



Contents lists available at ScienceDirect

Journal of Environmental Economics and Management

journal homepage: www.elsevier.com/locate/yjeem

Only in my backyard: The effect of flood exposure on environmental behavior

Derrick Xu 

Department of Economics, University of Southampton, Southampton, SO17 1BJ, UK

ARTICLE INFO

JEL classification:

D64
D72
D91
H41
Q54

Keywords:

Flood
Climate change
Environmental behavior
Environmental belief

ABSTRACT

Does exposure to climate shocks make people behave more pro-environmentally? I use precise residential locations to identify people exposed to floods and analyze a decade of real-world donation records from around 90,000 donors in England, along with longitudinal surveys. I show that people become more likely to donate to environmental charities and support the Green Party, after experiencing a flood that directly affects their own postcode. I also find that they are more likely to reassess their own environmental efforts as not enough following such an experience. However, exposure to floods affecting close neighbors does not lead to similar changes, indicating an “only in my backyard” phenomenon: on average, people become more pro-environment only when personally affected. Further, I show that people with strong universalist values do increase their green donations following neighboring floods. This suggests that the lack of response is driven by those with weak universalist values, who typically care less about global challenges.

1. Introduction

The consequences of climate change are intensifying (UNEP, 2022; IPCC, 2023), posing substantial threats to both natural ecosystems and human societies. However, the “principal margin of action” rests largely with high-income countries (Duflo, 2024), as they produce twice the carbon emissions relative to their share of the global population (Ritchie, 2024). Understanding what drives pro-environmental behavior in developed economies is therefore essential for mitigating the climate crisis.

Public responses, ranging from charitable giving to climate policy support, require widespread awareness of climate change (Deryugina, 2013; Frondel et al., 2017). In societies like the UK, awareness is already very high, with 70% of people viewing climate change as a serious threat. However, public actions remain insufficient to meet climate targets.¹ One possible explanation is that fewer people in these countries are actually affected by climate change, given that only 10% of the UK population has experienced severe weather events or knows someone who has (World Risk Poll, 2021). To investigate this, I look at whether experiencing climate shocks motivates pro-environmental actions.

Floods serve as a focal point in this paper because they are among the major impacts of climate change affecting the UK and are often associated with climate change by the public.² I use flood records in England from 2009 to 2022, collected by the Environment Agency, which provide detailed data on the timing and spatial extent of each flood event. Although floods in England affect fewer

Email address: derrick.xu@soton.ac.uk.

¹ Climate Action Tracker (2024) “rates the UK’s climate targets, policies, and finance as insufficient”, stating that “substantial improvements are needed for alignment with the Paris Agreement’s 1.5°C temperature limit.” Further, Climate Change Committee (2020) reports that “the 2050 net zero target would be unattainable without changes in people’s behaviors.” The committee shows that 32% of emission reductions by 2035 depend on individuals and households adopting low-carbon technologies and sustainable products, and reducing carbon-intensive consumption.

² Capstick et al. (2015) show that, following the major floods in 2013/2014, 72% of the British public agreed that these floods “showed us what we can expect in the future from climate change.” Further, in Appendix A.3 in Supplementary Material, using data from Google Trends throughout the research period, I show that Google searches for climate change increase during weeks with floods.

<https://doi.org/10.1016/j.jeem.2026.103300>

Received 7 July 2024

Available online 5 February 2026

0095-0696/© 2026 The Author. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

people and cause fewer deaths than some extreme global incidents, these small-scale floods occur more frequently around the world. Floods create visible damage within clear geographic boundaries, allowing for precise measurement of exposure based on proximity to flooded areas. This makes them ideal for studying local responses to climate events.

Estimating the effects of flood exposure is often limited by the lack of precise location data, which is essential for identifying directly affected people, and by the difficulty of observing real-world individual behaviors. Instead, researchers typically use aggregated outcomes or collect data through surveys and experiments. These methods, however, carry the risk that participants may report socially desirable behaviors (Brownback and Novotny, 2018; Reisinger, 2022) or adjust their actions according to what they believe the researcher expects (Ekström, 2012; De Quidt et al., 2019).³

The Charities Aid Foundation (CAF) has granted access to a unique dataset that addresses both challenges. The data include donation records from 91,665 regular donors to about 55,000 charities from 2011 to 2022. For each donor-year, I classify donations by cause and use a binary indicator for giving to environmental charities as the primary measure of pro-environmental behavior. Surveys often measure green behavior through willingness to donate, with evidence showing that green donations strongly correlate with support for climate policies (Andre et al., 2024; Dechezleprêtre et al., 2023). The CAF data, however, capture actual financial commitments and enables tracking changes in donations across multiple causes. Notably, CAF donors are likely among the wealthier people in the population, a group particularly influential in shaping climate outcomes.⁴ To evaluate whether these effects generalize, I also use data from the UK Household Longitudinal Study (UKHLS), which covers a more representative sample.

Both CAF and UKHLS provide individuals' postcodes at the most granular level, with each postcode covering around 15 households.⁵ This detailed location enables the precise assignment of people to treatment based on their proximity to floods. People are classified as directly flooded if their postcode is affected by a flood, and as indirectly flooded if their postcode is within 200 meters of a flood but not directly affected.

Exploiting geographic and temporal variations in flood incidents, I compare the change in green outcomes before and after a flood between those directly (or indirectly) affected and others from the same region whose postcodes have the same flood risk but are not flooded. The identifying assumption is that whether an individual's postcode is flooded in a given year is uncorrelated with other determinants of their green actions, conditional on individual fixed effects, region-by-year and risk-by-year fixed effects. This assumption is plausible given the unpredictability of floods among places of the same level of flood risk. To validate this assumption, I test for pre-flood trends in green donations between affected and control groups and find no statistically significant differences. I further support my estimation by showing largely consistent results using estimators that address limitations of the two-way fixed effects model in a staggered treatment setting (De Chaisemartin and d'Haultfoeuille, 2023; Roth et al., 2023) and a randomization test (Bertrand et al., 2004).

