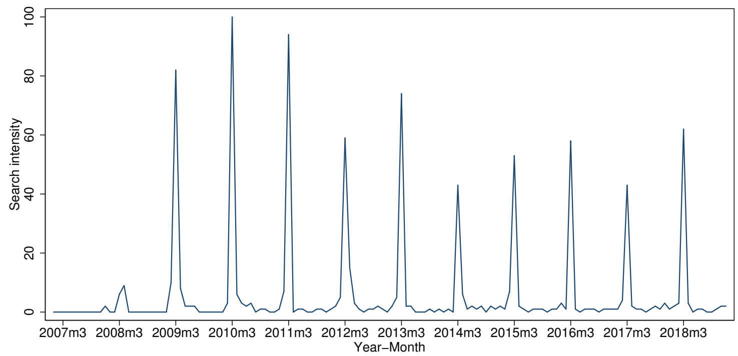
To account for pre-event trends and assess the evolution of the EH's immediate effect over time I estimate:

$$Y_{it} = \alpha_i + \delta_s + \sum_{r=-7}^{-2} \gamma_r D_{itr} + \sum_{r=0}^{7} \gamma_r D_{ir} + \beta_2 X_{itr} + \beta_3 C_{it} + T_t + I_{it} + \epsilon_{it} \tag{2}$$

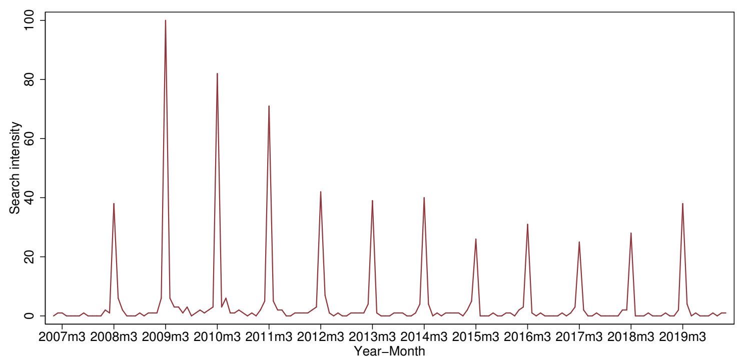
Variables D_r are binary, indicating participants surveyed on day $\pm r$ from the EH date. On the EH date, $r = 0$. Coefficients γ_r capture the change in the outcome variable from responding on day r, relative to day $r = -1$, which is omitted. I censor r at 7, so variables D_{-7} and D_7 represent the average effects of being surveyed in days $\{-30, ..., -7\}$ and $\{7, ..., 30\}$ respectively[4].

To assess the public's interest on the EH over time, figure 1 shows monthly Google search intensity for the term "Earth Hour" over time for Germany and the UK. While google search intensity does not fully capture the availability of information on EH, it may contribute some insight on the distribution of interest over time. Interest in the EH consistently peaks in March every year. Search intensity on any other month of the year rarely exceeds 3% of the peak for the entire period.

[4]All models are estimated in Stata 14.2.



(a) Germany



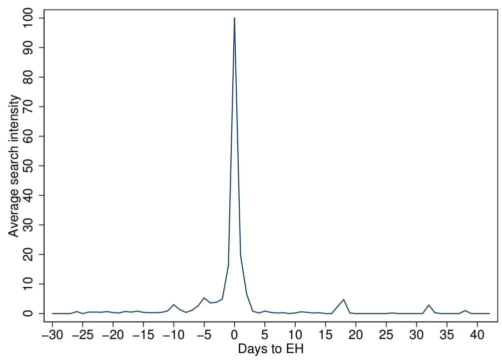
(b) UK

Figure 1: Google search intensity for "Earth Hour" in January 2007 to December 2018 in Germany and January 2007 to December 2019 in the UK. Data from Google Trends.

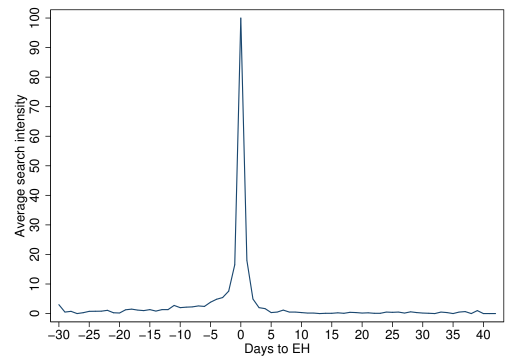
Figure 2 shows daily average Google search intensity in March-April for years 2007-2018 by day, centred on the EH observance date. Public interest spikes at the EH observance date, while there is little evidence of interest earlier, suggesting that respondents after the observance are more likely to be aware of it, and to have been exposed to its messaging, relative to respondents before. Nevertheless, to account for the possibility that individuals may anticipate the EH[5], or hear of the observance after the event, I test the sensitivity of the result to the definition of the main independent variable. Specifically, I show estimates when the variable of interest Eh_r is binary, indicating individuals responding in the period between r and 30 days after the EH observance, where $r = \{-3, -2, -1, 1, 2, 3\}$[6].

[5] Lehmann et al. (2012) examine twitter activity between November 20, 2008 and May 27, 2009, finding that tweets about EH tended to occur shortly before the observance.

[6] That is $EH_r = \boldsymbol{I}\{Day\ of\ Response \geq r\}$where $r = \{-3, -2, -1, 1, 2, 3\}$ days relative to the EH observance.



(a) Germany



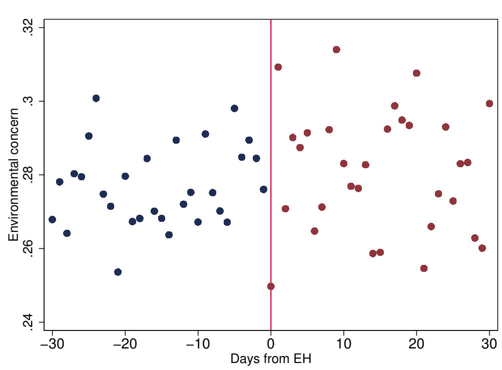
(b) UK

Figure 2: Average Google search intensity for "Earth Hour" by day centred on the EH observance date, in March-April for years 2007-2017 in Germany and 2007-2019 the UK. Data from Google Trends.

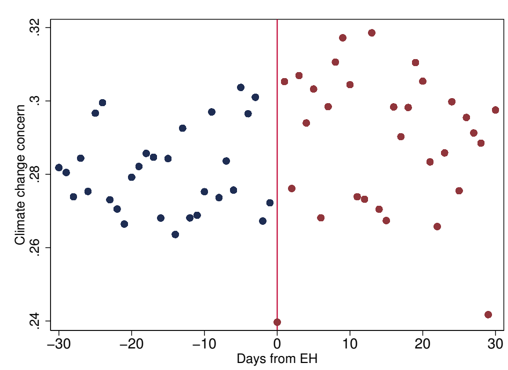
3 Results

3.1 Earth Hour, environmental and climate attitudes

I start by assessing the influence of the EH on the concern indicators reported in SOEP. Figures 3a and 3b show average environmental and climate concern for each of the 30 days around the EH observance as recorded by SOEP in 2008-2017 and 2009-2017 respectively. The prevalence of environmental and climate change concern do not appear to change in the days following the EH observance, and do not suggest an extraordinary response of public environmental or climate change attitudes to the event.



(a) Average Environmental Concern 2008-2017

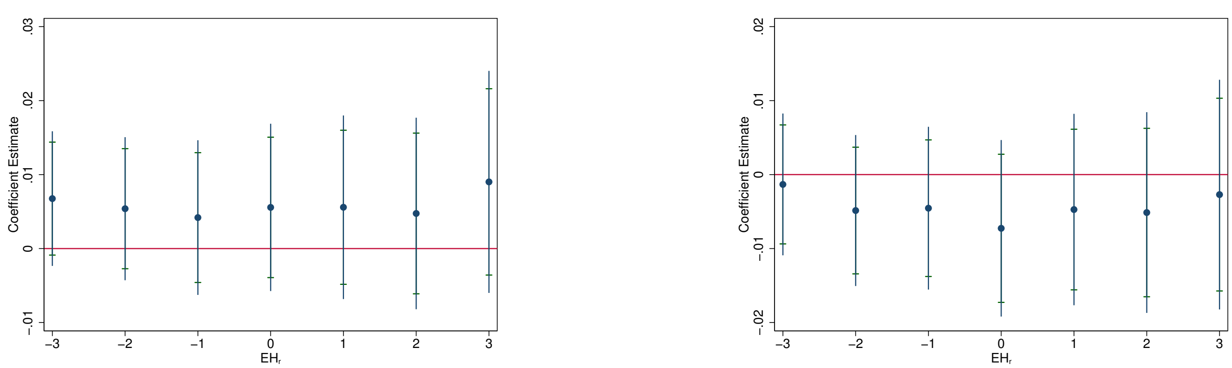


(b) Average Climate Change Concern 2009-2017

Figure 3: Average environmental and climate change concern around the EH day. Data from SOEP 2008-2017 (3a) and 2009-2017 (3b). Points represent the average value of the respective outcome on each of $\{-30, ..., +30\}$ days from the EH. The vertical line at zero marks the EH observance date.

Figure 4 shows estimates of the Earth Hour's influence on individual environmental and climate change attitudes from equation 1, regressing the concern indicators on the post-EH indicator and the full set of controls. I do not find evidence of an EH effect on environmental concern. The coefficient on Eh_0, indicating subjects responding to SOEP in the period from the day of the EH observance to thirty days later, is statistically insignificant and very close to zero. To test the result's stability to the definition of the treated group, I also show estimates when the main independent variable indicates individuals responding from day $r = \pm\{1, 2, 3\}$ relative to the actual EH date, until the end of the 30 day window. Changing the definition of the main independent variable does not change the result and in all cases the coefficient on the main independent variable is quantitatively and statistically insignificant.

Estimates are similar when focusing on individual concern for the consequences of climate change: the influence of responding in the 30 days following the EH is small and statistically insignificant (coefficient on Eh_0 in Figure 4b), while slightly modifying the treated group does not change results. Table A1 in the Appendix shows the corresponding estimates and standard errors. The table also shows estimates when adding Year-Region and Year-Region-Month effects in equation 1, as well as standard errors when clustering at the day of response level. Results are in all cases similar. Table A2 shows estimates when applying the estimator proposed by de Chaisemartin and D'Haultfœuille (2020) with no change in conclusions.

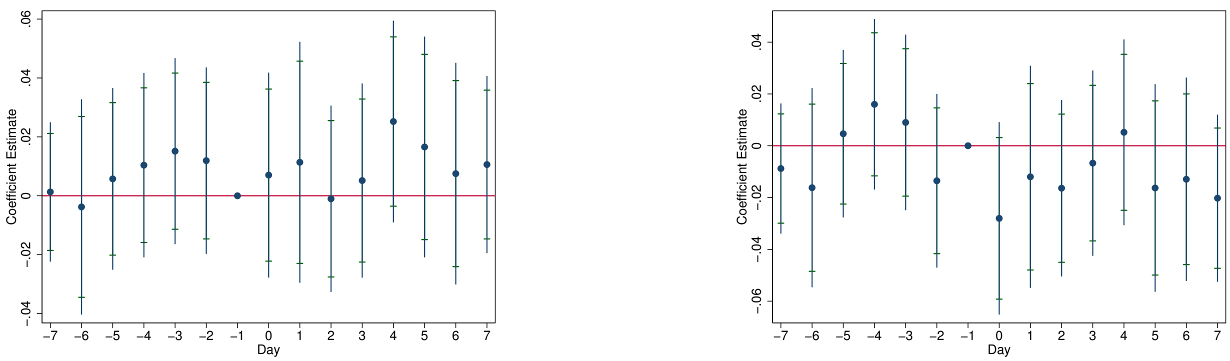


(a) Environmental Concern

(b) Climate Change Concern

Figure 4: The influence of the EH on environmental (4a) and climate change concern (4b). Each point represents a different estimation of equation 1. Each point shows the estimated coefficient on the main independent variable Eh_r, indicating individuals responding in the period $EH + r$ to $EH + 30$ where $r = \{-3, ..., 3\}$ and EH is the date of the EH observance. Data from SOEP 2008-2017 (80,121 obsevations) and 2009-2017 (72,144 observations). Bars and horizontal ticks show 95% and 90% confidence intervals respectively.

Figure 5 shows estimates from equation 2, accounting for pre-event trends in environmental and climate concern and assessing the effect of the EH over time. Each point shows an estimate of γ_r for $r \in \{-7, ..., 7\}$ while bars and ticks represent 95% and 90% confidence intervals respectively. Figure 5a examines the influence on environmental concern. Estimates on the pre-EH observance dummies are very close to zero and statistically insignificant at conventional levels. Coefficients on the post-EH observance dummies are also statistically insignificant. Estimates are similar when focusing on the influence of the campaign on the probability of declaring climate concern. Table A3 shows the corresponding estimates and standard errors, as well as similar results when controlling for interactions between Region, Year and Month effects.



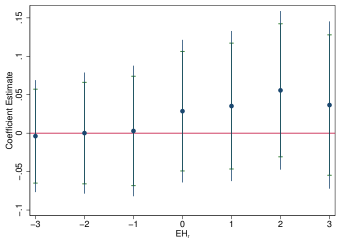
(a) Environmental Concern

(b) Climate Change Concern

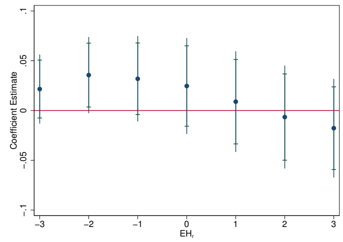
Figure 5: EH, environmental and climate concern. Estimates from equation 2. Each point shows an estimate of the difference in outcomes between those surveyed on day $r \in \{-7, ..., -2, 0, ...7\}$ from the EH date, relative to those surveyed on day $r = -1$. The coefficient on $Day - 1$ is set to zero. Bars and ticks show 95% and 90% confidence intervals respectively. 5a uses data from SOEP 2008-2017 (80,121 observations), and 5b uses data from SOEP 2009-2017 (72,144 observations).

I now turn to the UKHLS data, examining the influence of the EH observance on the relevant attitudinal and behavioral indicators. Figures 6 and 7 show estimates from equations 1 and 2 respectively, for each of the indicators[7]. Similar to the results presented earlier, estimates of the EH influence are close to zero, statistically insignificant, and do not suggest evidence that the attitudinal and behavioral indicators respond to the EH observance. Tables A4 and A5 in the Appendix show the corresponding estimates and standard errors.

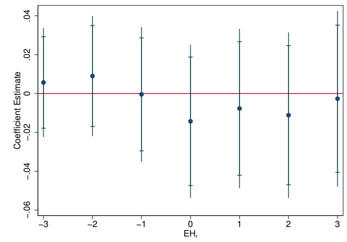
[7]Figure B1 in the Appendix shows the average value of the indicators in the days around the EH observance



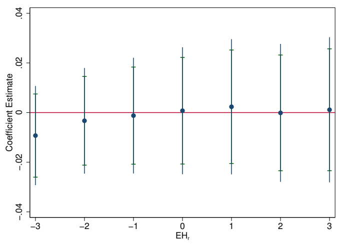
(a) Willing to pay more for environmentally friendly goods



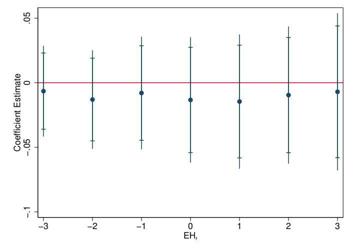
(b) Climate change will have consequences in 30 years



(c) Climate change will have consequences in 200 years

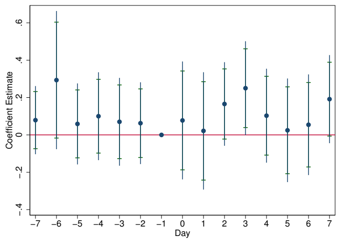


(d) Switch off lights when leaving room

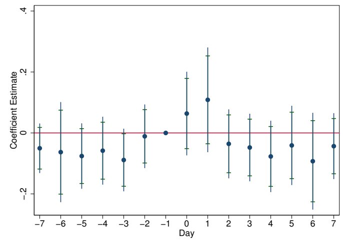


(e) Switch off tv when leaving room

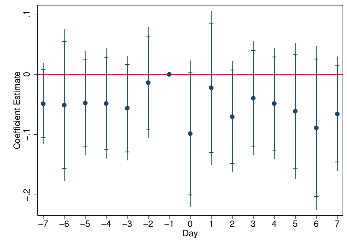
Figure 6: The effect of the EH on environmental attitudes and behaviors using data from the UKHLS for years 2009-2020. Each point represents a different estimation of equation 1. Each point shows the estimated coefficient on the main independent variable Eh_r, indicating individuals responding in the period $EH + r$ to $EH + 30$ where $r = \{-3, ..., 3\}$ and EH is the date of the EH observance. Data from the UKHLS waves 1,4 and 10. Bars and horizontal ticks show 95% and 90% confidence intervals respectively.



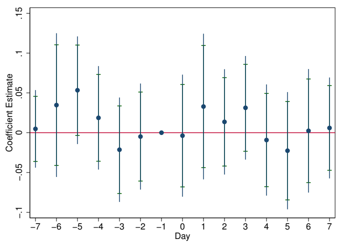
(a) Willing to pay more for environmentally friendly goods



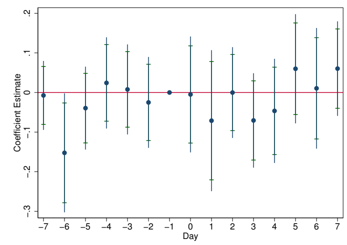
(b) Climate change will have consequences in 30 years



(c) Climate change will have consequences in 200 years



(d) Switch off lights when leaving room



(e) Switch off tv when leaving room

Figure 7: EH and environmental attitudes and behaviors. Each point shows point estimates of the difference in outcomes between those responding $r \in \{-7, ..., -2, 0, ...7\}$ days before and after the EH date, relative to those responding on day $r = -1$. Data from the UKHLS for years 2009-2020. Bars show 95% confidence intervals and horizontal ticks mark the 90% confidence interval.