I find that people are two percentage points more likely to donate to environmental charities after experiencing a flood that directly affects their own postcode. This effect is substantial, given that only six percent of donors in the control group contribute to environmental charities. It remains statistically significant for up to three years after the flood and continues to be positive in size even six years after exposure. Repeated direct exposures further amplify this effect, with an additional flood experience leading to an even greater increase in green giving. This increase is driven specifically by donations to charities working on climate change, with no significant effect on giving to other causes, suggesting that the change is specific to climate-friendly behavior rather than a general rise in pro-sociality. In contrast, people do not change their green donations after a flood affecting their neighbors, even if they live within 200 meters, regardless of whether the exposure occurs once or multiple times. Finally, I show that the highly localized response also extends to increased support for the Green Party among a broader sample of people.

My headline results indicate an "only in my backyard" phenomenon, emphasizing the role of personal consequences of climate shocks in motivating green action. The effect is consistent with the idea that mitigating climate change is a public good, where people may have less incentive to act, especially when they do not personally bear the costs. However, directly experiencing climate shocks could make these issues feel more personally relevant, shifting climate change from a problem mainly affecting others to one affecting oneself. This relevance can operate through two broad channels: *information* (Andre et al., 2024; Deryugina and Shurchkov, 2016; Dechezleprêtre et al., 2023) and *salience* (Bordalo et al., 2020, 2022; Allcott and Rogers, 2014). Direct exposure to floods might provide firsthand information about climate change, such as the personal costs of such events.⁶ Floods can also increase the salience of personal climate risks through "availability bias", as flood threats feel immediate and emotionally urgent for those directly affected, while remaining abstract for others (Kahneman and Tversky, 1982; Deryugina, 2013; Gallagher, 2014). These channels, taken together, could explain why people with firsthand flood experience are more likely to engage in green actions.

Interestingly, I find evidence suggesting that direct flood exposure makes people less likely to see themselves as environmentally friendly. The drop in self-assessment, without a corresponding decrease in actual efforts, is consistent with people raising their expected standard of being pro-environment. This suggests a potential mechanism for the behavioral change: direct experience raises people's expectations of the environmental actions required, leading them to lower their self-evaluation and modify their actions to meet these revised expectations (Akerlof and Kranton, 2000, 2005).

³ Research also shows that people may make different decisions in the lab. For example, they are less generous with earned income than with windfall (Carlsson et al., 2013; Li et al., 2019) and less generous with out-of-pocket cash than with cash promised on a screen (Reinstein and Riener, 2012).

⁴ Baltruszewicz et al. (2023) highlights significant inequalities in carbon emissions within the UK. In 2019, the wealthiest 10% of the population consumed around three times more energy for driving and five times more for recreational activities compared to the bottom 10%.

⁵ According to Office for National Statistics (2023), there are 1.79 million live postcodes in the UK, with an average area of 0.14 square kilometers per postcode.

⁶ Moreover, floods often attract media coverage (Eisensee and Strömberg, 2007; Beattie, 2022), shaping beliefs and behaviors. For example, Gallagher (2014) shows that flood insurance take-up increases among unaffected neighbors in the same media market but not among those merely spatially close.

To better understand the highly localized response, I show that people with strong universalist values increase green giving when their neighbors are affected. This pattern suggests that the limited response is driven by those with weaker universalist—or more communitarian—values. Universalists prioritize the welfare of all people over group-based interests and thus care about both global and local problems equally (Schwartz, 2007, 2012; Cappelen et al., 2022; Enke et al., 2023). They may interpret floods affecting their neighbors as part of a global climate challenge, which aligns with my finding that the increased donations go to non-local, climate-related charities. By contrast, communitarians tend to place less weight on global problems such as climate change.

The central contribution of this paper is the finding that people behave more pro-environmentally only when personally affected by climate shocks. Previously, Dechezleprêtre et al. (2023) provide global survey evidence showing that public support for climate policies hinges on self-interest. My results suggest that those affected by floods might see greater personal benefits in reversing climate change, hence behaving more actively. This finding has an important implication: efforts to encourage green behaviors may be more effective if people are made more aware of the personal impact of climate change rather than just recognizing it as a global problem. Therefore, this paper relates to studies examining the effect of extreme climate events on green activities. Previous research often uses surveys to measure activities or elicit willingness to act (Whitmarsh, 2008; Spence et al., 2011; Bulut and Samuel, 2024). A growing body of research focuses on aggregated political outcomes, showing that extreme weather events make politicians more likely to endorse green legislation and policy reforms (Herrnstadt and Muehlegger, 2014; Gagliarducci et al., 2019). Similarly, the public tends to show greater support for climate policies (Hazlett and Mildenberger, 2020; Baccini and Leemann, 2021; Coury, 2023) and vote for the Green Party (Goebel et al., 2015; Hoffmann et al., 2022).⁷

My paper differs from this literature in two key ways. First, I use precise locations to determine individual exposure to climate events, while previous work mostly uses broader administrative units like counties or census blocks. Studying regional responses is useful when aggregated outcomes matter, such as voting for legislation (Herrnstadt and Muehlegger, 2014; Coury, 2023). Yet, the broader definition can introduce measurement errors when the focus is on individuals. For instance, people living in non-flooded areas within a county would be misclassified as treated if flood exposure is determined at the county level. I show that using precise locations to identify households directly affected is crucial for detecting behavioral nuances that broader definitions might miss.