3.2 Earth Hour, environmental and climate attitudes and sociodemographic characteristics

To assess whether the influence of the EH observance varies across sociodemographic groups, I estimate equation 1 introducing interactions between the treatment indicator, and the respondents' urban status, sex and age. Table 3 shows the results. I find no evidence that the influence of the EH observance on environmental or climate concern (columns 1-3 and 4-6 respectively) vary with individuals' urban status, sex or age. Conclusions are similar when examining most attitudinal and behavioral indicators from the UKHLS (columns 7-21). The coefficient on the interaction between the urban status and the treatment indicator is positive and statistically significant when focusing on the influence of the EH on energy saving behavior. Specifically, residents in urban regions responding in the 30 days after the observance appear more likely to leave their appliances on standby mode relative to those in rural locations (column 19). However this result does not agree with the pattern emerging from examining the heterogeneous influence of the EH between urban and rural residents on any of the remaining indicators.

Table 3: Earth Hour and sociodemographic characteristics

	(1) Env. Conc.	(2) Env. Conc.	(3) Env. Conc.	(4) Clim. Conc.	(5) Clim. Conc.	(6) Clim. Conc.	(7) Willing to Pay	(8) Willing to Pay	(9) Willing to Pay	(10) CC Imp. 30yrs	(11) CC Imp 30yrs	(12) CC Imp. 30yrs	(13) CC Imp. 200yrs	(14) CC Imp. 200yrs	(15) CC Imp. 200yrs	(16) Lights off	(17) Lights off	(18) Lights off	(19) TV off	(20) TV off	(21) TV off
Eh_0	0.004	0.000	-0.008	-0.006	-0.008	-0.015	0.057	0.005	0.013	0.049	0.028	0.054	-0.028	-0.020	-0.023	0.016	-0.001	-0.028	-0.073**	-0.022	0.007
	(0.007)	(0.007)	(0.009)	(0.007)	(0.007)	(0.009)	(0.061)	(0.054)	(0.061)	(0.033)	(0.029)	(0.034)	(0.025)	(0.024)	(0.026)	(0.018)	(0.016)	(0.019)	(0.034)	(0.028)	(0.036)
$Urban$	0.003			-0.015			0.083			0.087**			-0.008			-0.053*			0.006		
	(0.019)			(0.020)			(0.062)			(0.042)			(0.027)			(0.028)			(0.044)		
$Eh_0 \times Urban$	0.002			-0.002			-0.038			-0.033			0.018			-0.020			0.079**		
	(0.007)			(0.007)			(0.051)			(0.030)			(0.022)			(0.017)			(0.031)		
$Eh_0 \times Female$		0.010			0.001			0.042			-0.005			0.011			0.004			0.016	
		(0.006)			(0.007)			(0.046)			(0.027)			(0.022)			(0.015)			(0.027)	
$Age\ 16-24$			-0.006			0.027			-0.099			0.107*			0.018			0.045			-0.134**
			(0.019)			(0.021)			(0.106)			(0.056)			(0.045)			(0.039)			(0.062)
$Age\ 25-34$			0.001			0.018			-0.031			-0.001			0.010			0.004			-0.010
			(0.012)			(0.013)			(0.058)			(0.033)			(0.023)			(0.021)			(0.035)
$Age\ 45-54$			-0.006			-0.006			-0.032			0.007			-0.024			-0.009			-0.013
			(0.009)			(0.011)			(0.054)			(0.030)			(0.023)			(0.016)			(0.035)
$Age\ 55-64$			-0.008			-0.011			-0.110			0.037			-0.043			-0.048*			-0.046
			(0.014)			(0.015)			(0.081)			(0.046)			(0.038)			(0.026)			(0.050)
$Age\ 65-74$			0.012			0.012			-0.015			0.090			0.054			-0.047			-0.105
			(0.018)			(0.020)			(0.109)			(0.061)			(0.053)			(0.035)			(0.064)
$Age\ 74-85$			0.012			0.025			0.026			0.053			0.024			-0.059			-0.155*
			(0.023)			(0.024)			(0.145)			(0.082)			(0.074)			(0.047)			(0.082)
$Age\ 85+$			-0.017			-0.009			-0.132			0.148			0.107			-0.095			-0.227**
			(0.033)			(0.034)			(0.218)			(0.115)			(0.113)			(0.061)			(0.112)
$Eh_0 \times Age\ 16-24$			0.012			0.003			0.070			-0.049			-0.039			0.037			0.079
			(0.016)			(0.017)			(0.105)			(0.062)			(0.047)			(0.034)			(0.059)
$Eh_0 \times Age\ 25-34$			0.024**			0.023*			-0.031			-0.003			0.006			0.044*			0.005
			(0.012)			(0.012)			(0.078)			(0.043)			(0.027)			(0.025)			(0.045)
$Eh_0 \times Age\ 45-54$			0.011			0.009			-0.049			-0.022			0.032			0.026			-0.050
			(0.010)			(0.011)			(0.063)			(0.039)			(0.028)			(0.020)			(0.040)
$Eh_0 \times Age\ 55-64$			0.013			0.007			0.038			-0.063			0.061**			0.044**			-0.035
			(0.010)			(0.011)			(0.069)			(0.040)			(0.031)			(0.021)			(0.041)
$Eh_0 \times Age\ 65-74$			0.023**			0.008			0.122			-0.082*			-0.062*			0.041			-0.010
			(0.011)			(0.012)			(0.079)			(0.043)			(0.035)			(0.028)			(0.046)
$Eh_0 \times Age\ 65-74$			0.017			0.004			-0.012			0.030			0.045			0.020			-0.138***
			(0.014)			(0.014)			(0.106)			(0.062)			(0.062)			(0.030)			(0.053)
$Eh_0 \times Age\ 85+$			0.007			0.019			0.115			-0.210*			-0.029			0.066			-0.052
			(0.028)			(0.029)			(0.177)			(0.119)			(0.122)			(0.050)			(0.107)
Observations	80,121	80,121	80,121	72,144	72,144	72,144	2,732	2,732	2,732	7,072	7,072	7,072	6,965	6,965	6,965	8,655	8,655	8,655	8,471	8,471	8,471

NOTE: Estimates from equation 1. Each column shows estimates from a different fixed effects model. Data from the German SOEP (columns 1-6) and the UKHLS (columns 7-21). The dependent variables are indicators for: Environmental concern (columns 1-3), climate concern (columns 4-6), willingness to pay more for environmentally friendly goods (columns 7-9), belief that climate change will have negative effects in 30 and 200 years (columns 10-12 and 13-15 respectively), regularly switching off lights and leaving tv on standby (columns 16-18 and 19-21 respectively). Age 35-44 is the omitted category. Standard errors, clustered at the individual respondent level reported in parentheses. ** $p < 0.05$, * $p < 0.1$

3.3 Sensitivity to sample choice

To assess the results' sensitivity to the choice of the time window around the EH, I repeat the analysis focusing on the sample of individuals responding in the 15 and 7 days on either side of the EH. Tables A6 and A7 in the Appendix show estimates from equation 1 for all indicators, while tables A8 and A9 show estimates from equation 2. Restricting focus on the period closer to the observance does not change the result for most outcomes. The only exception is the probability of expecting climate change impacts within 30 years: respondents in the 7 and 15 days following the observance appear more likely to expect impacts from climate change in the medium term.

To further assess whether the results are driven by individuals' differential exposure to EH activities due to their location, as many EH activities tend to focus in cities, I use information on the respondents region of residence to estimate equations 1 and 2 for the sample of individuals living in urban centres. Both SOEP and UKHLS report respondents' region of residence at the first level of the Nomenclature of Territorial Units for Statistics (NUTS 1). This allows to focus on residents of Berlin, Hamburg and Bremen in Germany, and Greater London in the UK. Tables A10 and A11 in the Appendix report estimates from equations 1 and 2 respectively. In all cases estimates are similar to those reported earlier and there is no systematic evidence that either the concern or the attitudinal and behavioural indicators respond to the EH observance.

3.4 EH influence over time

To examine the evolution of the EH's influence over time, I estimate equation 1 introducing interactions between the main independent variable and bi-annual (for the SOEP indicators) and tri-annual (for the UKHLS indicators) time dummies. Estimates are reported in table 4. For the model in column 1, the coefficient on Eh_0 captures the influence of the EH on environmental concern in years 2008 and 2009, while the interaction terms capture the change in the influence of the EH relative to years 2008-2009. The coefficient on Eh_0 is statistically insignificant and close to zero, suggesting that responding in the 30 days following the observance in 2008-2009, did not influence environmental concern. The coefficient on $Eh_0 \times Years\, 2010 - 2011$ suggests that the probability the treated group declared environmental concern in 2010-2011 was 3.9 percentage points greater relative to 2008-2009. However, the influence of the EH on environmental concern decreases over time as suggested by the coefficients on the remaining interaction terms, that are either lower (coefficient on $Eh_0 \times Years\, 2014 - 2015$) or very close to zero and statistically insignificant. Column 2 shows estimates when the outcome of interest is climate concern. There is little evidence to suggest that the influence of the EH on climate concern varies over time. The coefficient on Eh_0 capturing the effect of the EH in 2009 is statistically insignificant, while there is only weak evidence that the

EH had a larger effect in 2014-2015. The models in columns 2-7 focus on the indicators from the UKHLS data. The coefficients on Eh_0 capture the influence of the EH observance on years 2009-2011. There is no evidence that any of the indicators respond to the EH, or that its influence varies over time.

Table 4: The evolution of the EH's influence over time

	(1) Environmental Concern	(2) Climate Concern	(3) Willing to Pay	(4) CC Impact in 30yrs	(5) CC Impact in 200yrs	(6) Lights off	(7) TV off
Eh_0	-0.012	-0.011	0.038	0.007	-0.019	-0.006	-0.019
	(0.009)	(0.012)	(0.047)	(0.029)	(0.023)	(0.015)	(0.028)
$Eh_0 \times Years\ 2010-2011$	0.039***	0.019					
	(0.010)	(0.013)					
$Eh_0 \times Years\ 2012-2013$	0.004	-0.008					
	(0.010)	(0.013)					
$Eh_0 \times Years\ 2014-2015$	0.024**	0.024*					
	(0.010)	(0.013)					
$Eh_0 \times Years\ 2016-2017$	-0.000	-0.019					
	(0.010)	(0.013)					
$Years\ 2010-2011$	0.020***	0.014**					
	(0.006)	(0.007)					
$Years\ 2012-2013$	-0.008	-0.014*					
	(0.006)	(0.008)					
$Years\ 2014-2015$	-0.024***	-0.022***					
	(0.007)	(0.008)					
$Years\ 2016-2017$	0.030***	0.058***					
	(0.008)	(0.009)					
$Eh_0 \times Years\ 2012-2014$			-0.063	0.036	0.005	0.010	0.009
			(0.044)	(0.026)	(0.021)	(0.014)	(0.025)
$Eh_0 \times Years\ 2018-2020$				0.001	0.005	0.013	0.010
				(0.029)	(0.022)	(0.018)	(0.031)
$Years\ 2012-2014$			-0.095***	0.026	0.032***	-0.022**	0.086***
			(0.030)	(0.016)	(0.012)	(0.009)	(0.016)
$Years\ 2018-2020$				0.083***	0.040**	0.013	0.200***
				(0.023)	(0.019)	(0.014)	(0.025)
Observations	80,121	72,144	2,732	7,072	6,965	8,655	8,471

NOTE: Estimates from equation 1. Each column shows estimates from a different fixed effects model. Data from the German SOEP (columns 1 and 2) and the UKHLS (columns 2-7). The dependent variables are indicators for: Environmental concern (column 1), climate concern (column 2), willingness to pay more for environmentally friendly goods (column 3), belief that climate change will have negative effects in 30 and 200 years (columns 4 and 5 respectively), regularly switching off lights and leaving tv on standby (columns 6 and 7). All models include the full set of controls. Standard errors, clustered at the individual respondent level reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

I also examine whether the introduction and internationalization of the EH observance influenced attitudes. To assess the impact of the EH's introduction I focus on 2007, the year of the EH's first ever observance and estimate equations 1 and 2[8]. To estimate the effect of the EH's internationalization, I repeat the analysis using data from 2008, the first year the EH was observed around the world[9]. I limit the analysis

[8]Estimates capture the effect of the EH's introduction in Australia, on SOEP respondents' environmental concern. Evidence suggests that events taking place in one part of the world may affect attitudes elsewhere. For example the Fukushima disaster in Japan affected environmental concern (Goebel et al., 2015), and public attitudes (Arlt and Wolling, 2015) in Germany, Greta Thunberg's campaign which took place mostly in Europe and targeted the young, influenced US adults' attitudes (Sabherwal et al., 2021), while the 9/11 terrorist attacks in the US affected self reported life satisfaction of UK residents (Metcalfe et al., 2011). As environmental campaigners employ increasingly media-friendly approaches to publicize their messaging, the likelihood the message will cross borders is high.

[9]Estimates capture the effect of the first international observance of the EH on SOEP respondents' environmental concern

to environmental concern as the remaining indicators only become available in 2009, one year after the EH became a global event and two years from its introduction. Estimates from equation 1 and 2 are shown in figure B2 in the Appendix. There is no evidence that either the introduction or the internationalization of the observance influenced environmental concern. It is possible that awareness of the EH was limited in the early years of the observance, while Google trends data shown in figure 1 suggest an increase in public interest for the EH in 2009 and 2010. To account for this when testing for the influence of the observance's introduction and internationalization, I repeat the analysis using information from years 2007-2010. Estimates shown in figure B3 in the Appendix are similar to those discussed earlier.

Finally, to account for the possibility that limited awareness of the EH in its early years affects the results, I repeat the analysis using data only from 2011 and later. Estimates shown in table A12 in the Appendix are identical to the baseline results.

4 Discussion and conclusion

This paper examines the impact of awareness days on environmental and climate change attitudes and concern, focusing on the Earth Hour, a global, visible, well-organized and publicized environmental awareness event calling for coordinated mass action, that has been successful in raising media and public interest on climate change and environmental degradation (The Guardian, 2009; Deutsche Welle, 2020a; Cheong and Lee, 2010). Using data from the German SOEP and the UK UKHLS, I do not find systematic evidence of a relationship between the EH observance and any of the indicators used to quantify attitudes towards the environment. The pattern of the results does not vary with individual sociodemographic characteristics, choice of the sample, or over time. Furthermore, as results are generally consistent across the two datasets used, the result does not appear to be due to country-specific characteristics.

Given the data available, the reasons underlying the results presented here can only be speculated. The EH observance is one among many environment related awareness days occurring throughout the year. It is plausible that the results reflect the public's constraint capacity to process environmental information or the decreasing marginal effect of awareness days. On the other hand, it may be that the attitudinal, concern and behavioural indicators examined here are too crude to fully capture the influence of EH. It is also possible that the definition of the main explanatory variable, indicating subjects responding to the surveys on (or a few days earlier) the observance and up to 30 days later, does not adequately distinguish between the treated and the control groups. Finally, it is also plausible that the results may be due to information about the EH campaign not reaching UKHLS and SOEP respondents. Information on the distribution of EH campaigning effort over space and time would be needed for a closer investigation of the EH's influence on attitudes.

Existing research suggests that awareness days may increase information seeking behavior. Vernon et al. (2021) for example presents evidence that online search activity for health ailments increases following public health awareness days, while Chua et al. (2021) find that relevant Google searches and Wikipedia page views increase in the aftermath of conservation days. Little evidence exists however on the extent to which information seeking, translates to changes in attitudes and behaviours. Data from google trends shown in figures 1 and 2 suggest that public interest and information seeking regarding the EH increase at around the time of the observance. However, model estimates shown in figures 4 and 6 raise the possibility that information seeking may not necessarily lead to detectable changes in environmental attitudes, concern or behaviours. In this respect, results agree with the findings of Vernon et al. (2021), showing that while health awareness days can increase information seeking behaviour, they may have have limited influence on health outcomes.

Results point to the need for systematically assessing the impact of environmental campaigns in general and environmental awareness days in particular, on attitudes and behaviors. The EH and many similar observances aim to raise public interest in environmental challenges, eventually improving the public's understanding of environmental challenges and promoting sustainable behaviour. Considerable effort is devoted by organizers and volunteers in designing and implementing awareness days. Examining their impact on attitudes can provide an indication of whether the organizers' effort influences the general public's attitudes. At the same time, research testing the influence of specific features of awareness days can provide insights on their design and contribute towards improving their effectiveness.

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A Appendix

Table A1: Earth Hour, environmental and climate concern: estimates from equation 1

	(1)	(2)	(3)	(4)	(5)	(6)
Eh_0	0.0056	0.0053	0.0026	-0.0073	-0.0071	-0.0104*
	(0.0058)	(0.0058)	(0.0059)	(0.0061)	(0.0061)	(0.0062)
	[0.0053]	[0.0053]	[0.0055]	[0.0062]	[0.0061]	[0.0062]
Eh_{-3}	0.0068	0.0072	0.0057	-0.0013	-0.0008	-0.0029
	(0.0046)	(0.0047)	(0.0047)	(0.0049)	(0.0049)	(0.0050)
	(0.0040)	(0.0041)	(0.0041)	(0.0049)	(0.0049)	(0.0049)
Eh_{-2}	0.0054	0.0057	0.0038	-0.0049	-0.0044	-0.0070
	(0.0049)	(0.0049)	(0.0050)	(0.0052)	(0.0052)	(0.0053)
	[0.0045]	[0.0046]	[0.0047]	[0.0053]	[0.0053]	[0.0053]
Eh_{-1}	0.0042	0.0043	0.0019	-0.0045	-0.0043	-0.0069
	(0.0053)	(0.0053)	(0.0054)	(0.0056)	(0.0056)	(0.0057)
	[0.0048]	[0.0048]	[0.0049]	[0.0061]	[0.0061]	[0.0062]
Eh_{+1}	0.0056	0.0055	0.0028	-0.0047	-0.0044	-0.0076
	(0.0063)	(0.0063)	(0.0065)	(0.0066)	(0.0066)	(0.0068)
	[0.0058]	[0.0060]	[0.0063]	[0.0063]	[0.0062]	[0.0064]
Eh_{+2}	0.0047	0.0046	0.0020	-0.0051	-0.0048	-0.0083
	(0.0066)	(0.0066)	(0.0067)	(0.0069)	(0.0069)	(0.0071)
	[0.0062]	[0.0064]	[0.0066]	[0.0068]	[0.0067]	[0.0069]
Eh_{+3}	0.0090	0.0091	0.0072	-0.0027	-0.0024	-0.0064
	(0.0077)	(0.0077)	(0.0078)	(0.0079)	(0.0079)	(0.0081)
	[0.0070]	[0.0071]	[0.0072]	[0.0091]	[0.0090]	[0.0092]
Region	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Month	Yes	Yes	Yes	Yes	Yes	Yes
Day-of-week	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Region-Year	No	Yes	Yes	No	Yes	Yes
Region-Year-Month	No	No	Yes	No	No	Yes
Observations	80,121	80,121	80,121	72,144	72,144	72,144