Second, I am the first to use real-world donations to measure environmental outcomes. Liao and Junco (2022) show that extreme temperatures increase donations to Democratic candidates, who are typically pro-environment. In a lab study, Li et al. (2011) find that people are more likely to donate to an environmental charity if they perceive the previous day's temperature as unusual. Experiments and surveys are suitable for measuring one-off responses. Scharf et al. (2022) find that a fundraising appeal might simply bring forward donations despite an immediate increase for those non-fundraising charities, showing the importance of using data rich in timing and charity space to capture full responses. I focus on a setting where people have more choices in directing their money and flexibility to adjust their choices (Andreoni, 2006), unlike political decisions. I can also track people on where their donation goes for more than ten years. With these strengths, I provide novel evidence that the sizable increase in green donations due to direct climate exposure does not reduce support for other social causes, and is relatively long-lasting.

This paper also relates to research on how climate events affect beliefs and preferences. To the best of my knowledge, I am the first to look at their effects on self-assessment. Previous work shows that self-assessment is important in driving green actions (Sonenshein et al., 2014; Binder and Blankenberg, 2017), but people may overestimate their efforts (Biais et al., 2005; Burks et al., 2013; Leviston and Uren, 2020). My results suggest that direct flood experiences might lead people to adjust their self-evaluation, recognizing their efforts as insufficient. This can further motivate their actions to align with the updated beliefs (Festinger, 1957; Bandura, 1991). Most research focuses on risk perception (Gallagher, 2014; Frondel et al., 2017; Brown et al., 2018; Lohmann and Kontoleon, 2023; Djourelouva et al., 2024) and risk attitudes (Botzen and van den Bergh, 2012; Cameron and Shah, 2015; Shupp et al., 2017; Bourdeau-Brien and Kryzanowski, 2020), showing context-dependent evidence. Gao et al. (2020) show that the impact of disasters on risk perception depends on whether the actual damage exceeds or falls short of expectations. I show that flood exposure does not change perceptions of climate change as a threat to the UK. This aligns with other research showing that people with initially high risk perception are less likely to update their beliefs (Deryugina, 2013), given the broad climate awareness in the UK.

More broadly, this paper is related to studies on how adverse experiences affect prosocial behaviors. Previous research shows that natural disasters increase donations to victims (Deryugina and Marx, 2021; Scharf et al., 2022; Jayaraman et al., 2023), and health shocks lead people to reallocate their donations toward health charities (Black et al., 2021). Unlike most of these studies, I focus on a group of people who are typically wealthier and donate more. Méon and Verwimp (2022) find that a damaging storm in Belgium makes affected people more prosocial, increasing their donations to an unrelated famine relief campaign in Africa. In contrast, I show that people view flooding as climate shocks, increasing donations to charities addressing climate change, but I do not observe a general increase in prosociality, as donations to non-climate charities remain unchanged.

The rest of the paper is structured as follows. Section 2 describes the context and flooding in England. Section 3 discusses data and empirical strategy. Section 4 presents the results, and Section 5 concludes.

2. Flooding in England

Compared with other countries, awareness about climate change is notably high, but extreme weather events are actually rare in the UK. Fig. 1 shows that 70% of UK residents view climate change as a very serious threat. This level of risk perception is substantial,

⁷ While most research focuses on disaster-hit areas, Goebel et al. (2015) find that people in the UK, Germany and Switzerland increase support for the Green Party after Japan's Fukushima nuclear disaster.

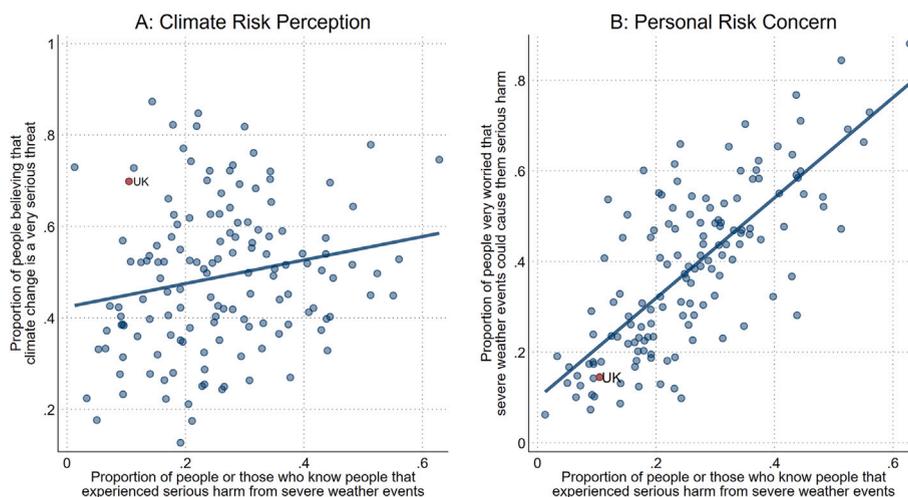


Fig. 1. Risk perception and severe weather experiences across countries. *Notes:* This figure presents scatter plots comparing the proportion of people who believe in climate risk and those worried about their personal risk from severe weather to the proportion of people exposed to severe weather events, in Figs. A and B respectively. Each dot represents a country. The line indicates the fitted OLS line. The data are from the Lloyd's register foundation world risk poll, which conducted around 125,000 interviews across 121 countries in 2021.

given that only 10% have experienced extreme weather or know someone who has (World Risk Poll, 2021). Google searches also suggest that there is no growing trend in the denial of climate change in the UK, unlike what is common in the US.⁸ However, this strong perception does not translate into adequate public actions (Climate Change Committee, 2020). One conjecture is that insufficient effort is partly due to minimal concern about the personal impact of global warming. Fig. 1(B) shows that only 15% of UK residents are worried about suffering serious harm from extreme weather.