NOTE: Estimates from equation 1. Each cell shows an estimate of the main independent variable from a different fixed effects model. Data from SOEP 2008-2017 (columns 1-3) and 2009-2017 (columns 4-6). The dependent variables are binary, indicating individuals that declare environmental and climate concern in columns 1-3 and 4-6 respectively. The main independent variable EH_0 is binary equalling one for respondents on, and up to 30 days after, the Earth Hour observance. Independent variables EH_r indicate individuals responding from day r relative to the EH, and up to 30 days after the EH observance. Standard errors, clustered at the individual respondent level reported in parentheses. Standard errors clustered at the level of response day in square brackets. * $p < 0.1$

Table A2: Earth Hour, environmental and climate concern

	(1) Environmental Concern	(2) Climate Concern
EH	0.008	0.005
	(0.006)	(0.007)
Observations	80,121	72,144

NOTE: The table presents estimates of the EH effect from the estimator proposed in de Chaisemartin and D'Haultfœuille(2020). Data from SOEP 2008-2017 (column 1) and 2009-2017 (column 2). The dependent variable is binary indicating those who are "Very worried about environmental protection" (column 1) and those who are "Very worried about the consequences of climate change" (column 2). Standard errors, clustered at the individual respondent level reported in parentheses.

Table A3: Earth Hour, environmental and climate concern: estimates from equation 2

	(1)	(2)	(3)	(4)	(5)	(6)
Day_{-7}	0.001	-0.001	-0.000	-0.009	-0.010	-0.010
	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)
Day_{-6}	-0.004	-0.005	-0.003	-0.016	-0.017	-0.017
	(0.019)	(0.019)	(0.019)	(0.020)	(0.020)	(0.020)
Day_{-5}	0.006	0.004	0.004	0.005	0.004	0.003
	(0.016)	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)
Day_{-4}	0.010	0.009	0.010	0.016	0.016	0.016
	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)
Day_{-3}	0.015	0.014	0.016	0.009	0.009	0.009
	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)
Day_{-2}	0.012	0.011	0.012	-0.014	-0.013	-0.015
	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)
Day_{0}	0.007	0.004	0.002	-0.028	-0.030	-0.032*
	(0.018)	(0.018)	(0.018)	(0.019)	(0.019)	(0.019)
Day_{+1}	0.011	0.010	0.008	-0.012	-0.012	-0.013
	(0.021)	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)
Day_{+2}	-0.001	-0.003	-0.006	-0.016	-0.017	-0.018
	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)	(0.018)
Day_{+3}	0.005	0.003	-0.001	-0.007	-0.007	-0.013
	(0.017)	(0.017)	(0.017)	(0.018)	(0.018)	(0.018)
Day_{+4}	0.025	0.023	0.024	0.005	0.005	0.003
	(0.017)	(0.018)	(0.018)	(0.018)	(0.018)	(0.019)
Day_{+5}	0.017	0.016	0.015	-0.016	-0.017	-0.022
	(0.019)	(0.019)	(0.019)	(0.020)	(0.021)	(0.021)
Day_{+6}	0.008	0.009	0.007	-0.013	-0.012	-0.015
	(0.019)	(0.019)	(0.020)	(0.020)	(0.020)	(0.020)
Day_{+7}	0.011	0.010	0.009	-0.020	-0.021	-0.024
	(0.015)	(0.015)	(0.016)	(0.016)	(0.016)	(0.017)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Month	Yes	Yes	Yes	Yes	Yes	Yes
Day of week	Yes	Yes	Yes	Yes	Yes	Yes
Region-Year	No	Yes	Yes	No	Yes	Yes
Region-Year-Month	No	No	Yes	No	No	Yes
Observations	80,121	80,121	80,121	72,144	72,144	72,144

NOTE: Estimates from equation 2 using data from SOEP 2008-2017 (columns 1-3) and 2009-2017 (columns 4-6). The dependent variable is binary indicating those who are "Very worried about environmental protection" (columns 1-3) and those who are "Very worried about the consequences of climate change" (columns 4-5). Day_t where t is -7,..,7 indicates individuals responding to the SOEP on day t relative to the EH observance. Models use data from individuals interviewed ±30 days from the Earth Hour date. Standard errors, clustered at the individual respondent level reported in parentheses. * $p < 0.1$

Table A4: Earth Hour and environmental attitudes: estimates from equation 1

	(1)	(2)	(3)	(4)	(5)
Eh_0	0.029	0.025	-0.014	0.001	-0.013
	(0.047)	(0.025)	(0.020)	(0.013)	(0.025)
	[0.041]	[0.022]	[0.014]	[0.011]	[0.023]
Eh_{-3}	-0.004	0.022	0.006	-0.009	-0.007
	(0.037)	(0.018)	(0.014)	(0.010)	(0.018)
	[0.031]	[0.018]	[0.014]	[0.008]	[0.017]
Eh_{-2}	0.000	0.036*	0.009	-0.003	-0.013
	(0.040)	(0.020)	(0.016)	(0.011)	(0.019)
	[0.037]	[0.018]	[0.013]	[0.010]	[0.016]
Eh_{-1}	0.003	0.032	-0.000	-0.001	-0.008
	(0.043)	(0.022)	(0.018)	(0.012)	(0.022)
	[0.041]	[0.022]	[0.015]	[0.011]	[0.018]
Eh_{+1}	0.035	0.009	-0.008	0.002	-0.015
	(0.050)	(0.026)	(0.021)	(0.014)	(0.027)
	[0.040]	[0.023]	[0.014]	[0.012]	[0.026]
Eh_{+2}	0.056	-0.007	-0.011	-0.000	-0.010
	(0.053)	(0.026)	(0.022)	(0.014)	(0.027)
	[0.044]	[0.021]	[0.013]	[0.012]	[0.026]
Eh_{+3}	0.037	-0.018	-0.003	0.001	-0.007
	(0.055)	(0.025)	(0.023)	(0.015)	(0.031)
	[0.050]	[0.021]	[0.017]	[0.013]	[0.031]
Observations	2,732	7,072	6,965	8,655	8,471

NOTE: Estimates from equation 1. Each cell shows an estimate of the coefficient on the main independent variable from a different fixed effects model. Data from the UKHLS waves 4 and 10 (columns 1) and waves 1, 4 and 10 (columns 2-5). The dependent variables are binary, indicating individuals that are willing to pay more for environmentally friendly goods (column 1), think that climate change will have negative effects in 30 and 200 years (columns 2 and 3 respectively), regularly switch off lights and leave tv on standby (columns 4 and 5). The main independent variable EH_0 is binary equalling one for respondents on, and up to 30 days after, the Earth Hour observance. Independent variables EH_r indicate individuals responding from day r relative to the EH, and up to 30 days after the EH observance. Standard errors, clustered at the individual respondent level reported in parentheses. * $p < 0.1$

Table A5: Earth Hour and environmental attitudes: estimates from equation 2

	(1)	(2)	(3)	(4)	(5)
Day_{-7}	0.079	-0.050	-0.049	0.005	-0.007
	(0.093)	(0.041)	(0.034)	(0.025)	(0.044)
Day_{-6}	0.294	-0.063	-0.051	0.035	-0.152**
	(0.189)	(0.084)	(0.064)	(0.046)	(0.077)
Day_{-5}	0.059	-0.076	-0.048	0.053	-0.039
	(0.111)	(0.055)	(0.044)	(0.034)	(0.053)
Day_{-4}	0.100	-0.058	-0.048	0.019	0.024
	(0.120)	(0.057)	(0.047)	(0.033)	(0.059)
Day_{-3}	0.070	-0.089*	-0.056	-0.021	0.008
	(0.120)	(0.052)	(0.044)	(0.033)	(0.058)
Day_{-2}	0.063	-0.011	-0.014	-0.005	-0.025
	(0.112)	(0.053)	(0.047)	(0.034)	(0.059)
Day_{0}	0.077	0.064	-0.098	-0.004	-0.005
	(0.161)	(0.070)	(0.062)	(0.039)	(0.075)
Day_{+1}	0.022	0.109	-0.022	0.033	-0.071
	(0.160)	(0.088)	(0.065)	(0.047)	(0.091)
Day_{+2}	0.166	-0.036	-0.070	0.014	-0.000
	(0.114)	(0.058)	(0.047)	(0.034)	(0.058)
Day_{+3}	0.250*	-0.048	-0.040	0.031	-0.071
	(0.128)	(0.057)	(0.048)	(0.033)	(0.061)
Day_{+4}	0.103	-0.077	-0.048	-0.009	-0.046
	(0.128)	(0.060)	(0.047)	(0.036)	(0.067)
Day_{+5}	0.025	-0.041	-0.061	-0.023	0.060
	(0.141)	(0.066)	(0.057)	(0.038)	(0.070)
Day_{+6}	0.054	-0.093	-0.089	0.002	0.011
	(0.137)	(0.081)	(0.069)	(0.040)	(0.078)
Day_{+7}	0.192	-0.043	-0.066	0.006	0.060
	(0.120)	(0.055)	(0.049)	(0.032)	(0.061)
Observations	2,732	7,072	6,965	8,655	8,471

NOTE: Estimates from equation 2. Each column shows estimates from a different fixed effects model. Data from the UKHLS waves 4 and 10 (columns 1) and waves 1, 4 and 10 (columns 2-5). The dependent variables are binary, indicating individuals that are willing to pay more for environmentally friendly goods (column 1), think that climate change will have negative effects in 30 and 200 years (columns 2 and 3 respectively), regularly switch off lights and leave tv on standby (columns 4 and 5). The main independent variables $Day \pm t$ indicate individuals responding on day $\pm t$ relative to the Earth Hour observance. Standard errors, clustered at the individual respondent level reported in parentheses.

Table A6: Earth Hour and environmental attitudes: estimates from equation 1 using a 15 day window

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Eh_0	-0.002	-0.003	-0.089	0.070**	-0.010	-0.004	0.004
	(0.007)	(0.007)	(0.069)	(0.031)	(0.027)	(0.017)	(0.033)
Eh_{-3}	0.003	0.001	-0.027	0.059**	0.009	-0.014	0.021
	(0.006)	(0.006)	(0.058)	(0.025)	(0.019)	(0.014)	(0.025)
Eh_{-2}	0.000	-0.002	-0.063	0.070***	0.021	-0.015	0.014
	(0.006)	(0.007)	(0.061)	(0.026)	(0.021)	(0.015)	(0.026)
Eh_{-1}	-0.002	-0.003	-0.079	0.071**	0.011	-0.010	0.011
	(0.007)	(0.007)	(0.060)	(0.028)	(0.023)	(0.016)	(0.030)
Eh_{+1}	-0.000	-0.000	-0.105	0.054	-0.006	-0.006	0.002
	(0.008)	(0.008)	(0.074)	(0.033)	(0.028)	(0.018)	(0.035)
Eh_{+2}	-0.002	-0.001	-0.096	0.043	-0.012	-0.007	0.014
	(0.008)	(0.009)	(0.076)	(0.034)	(0.029)	(0.019)	(0.035)
Eh_{+3}	0.003	0.005	-0.073	0.044	-0.004	-0.010	-0.002
	(0.009)	(0.010)	(0.080)	(0.034)	(0.030)	(0.020)	(0.041)
Observations	31,497	28,022	650	2,356	2,313	2,922	2,866

NOTE: Estimates from equation 1. Each cell shows an estimate of the coefficient on the main independent variable from a different fixed effects model. Data from the German SOEP (columns 1 and 2) and the UKHLS (columns 2-7). The dependent variables are indicators for: Environmental concern (column 1), climate concern (column 2), willingness to pay more for environmentally friendly goods (column 3), belief that climate change will have negative effects in 30 and 200 years (columns 4 and 5 respectively), regularly switching off lights and leaving tv on standby (columns 6 and 7). The main independent variable EH_0 is binary equalling one for respondents on, and up to 15 days after the Earth Hour observance. Independent variables EH_r indicate individuals responding in the period starting on day r relative to the EH, and up to 15 days after the EH observance. Standard errors, clustered at the individual respondent level reported in parentheses. ** $p < 0.05$

Table A7: Earth Hour and environmental attitudes: estimates from equation 1 using a 7 day window

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Eh_0	-0.002	-0.002	-0.096	0.106**	-0.007	0.005	0.033
	(0.010)	(0.011)	(0.101)	(0.049)	(0.045)	(0.024)	(0.049)
Eh_{-3}	-0.007	-0.009	0.079	0.112**	-0.017	-0.051**	0.064
	(0.010)	(0.011)	(0.119)	(0.045)	(0.039)	(0.025)	(0.040)
Eh_{-2}	-0.015	-0.009	0.030	0.108**	-0.001	-0.020	0.084**
	(0.010)	(0.011)	(0.119)	(0.044)	(0.038)	(0.023)	(0.040)
Eh_{-1}	-0.011	-0.001	-0.078	0.112**	0.011	-0.028	0.062
	(0.010)	(0.011)	(0.087)	(0.047)	(0.043)	(0.025)	(0.044)
Eh_{+1}	0.004	-0.000	-0.134	0.092*	-0.019	-0.002	0.041
	(0.011)	(0.011)	(0.100)	(0.048)	(0.045)	(0.025)	(0.052)
Eh_{+2}	-0.001	-0.003	-0.070	0.075	-0.018	-0.006	0.071
	(0.011)	(0.012)	(0.109)	(0.047)	(0.043)	(0.025)	(0.049)
Eh_{+3}	-0.004	-0.004	-0.103	0.137***	-0.002	-0.007	0.010
	(0.013)	(0.014)	(0.125)	(0.040)	(0.040)	(0.025)	(0.060)
Observations	10,821	9,384	176	684	674	869	858

NOTE: Estimates from equation 1. Each cell shows an estimate of the coefficient on the main independent variable from a different fixed effects model. Data from the German SOEP (columns 1 and 2) and the UKHLS (columns 2-7). The dependent variables are indicators for: Environmental concern (column 1), climate concern (column 2), willingness to pay more for environmentally friendly goods (column 3), belief that climate change will have negative effects in 30 and 200 years (columns 4 and 5 respectively), regularly switching off lights and leaving tv on standby (columns 6 and 7). The main independent variable EH_0 is binary equalling one for respondents on, and up to 7 days after, the Earth Hour observance. Independent variables EH_r indicate individuals responding in the period starting on day r relative to the EH, and up to 7 days after the EH observance. Standard errors, clustered at the individual respondent level reported in parentheses. *** $p < 0.01$,** $p < 0.05$

Table A8: Earth Hour and environmental attitudes: estimates from equation 2 using a 15 day window

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Day_{-7}	0.000	0.003	0.019	-0.057	-0.080*	0.032	-0.026
	(0.015)	(0.016)	(0.122)	(0.053)	(0.043)	(0.033)	(0.063)
Day_{-6}	-0.007	-0.011	0.298	-0.180	-0.160	0.003	-0.251*
	(0.024)	(0.025)	(0.320)	(0.139)	(0.121)	(0.058)	(0.130)
Day_{-5}	-0.016	0.005	0.051	-0.078	-0.116*	0.085*	-0.069
	(0.021)	(0.022)	(0.185)	(0.078)	(0.061)	(0.048)	(0.078)
Day_{-4}	0.017	0.039*	0.159	-0.033	-0.052	0.025	0.020
	(0.020)	(0.022)	(0.175)	(0.079)	(0.062)	(0.049)	(0.085)
Day_{-3}	0.025	0.024	0.109	-0.052	-0.125**	0.018	-0.000
	(0.021)	(0.023)	(0.181)	(0.075)	(0.058)	(0.045)	(0.081)
Day_{-2}	0.010	0.009	-0.018	0.010	-0.014	-0.005	0.003
	(0.021)	(0.023)	(0.160)	(0.077)	(0.063)	(0.050)	(0.083)
Day_{0}	-0.008	-0.012	0.028	0.094	-0.118	0.041	-0.006
	(0.022)	(0.024)	(0.209)	(0.091)	(0.082)	(0.048)	(0.103)
Day_{+1}	0.011	0.004	-0.029	0.075	-0.063	0.017	-0.185
	(0.026)	(0.028)	(0.228)	(0.120)	(0.092)	(0.075)	(0.138)
Day_{+2}	-0.018	-0.008	-0.076	-0.025	-0.131*	0.050	0.015
	(0.021)	(0.022)	(0.200)	(0.082)	(0.068)	(0.047)	(0.085)
Day_{+3}	-0.001	0.025	0.191	0.048	-0.024	0.055	-0.034
	(0.021)	(0.023)	(0.190)	(0.074)	(0.063)	(0.051)	(0.088)
Day_{+4}	0.032	0.031	-0.082	0.005	-0.096	-0.003	-0.062
	(0.022)	(0.024)	(0.191)	(0.078)	(0.063)	(0.049)	(0.092)
Day_{+5}	0.007	0.004	-0.299	0.053	-0.040	-0.006	0.031
	(0.024)	(0.026)	(0.243)	(0.096)	(0.078)	(0.057)	(0.098)
Day_{+6}	-0.002	-0.011	-0.027	-0.114	-0.156	-0.010	-0.001
	(0.023)	(0.024)	(0.183)	(0.111)	(0.099)	(0.054)	(0.098)
Day_{+7}	0.005	0.004	-0.122	0.031	-0.149**	-0.001	0.088
	(0.019)	(0.021)	(0.199)	(0.076)	(0.066)	(0.047)	(0.087)
Observations	31,497	28,022	650	2,356	2,313	2,922	2,866