The remainder of this section discusses the distribution of flood risk and incidents in England, whether people associate floods with climate change, and how they insure against flood risk and receive post-flood aid.

2.1. Flood risk

One out of six properties in England is at risk of flooding (Skouralis and Lux, 2023). Flood risk information is widely available, as the government publishes detailed flood maps and long-term risk assessments. Assessing flood risk is also common in property valuations. I use flood risk data provided by Fathom UK, an organization known for its leading scientists and advanced flood modeling services. Their model incorporates high-resolution terrain data, comprehensive flood defenses, and channel drainage systems (Fathom, 2021). I define flood risk as the annual probability that the flood depth exceeds 10 centimeters at a given location.⁹ Postcode-level flood risk is calculated as the mean flood risk across all places within the postcode. Appendix B in Supplementary Material provides details on the construction of the flood risk variable. Appendix Fig. B.1 in Supplementary Material shows that the main flood risk measure is positively correlated with alternative measures, including flood risk at depths above 25 centimeters and the flood risk published by the Department for Environment, Food & Rural Affairs (Defra). I use the flood risk map from Fathom as the main measure because it is more granular, with a 10-meter resolution, and better captures the risks that directly affect individuals, which people tend to care more about.¹⁰ Fig. 2(a) shows that areas along rivers, coastlines, and rural regions are more prone to flooding.

2.2. Flood occurrences

Floods in the UK have lower intensity and affect fewer people compared with other countries. Although the UK lacks catastrophic flood disasters, it does encounter smaller-scale floods, which are the most common form of flooding worldwide.¹¹

⁸ Appendix Fig. A.1 in Supplementary Material shows that the UK ranks among the top 10 high-income countries for recognizing climate risk. Appendix Table A.1 in Supplementary Material shows the top five rising search queries related to "global warming" and "climate change" in the UK and the US. It shows that the low-level climate change denial in the UK pairs with a heightened concern about its impact on future generations, in contrast to the US, which has witnessed rising queries casting doubt on the reality of climate change.

⁹ A flood depth of 10 cm is unlikely to pose a direct risk to people but can cause significant damage to buildings and their contents (Landmark Information Group, 2022).

¹⁰ The flood risk provided by Defra is at 50-meter resolution.

¹¹ In the Appendix Table A.2 in Supplementary Material, I compare floods in the UK with those in other regions, using flood and storm records between 2009 and 2022 from EM-DAT. I show that: (1) the average fatality per flood event in the UK is about half that in other European countries and a fifth of that in the US; (2) the most severe floods in the UK are less deadly than those in other countries; (3) the scale of floods in the UK is similar to those that occur around half the time in the US and more than half the time in Europe.

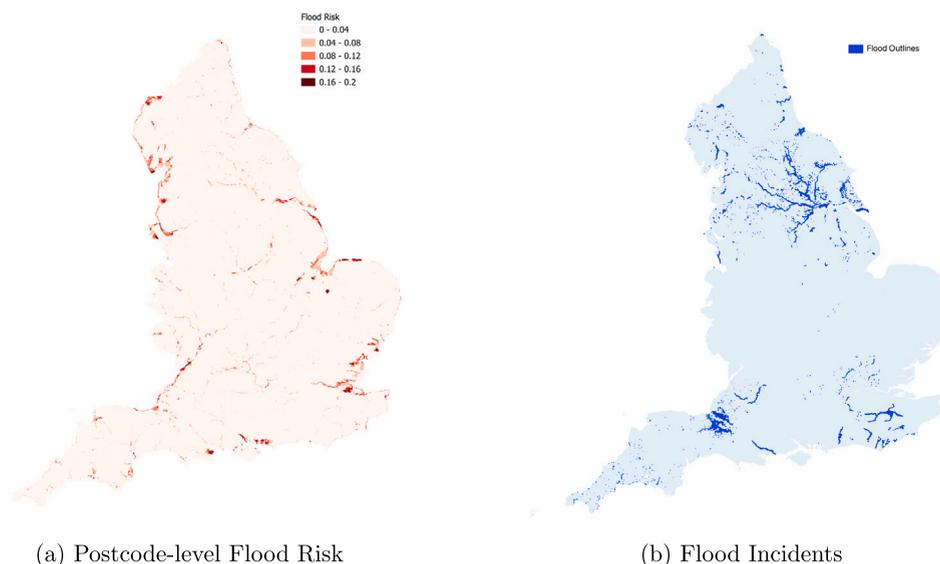


Fig. 2. Flood risk and flood incidents (2009-2022) in England. *Notes:* Flood risk in figure a is defined as the probability that the flood depth at a specific location exceeds 10 cm in any given year. The map presents the risk averaged across all 10-meter by 10-meter squares within each postcode. The high-resolution outlines of floods that have occurred since 2009 in figure b are primarily derived from aerial photographs captured during peak flooding.

I focus on floods that occurred from 2009 to 2022 in England, a period that aligns with the data on environmental behaviors observed in this study. Flood records collected by the Environment Agency through aerial photography, satellite imagery, and surveys precisely outline the affected areas at the time of peak flooding and provide clear timing for each event. The flood extent rarely aligns with the borders of administrative units, highlighting the importance of defining flood exposure using the precise location of individuals. I refine the sample by excluding potentially erroneous records. Specifically, I drop duplicate flood entries, invalid floods as determined by the Environment Agency, floods with the same event ID but conflicting start years, and floods that persisted for more than a year. This sample ensures a set of floods with accurate timing, at least at the year level.

Appendix Table A.3 in Supplementary Material shows that these flood events are typically small, affecting an average of 90 postcodes. Given that the average postcode in England covers 15 households, this amounts to around 1350 households affected per flood event. A median flood is even more localized, affecting only 12 postcodes. These floods are short-lived, with an average duration of four days, although the majority last merely a single day. The data records the detailed extent of flooded areas but lacks intensity information for each event.

Within areas of the same flood risk, the unpredictability of when and where floods occur provides a plausible natural experiment. I leverage the geographic and temporal variations in flood occurrences. First, Fig. 2(b) illustrates the distribution of flood incidents across England, showing that floods mainly occur in high-risk areas. However, some high-risk areas have remained unaffected since 2009, highlighting the randomness of flood locations within high-risk zones. Second, the yearly fluctuation in the number of flood events, shown in Appendix Fig. A.2 in Supplementary Material, makes it difficult to anticipate floods—especially when 80% of people in my data experience them only once.

2.3. Do people associate floods with climate change?

Climate change has contributed to flooding in the UK and is increasing the risk of future floods (Thompson et al., 2017; Betts and Brown, 2021; Kew et al., 2024). However, various factors may affect how people experience floods, making the link between flood events and climate change tenuous. Whether floods are perceived as climate shocks depends on whether people link flood incidents with climate change. To investigate this, I collect weekly Google Trends indices for the search terms “climate change” and “flood”, separately for each year from 2009 to 2022. For each search term and year, the week with the highest search volume is normalized to one, and the indices for all other weeks are scaled proportionally to that peak. Comparing weeks with floods to those without within the same year and month, I show that searches for climate change increase by 0.23 standard deviations during flooded weeks. The result is robust to a randomization test, with details reported in Appendix A.3 in Supplementary Material. This finding aligns with other research in the US showing that extreme weather events increase searches about climate change (Herrnstadt and Muehlegger, 2014).¹²

¹² This result is suggestive rather than definitive. The increase in searches indicates that people generally connect floods with climate change, but it does not reveal whether those who refrain from changing their behavior fail to make this connection, or recognize it but choose not to act.

2.4. Flood insurance and post-flood aid

Over 95% of properties in England are insured against flood risk, a rate comparable to some European countries like France and Switzerland but much higher than in the US (Hu, 2022). The UK public reinsurance scheme, Flood Re, allows insurers to transfer the flood risk component of their policies to a reinsurer at a reduced cost, regardless of the property's specific risk. This ensures the availability and affordability of flood insurance, particularly in flood-prone areas (Flood Re, 2023). Given that the risk component is subsidized by the government, specific flood incidents are unlikely to affect current or future insurance premiums (Garbarino et al., 2022). Therefore, the high uptake of home insurance reduces the likelihood of households facing significant financial losses from flood recovery. Alongside these insurance measures, the UK government has introduced various schemes to support households impacted by flooding. These initiatives include cash subsidies and tax discounts, provided either as general flood relief or tailored to specific flood events, helping to mitigate the immediate disruptions to the lives of those affected (Department for Communities and Local Government, 2014).

3. Empirical approach

3.1. Data

3.1.1. Environmental donation

The data come from the Charities Aid Foundation (CAF), which provides a platform for people to manage their donations. I observe all transactions made by personal donors through their CAF accounts between 2011 and 2022. This dataset has two main advantages. First, people can donate to any UK-registered charity at any time. The data avoid biases that may exist in experimental settings, such as experimenter demand bias, where participants may adjust their behavior to align with perceived expectations, and social desirability bias, where individuals report desirable actions. Unlike experiments, which often involve a limited set of charities and hypothetical choices, this dataset captures real-world giving decisions involving actual financial costs. Second, the data allow me to examine changes in donations across a wide range of causes, including potential shifts in the composition of charities people choose to support.

I focus on the 91,665 donors in England who have been active for more than seven years (the 75th percentile), as it is difficult to assess whether people who are less active on CAF stopped donating entirely or donated through other channels. Donors are considered active from the year of their first donation until the year of their most recent donation, regardless of whether they donated in the intervening years.¹³ I construct a panel dataset in which each donor appears from the year of their first donation through to the end of the dataset in 2022. If a donor does not make any donation in a given year after their first, they remain in the dataset with their donation coded as zero.

These CAF donors include individuals across the entire wealth distribution, although they are more concentrated in wealthier postcodes. Appendix Fig. D.1 in Supplementary Material illustrates this by comparing the wealth distribution of active CAF donors with that of the general population using postcode-level property prices. I also compare annual donation size between active CAF donors and those surveyed by UKHLS, showing that 80% of CAF donors fall within the top 60% of UKHLS donors ranked by donation size (see Appendix Tables D.1 and D.2 in Supplementary Material). These high-value donors are especially relevant for this study. First, they account for a large share of total giving: in the UKHLS data, the top 60% of donors account for 95% of donations. Second, wealthier individuals contribute disproportionately more to carbon emissions through their consumption (Baltruszewicz et al., 2023), meaning their behavior has greater implications for climate change.

For each donor-year, I aggregate donations by sector using the International Classification of Non-profit Organizations (ICNPO).¹⁴ Environmental charities are active in advocating for policy reform and addressing environmental issues.¹⁵ The top ten environmental charities, based on CAF donations, are listed in Appendix Table C.1 in Supplementary Material, accounting for over 70% of all donations to environmental causes. Nine of them work on issues relevant to climate change. Fig. 3 shows that environmental charities represent 2.5% of all charities receiving CAF donations but receive less than 2% of total donations. This indicates that individual environmental charities receive fewer donations than other charities. Given the small share of donors supporting environmental causes, I use a dummy variable to indicate support for environmental charities: *Green Donation* equals one if an individual donates to any environmental charity in a given year and zero otherwise.