NOTE: Estimates from equation 2. Each column shows estimates from a different fixed effects model. Data from the German SOEP (columns 1 and 2) and the UKHLS (columns 3-7). The dependent variables are indicators for: Environmental concern (column 1), climate concern (column 2), willingness to pay more for environmentally friendly goods (column 3), belief that climate change will have negative effects in 30 and 200 years (columns 4 and 5 respectively), regularly switching off lights and leaving tv on standby (columns 6 and 7 respectively). The main independent variables $Day \pm t$ indicate individuals responding on day $\pm t$ relative to the Earth Hour observance. Standard errors, clustered at the individual respondent level reported in parentheses. ** $p < 0.05$, * $p < 0.1$

Table A9: Earth Hour and environmental attitudes: estimates from equation 2 using a 7 day window

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Day_{-7}	0.033	-0.016	-0.099	-0.149*	-0.073	0.122**	-0.146
	(0.023)	(0.025)	(0.176)	(0.089)	(0.070)	(0.053)	(0.096)
Day_{-6}	0.012	-0.025	-0.424	-0.404**	-0.041	0.039	-0.354**
	(0.026)	(0.029)	(0.298)	(0.176)	(0.192)	(0.050)	(0.154)
Day_{-5}	0.026	0.026	0.247	-0.130	0.014	0.145**	-0.072
	(0.022)	(0.024)	(0.221)	(0.085)	(0.078)	(0.057)	(0.069)
Day_{-4}	0.044**	0.008	-0.096	-0.112	-0.074	0.077	-0.073
	(0.022)	(0.024)	(0.194)	(0.094)	(0.081)	(0.051)	(0.082)
Day_{-3}	0.046**	0.001	0.034	-0.069	-0.083	0.020	-0.103
	(0.022)	(0.024)	(0.169)	(0.081)	(0.072)	(0.048)	(0.083)
Day_{-2}	0.015	-0.024	0.079	-0.047	-0.072	0.089*	0.007
	(0.023)	(0.025)	(0.199)	(0.080)	(0.082)	(0.049)	(0.088)
Day_{0}	0.005	-0.011	0.071	0.025	0.002	0.121**	-0.084
	(0.025)	(0.027)	(0.256)	(0.125)	(0.113)	(0.053)	(0.113)
Day_{+1}	0.043	0.006	-0.365*	0.110	-0.059	0.082	-0.193
	(0.028)	(0.030)	(0.219)	(0.116)	(0.092)	(0.082)	(0.141)
Day_{+2}	0.030	-0.002	0.018	-0.106	-0.065	0.093*	0.037
	(0.022)	(0.024)	(0.168)	(0.099)	(0.092)	(0.055)	(0.083)
Day_{+3}	0.020	-0.004	-0.047	0.033	0.000	0.105**	-0.132
	(0.024)	(0.026)	(0.216)	(0.076)	(0.077)	(0.050)	(0.089)
Day_{+4}	0.046*	0.014	-0.192	0.094	-0.077	0.014	-0.033
	(0.025)	(0.026)	(0.245)	(0.097)	(0.078)	(0.059)	(0.111)
Day_{+5}	0.003	-0.026	-0.329	0.169	-0.031	0.132**	0.144
	(0.027)	(0.030)	(0.332)	(0.134)	(0.108)	(0.066)	(0.114)
Day_{+6}	0.018	-0.045	-0.023	0.057	-0.185	0.012	0.044
	(0.029)	(0.031)	(0.288)	(0.144)	(0.124)	(0.076)	(0.122)
Day_{+7}	0.004	0.006	0.345	-0.351*	-0.143	0.057	0.033
	(0.032)	(0.035)	(0.461)	(0.193)	(0.114)	(0.065)	(0.141)
Observations	10,821	9,384	176	684	674	869	858

NOTE: Estimates from equation 2. Each column shows estimates from a different fixed effects model. Data from the German SOEP (columns 1 and 2) and the UKHLS (columns 3-7). The dependent variables are indicators for: Environmental concern (column 1), climate concern (column 2), willingness to pay more for environmentally friendly goods (column 3), belief that climate change will have negative effects in 30 and 200 years (columns 4 and 5 respectively), regularly switching off lights and leaving tv on standby (columns 6 and 7 respectively). The main independent variables $Day\pm t$ indicate individuals responding on day $\pm t$ relative to the Earth Hour observance. Standard errors, clustered at the individual respondent level reported in parentheses. ** $p < 0.05$, * $p < 0.1$

Table A10: Earth Hour and environmental attitudes: estimates from equation 1 for the sample of city residents

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EH_0	0.005	0.017	-0.021	-0.011	-0.109*	0.011	-0.002
	(0.024)	(0.025)	(0.148)	(0.059)	(0.056)	(0.028)	(0.060)
EH_{-3}	-0.014	-0.009	-0.083	-0.045	-0.085**	-0.007	0.013
	(0.019)	(0.019)	(0.116)	(0.051)	(0.041)	(0.025)	(0.049)
EH_{-2}	-0.023	0.002	-0.085	-0.026	-0.061	-0.009	-0.011
	(0.020)	(0.020)	(0.117)	(0.054)	(0.045)	(0.024)	(0.054)
EH_{-1}	-0.014	0.023	-0.065	-0.028	-0.072	0.009	-0.021
	(0.022)	(0.023)	(0.144)	(0.059)	(0.052)	(0.025)	(0.056)
EH_{+1}	0.005	0.018	-0.134	-0.061	-0.140**	-0.008	-0.029
	(0.026)	(0.027)	(0.178)	(0.067)	(0.065)	(0.034)	(0.068)
EH_{+2}	-0.009	0.034	-0.112	-0.070	-0.117*	0.016	-0.027
	(0.027)	(0.029)	(0.189)	(0.070)	(0.065)	(0.031)	(0.070)
EH_{+3}	-0.015	0.041	-0.131	-0.035	0.002	0.003	-0.023
	(0.032)	(0.034)	(0.214)	(0.068)	(0.066)	(0.030)	(0.077)
Observations	4,966	4,459	258	727	725	991	953

NOTE: Estimates from equation 1. Each cell shows an estimate of the main independent variable from a different fixed effects model. Data from the German SOEP (columns 1 and 2) and the UKHLS (columns 2-7). The dependent variables are indicators for: Environmental concern (column 1), climate concern (column 2), willingness to pay more for environmentally friendly goods (column 3), belief that climate change will have negative effects in 30 and 200 years (columns 4 and 5 respectively), regularly switching off lights and leaving tv on standby (columns 6 and 7). The main independent variable EH_0 is binary equalling one for respondents on, and up to 30 days after, the Earth Hour observance. Independent variables EH_r indicate individuals responding in the period starting on day r relative to the EH, and up to 30 days after the EH observance. Standard errors, clustered at the individual respondent level reported in parentheses. *** $p < 0.01$, ** $p < 0.05$

Table A11: Earth Hour and environmental attitudes: estimates from equation 2 for the sample of city residents

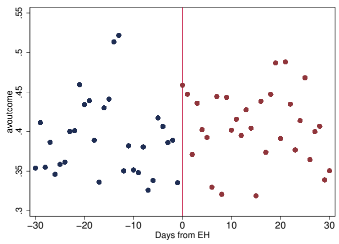
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Day_{-7}	0.083*	-0.040	0.272	0.135	-0.070	0.007	0.088
	(0.049)	(0.051)	(0.411)	(0.123)	(0.114)	(0.042)	(0.141)
Day_{-6}	0.124*	0.015	-0.184	0.024	-0.244*	0.079	0.044
	(0.073)	(0.082)	(0.490)	(0.207)	(0.146)	(0.106)	(0.204)
Day_{-5}	0.092	-0.003	0.375	0.248	-0.124	-0.022	0.287
	(0.064)	(0.070)	(0.498)	(0.178)	(0.143)	(0.099)	(0.191)
Day_{-4}	0.141**	0.015	0.079	0.006	-0.045	0.082	0.319*
	(0.063)	(0.063)	(0.472)	(0.162)	(0.134)	(0.089)	(0.176)
Day_{-3}	0.131*	-0.084	0.004	-0.031	-0.250	0.007	0.227
	(0.068)	(0.070)	(0.534)	(0.168)	(0.153)	(0.092)	(0.190)
Day_{-2}	0.031	-0.125*	0.142	0.109	-0.083	-0.070	0.149
	(0.066)	(0.066)	(0.433)	(0.151)	(0.153)	(0.065)	(0.190)
Day_{0}	0.083	-0.031	0.795	0.329**	-0.065	0.081	0.171
	(0.085)	(0.077)	(0.507)	(0.166)	(0.161)	(0.069)	(0.197)
Day_{+1}	0.172**	-0.116	0.047	0.148	-0.275	-0.113	0.106
	(0.083)	(0.091)	(0.560)	(0.161)	(0.177)	(0.108)	(0.201)
Day_{+2}	0.086	-0.022	0.227	0.066	-0.370**	0.040	0.138
	(0.065)	(0.074)	(0.553)	(0.160)	(0.159)	(0.064)	(0.174)
Day_{+3}	0.040	-0.019	-0.345	-0.010	-0.147	0.004	0.088
	(0.064)	(0.070)	(0.610)	(0.153)	(0.131)	(0.064)	(0.173)
Day_{+4}	0.167**	0.078	0.195	0.036	-0.007	-0.014	-0.023
	(0.074)	(0.074)	(0.481)	(0.165)	(0.126)	(0.092)	(0.202)
Day_{+5}	0.109	-0.030	-0.099	0.247	-0.098	0.082	0.177
	(0.078)	(0.080)	(0.555)	(0.186)	(0.164)	(0.101)	(0.203)
Day_{+6}	0.025	-0.044	-0.011	-0.217	-0.585*	0.050	0.232
	(0.074)	(0.075)	(0.571)	(0.298)	(0.336)	(0.044)	(0.250)
Day_{+7}	0.037	-0.035	0.054	0.147	-0.226	0.015	0.201
	(0.062)	(0.069)	(0.558)	(0.159)	(0.164)	(0.072)	(0.180)
Observations	4,966	4,459	258	727	725	991	953