3.1.2. Green party support and everyday green behavior

Another way to engage is to support political parties that prioritize environmental issues. The UK Household Longitudinal Study has surveyed political support since its inception in 2009, covering Waves 1 through 12, with the exception of Wave 8 (UKHLS, 2022). I define *Green Party Support* as equal to one if an individual identifies as a supporter of, or feels closer to, the Green Party, and zero otherwise.

¹³ For example, if a donor gave in 2011 and 2013, they are considered active for three years, even if they made no donation in 2012. The median active period across all donors is four years, while the 75th percentile is seven years. This suggests that many donors appear in the data only briefly, making it hard to assess whether they stopped donating or switched channels. Therefore, I focus on the top 25% of donors whose active span exceeds seven years. I also conduct a robustness check using donors who actually donated in more than seven calendar years, and the results remain consistent and significant.

¹⁴ The "5100 Environment" category in ICNPO includes charities focused on pollution control and prevention, environmental education and health, and environmental conservation (Salamon and Anheier, 1996). The classification is provided by the National Council for Voluntary Organizations.

¹⁵ For example, the Woodland Trust has planted over 50 million trees, contributing to carbon sequestration (Woodland Trust, 2024).

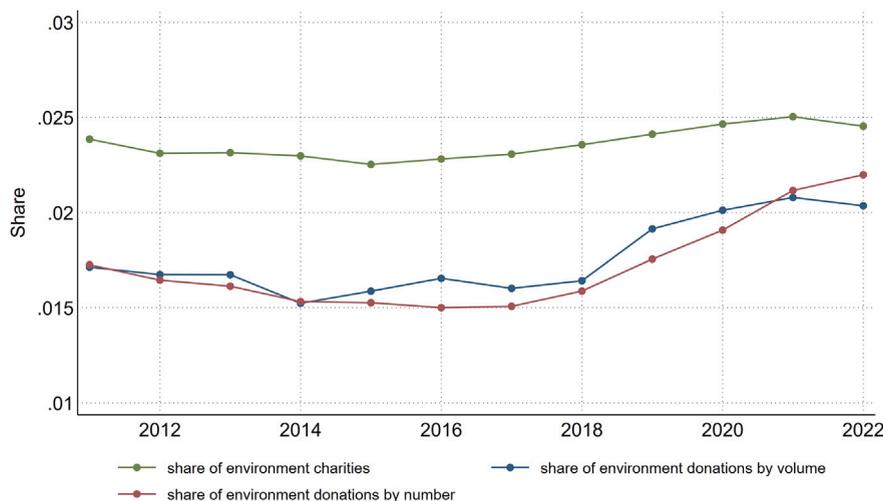


Fig. 3. Share of environmental charities and environmental donations. *Notes:* I plot the share of environmental charities that have received donations through CAF, the share of donations going to environmental charities by volume and by number of donations. In total, 55,447 unique charities have received donations through CAF, including 1297 environmental charities.

I also look at *Everyday Green behavior*. UKHLS surveyed nine specific activities related to energy usage, recycling, and transportation in Waves 1, 4, and 10. I use a two-step principal component analysis (PCA) to construct a behavioral index. Initially, I build a subindex for each behavioral dimension by retaining its first component. Then, I create an overall index using the first principal component derived from these three subindices. This two-step method avoids overemphasizing any dimension simply because it has more questions in the survey. The surveyed behaviors and the PCA loadings are reported in Appendix Table C.2 in Supplementary Material. The overall index has positive loadings on all dimensions and accounts for 45% of the variance in the subindices. Everyday green behavior is also positively correlated with other green activities (Appendix Fig. C.1 in Supplementary Material).

The UKHLS is designed to be representative of the UK population. However, among the 48,000 people who participated in at least two waves where political support was surveyed, and the 23,500 people who were present in at least two waves where everyday green activities were surveyed, only around 200 were directly flooded. The small sample of affected people limits statistical power and the ability to explore heterogeneity.

3.1.3. Environmental beliefs

Environmental actions often stem from deeply held beliefs. UKHLS asked 11 questions about these beliefs in Waves 4 and 10.¹⁶ Unlike the behavioral questions aimed at measuring environmental friendliness, the factors shaping the design of belief questions are initially unclear (Poortinga, 2022). I apply PCA with varimax rotation to combine these questions into a set of latent factors, following Jolliffe (1995).¹⁷

Retaining factors with an eigenvalue above one results in four factors, closely related to what sociologists have considered important in driving green behaviors (Stern, 2000; van Valkengoed et al., 2022). I assign names to each factor accordingly.¹⁸ The factor loadings, presented in Appendix Table C.3 in Supplementary Material, show that the retained factors explain around half of the variation in the original variables. Factor 1 captures the belief in an individual's capacity to impact climate change (*Self-Efficacy*); Factor 2 reflects whether respondents attribute responsibility for the climate crisis to themselves (*Personal Responsibility*); Factor 3 captures the perception of whether people in the UK will be affected by climate change (*Risk Perception*); and Factor 4 reflects the extent to which a respondent perceives their lifestyle as sufficiently green (*Self-Assessed Greenness*). Fig. 4 and Table C.4 in Supplementary Material show a strong correlation between these four environmental beliefs and green behaviors, which motivates me to investigate changes in beliefs as potential drivers of behavioral responses.

¹⁶ Some questions were asked in Wave 1 as well, but constructing a belief index using PCA requires observations with all variables.

¹⁷ The distinction in constructing behavioral and belief indices reflects a conceptual difference between survey questions on behavior and beliefs rather than a mechanical difference in the PCA procedure. For behaviors, the survey questions are designed to capture three clearly defined and ex ante distinct domains: energy consumption, recycling, and transport. To ensure that each domain contributes equally to the overall behavioral index, I first construct three sub-indices, one for each domain, and then aggregate them into a final behavioral index. This two-step approach prevents domains with more items or higher variance from mechanically receiving greater weight. By contrast, the underlying dimensions of environmental beliefs are not clearly defined ex ante, so I rely on a single PCA with varimax rotation to let the data identify the relevant belief dimensions, with the rotation used to obtain components that are as interpretable and orthogonal as possible by construction. The varimax rotation assumes orthogonal latent factors, enabling each variable to load more strongly on a specific factor.

¹⁸ Here are articles mostly in social psychology that discuss these four factors. Self-efficacy: Bandura (1982), Koletsou and Mancy (2011); personal responsibility: Berkowitz (1984), Stern et al. (1999); risk perception: Grothmann and Patt (2005); self-assessed greenness: Binder and Blankenberg (2017)

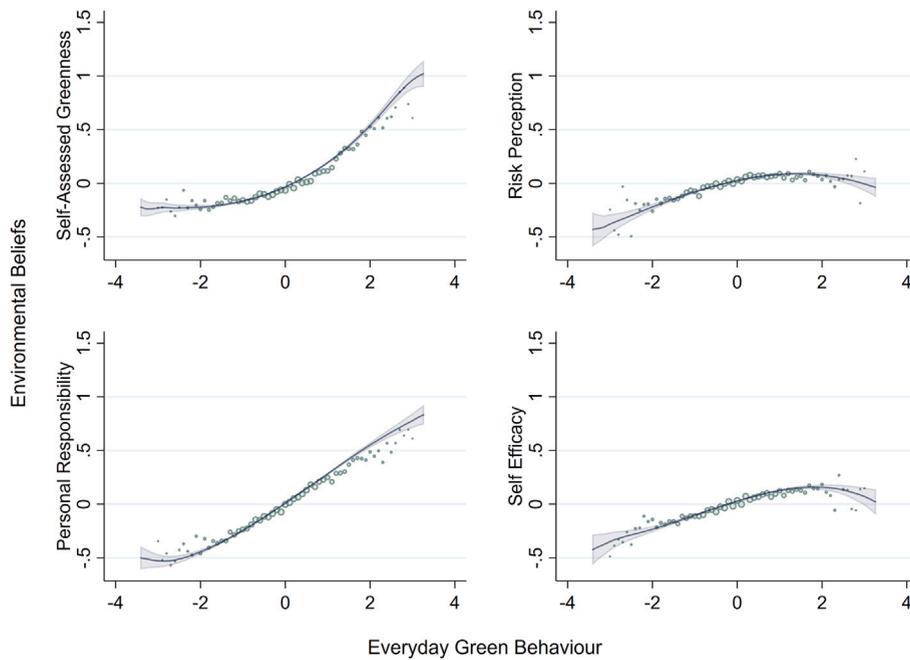


Fig. 4. Correlation between environmental beliefs and everyday green behavior. *Notes:* *everyday green behavior* indicates the level of environmental friendliness of everyday activities. Individuals are binned in increments of 0.1 based on the value of *everyday green behavior*. The x-axis represents these bins, while the y-axis represents the mean value of each variable across individuals within each bin. *Self-efficacy* refers to one's belief in their own capacity to behave in ways necessary to attenuate climate change; *personal responsibility* refers to the belief that one ascribes the responsibility for climate change to themselves; *risk perception* refers to the belief in the risk of climate change; *self-assessed greenness* refers to whether one considers oneself environmentally friendly enough. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

3.1.4. Moral values

To examine the role of moral values in shaping responses, I use data from the British Election Study (BES), a survey designed to be cross-sectionally representative of the UK public, with around 30,000 respondents in each wave. I focus on two variables related to universalist values: respondents' views on globalisation (“Do you think globalisation is a good or a bad thing?”) and their sense of local attachment (“Do you feel a sense of belonging to your community?”). The smallest geographical unit available for respondents' addresses is the parliamentary constituency. In England, there are around 540 such constituencies. I therefore average responses at that level and apply PCA to capture universalist versus communitarian values. The details of the measure are discussed in Section 4.4.

3.2. Descriptive statistics

People living in high versus low flood-risk areas exhibit differences in pro-environmental actions and social characteristics. Fig. 5 shows that individuals in high flood-risk areas are more likely to support environmental charities, vote for the Green Party, and adopt a green lifestyle. These observed associations suggest that living in high-risk areas may influence pro-environmental attitudes, or reversely that pro-environmental people may self-select into these areas. Table 1 shows socio-demographic differences across these groups, using UKHLS data. Residents in high-risk postcodes have slightly higher monthly incomes (£1910 versus £1766) and are more likely to hold university degrees (27% versus 25%). Additionally, Conservative Party supporters are more concentrated in high-risk areas. These differences underscore the need for within-individual comparisons to control for these time-invariant characteristics that might affect giving decisions.

3.3. Estimation strategy

I use a difference-in-differences design to estimate the effect of flood exposure. Treatment depends on the proximity of floods to the postcodes where people live. I classify people as *directly* affected if a flood affects their postcode and as *indirectly* affected if a flood affects neighboring postcodes within a 200-meter radius but not their own postcode.¹⁹ I compare changes in environmental outcomes before and after a flood between people affected (directly or indirectly) and those from the same region whose postcodes have the same flood risk but are unaffected. I extend the radius to examine the effect of varying distances from the flood.

¹⁹ Keep the definitions for *direct* and *indirect* exposure in mind when interpreting the results, as I use these terms for simplicity when discussing the estimation strategies. While I use a very small unit to define flood exposure, it is still possible that individuals in a flooded postcode are not personally affected. However, if only neighboring postcodes are flooded, their properties are certainly not directly affected.