NOTE: Estimates from equation 2. Each column shows estimates from a different fixed effects model. Data from the German SOEP (columns 1 and 2) and the UKHLS (columns 2-7). The dependent variables are indicators for: Environmental concern (column 1), climate concern (column 2), willingness to pay more for environmentally friendly goods (column 3), belief that climate change will have negative effects in 30 and 200 years (columns 4 and 5 respectively), regularly switching off lights and leaving tv on standby (columns 6 and 7). The main independent variables $Day \pm t$ indicate individuals responding on day $\pm t$ relative to the Earth Hour observance. Standard errors, clustered at the individual respondent level reported in parentheses.

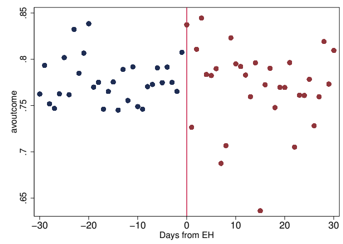
Table A12: Earth Hour and environmental attitudes: estimates from equation 1 using data from 2011 and later

	(1) Environmental Concern	(2) Climate Concern	(3) Willing to Pay	(4) CC Impact in 30yrs	(5) CC Impact in 200yrs	(6) Lights off	(7) TV off
Eh_0	0.004	-0.010	0.029	0.015	-0.043	-0.018	0.001
	(0.007)	(0.007)	(0.047)	(0.040)	(0.032)	(0.024)	(0.048)
Observations	56,559	56,505	2,732	2,696	2,670	2,998	2,922

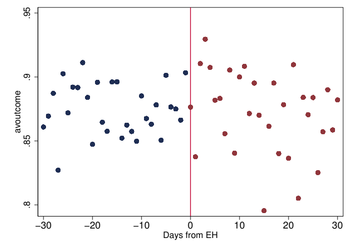
NOTE: Estimates from equation 1. Each column shows estimates from a different fixed effects model. Data from the German SOEP (columns 1 and 2) and the UKHLS (columns 2-7) for 2011 and later. The dependent variables are indicators for: Environmental concern (column 1), climate concern (column 2), willingness to pay more for environmentally friendly goods (column 3), belief that climate change will have negative effects in 30 and 200 years (columns 4 and 5 respectively), regularly switching off lights and leaving tv on standby (columns 6 and 7). All models include the full set of controls. Standard errors, clustered at the individual respondent level reported in parentheses.



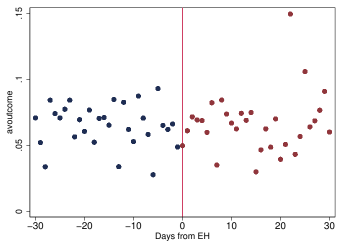
(a) Willing to pay



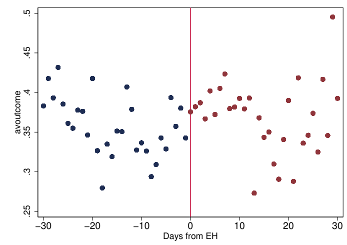
(b) Climate change effects in 30 years



(c) Climate change effects in 200 years

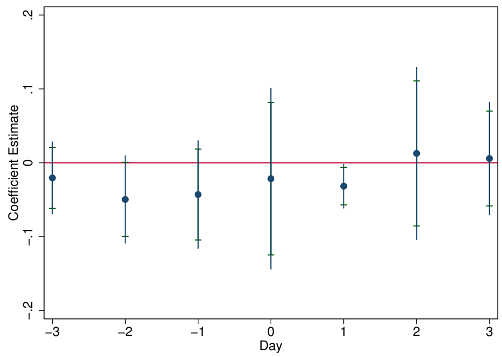


(d) Regularly switches off lights

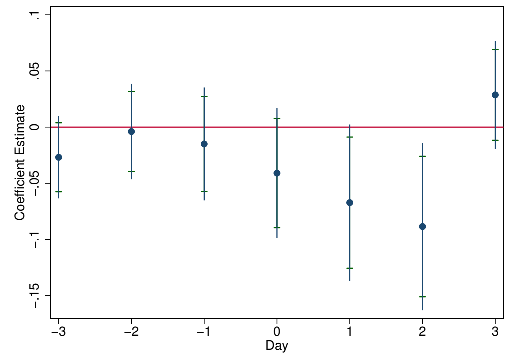


(e) Regularly leaves TV on standby

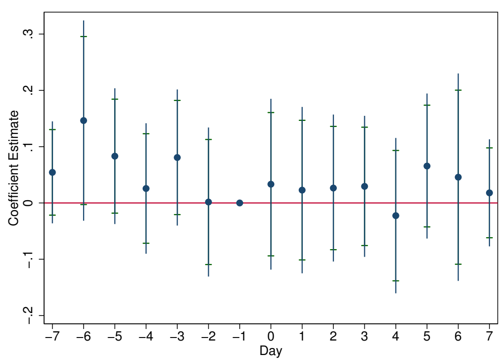
Figure B1: Environmental attitudes around the EH observance. Data from UK UKHLS waves 4 and 10 (B1a) and waves 1, 4, 10 (B1b,B1c, B1d, B1e). Points represent the average value of the respective outcome on each of $\{-30, ..., +30\}$ days from the EH. The vertical line at zero marks the EH observance date.



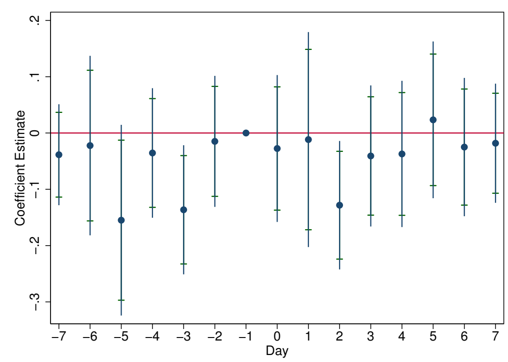
(a) Environmental Concern 2007



(b) Environmental Concern 2008

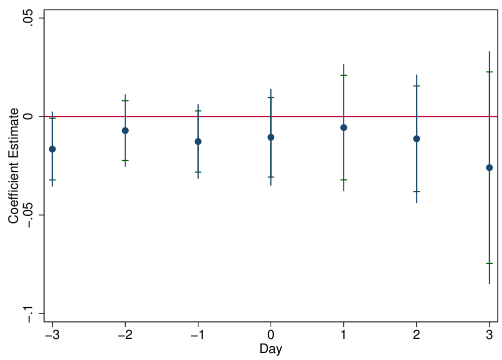


(c) Environmental Concern 2007

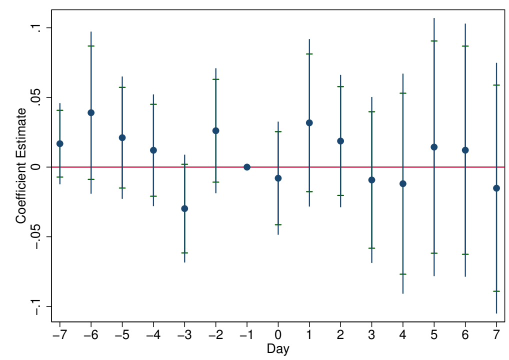


(d) Environmental Concern 2008

Figure B2: Figures B2a and B2b show the effect of the EH's introduction and internationalization on environmental concern from equation 1 using data from SOEP 2007 and 2008 respectively. Points represent estimates of the coefficient on EH_r where $r = \{-3, ..., 3\}$, and EH is binary indicating individuals surveyed in the period from r to $+30$ days from the observance. Figures B2c and B2d show estimates from equation 2 using the same data. Points show coefficient estimates on the D_i variables. The coefficent on D_1 is normalized to zero. In all cases, bars and horizontal ticks show 95% and 90% confidence intervals respectively.



(a) Environmental Concern 2007-2010



(b) Environmental Concern 2007-2010

Figure B3: The effect of the EH's introduction and internationalization on environmental concern from equations 1 and 2 respectively using data from SOEP 2007-2010. In figure B3a points represent estimates of the coefficient on EH_r where $r = \{-3, ..., 3\}$, and EH is binary indicating individuals surveyed in the period from r to +30 days from the observance. In figure B3b points show coefficient estimates on the D_i variables. The coefficient on D_1 is normalized to zero. In all cases, bars and horizontal ticks show 95% and 90% confidence intervals respectively.