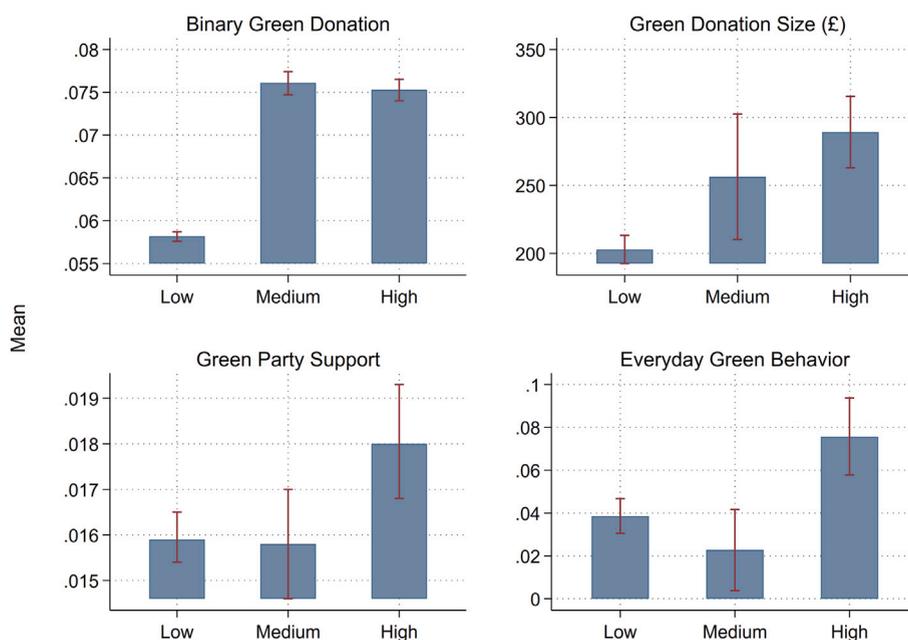


Fig. 5. Mean of environmental behaviors by flood risk. *Notes:* The figures are based on non-flooded observations. *binary green donation* indicates whether an individual gives to environmental charities in a year. The sub-figure on *green donation size* is conditional on positive donations that have been made to environmental charities. *everyday green behavior* indicates the level of environmental friendliness of everyday activities. *green party support* indicates whether an individual considers himself a supporter or feels closer to the green party. Flood risk is defined as the probability that the flood depth at a specific location exceeds 10 centimeters in any given year. Individuals are grouped into three categories based on the flood risk of their postcode. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Table 1
Descriptive statistics on demographics by flood risk.

	All	Low risk	Medium risk	High risk
Monthly Gross Income (£)	1806.16 (4381.59)	1765.92 (4417.14)	1868.01 (2598.59)	1948.99 (5387.97)
Age	47.74 (18.57)	47.41 (18.57)	48.78 (18.55)	48.43 (18.56)
Female	0.54 (0.50)	0.54 (0.50)	0.54 (0.50)	0.54 (0.50)
University Degree	0.26 (0.44)	0.25 (0.43)	0.26 (0.44)	0.28 (0.45)
Urban Address	0.81 (0.39)	0.85 (0.36)	0.71 (0.46)	0.71 (0.45)
Conservative Party Support	0.21 (0.40)	0.19 (0.40)	0.24 (0.42)	0.24 (0.43)
Obs.	385,893	278,299	51,468	56,126

Notes: UKHLS provides demographic information of their respondents. Conservative Party Supporter indicates if a respondent considers himself a strong supporter of or feels closer to the Conservative Party. Flood risk is defined as the probability that the flood depth at a specific location exceeds 10 centimeters in any given year. Individuals are grouped into three categories based on the flood risk of their postcode: Low (flood risk = 0), Medium ($0 < \text{flood risk} \leq 0.001$), and High (flood risk > 0.001).

Both CAF and UKHLS provide personal addresses at the smallest postcode level, with each postcode containing, on average, only about 15 households.²⁰ This granularity allows for a more precise identification of people affected by floods, marking an improvement over previous work. By definition, 734 CAF donors (around 1%) were directly treated between 2011 and 2022, while 1685 donors (around 2%), who were located within 200 meters of flooded areas, were indirectly treated. I report the number of people who switched their treatment status to directly or indirectly flooded by year in Appendix Tables E.1 and E.2 in Supplementary Material.

²⁰ CAF directly provides donor postcodes. The UKHLS offers a proxy for household location, where all households within a given postcode share the same proxy location. I match this proxy household location with its corresponding postcode boundary using the ONS postcode directory.

The main specification is:

$$Y_{it} = \beta_1 F_{it}^{direct} + \beta_2 F_{it}^{indirect} + \alpha_i + \gamma_{rt} + \delta_t R_i + u_{it}, \quad (1)$$

where Y_{it} is the outcome variable. F_{it}^{direct} equals one if individual i 's postcode is directly flooded in year t and remains one for all subsequent years; otherwise, it equals zero. $F_{it}^{indirect}$ is defined similarly for individuals whose neighboring postcodes within 200 meters were flooded, but not their own postcode. Once people experience a flood, they remain treated from the year of their first exposure onward. β_1 and β_2 capture the effects of direct and indirect flood exposure.²¹ Standard errors are clustered at the postcode level in the baseline specification. As robustness checks, I also report results clustering at the postcode area level and using Conley standard errors, which adjust for spatial correlation within 100 kilometers. I discuss these standard errors in the robustness checks section.

To make within-individual comparisons, I include individual fixed effects (α_i) to account for time-invariant differences across individuals. To compare people from the same region who face the same flood risk, I include region-by-year fixed effects (γ_{rt}) and flood risk-by-year fixed effects ($\delta_t R_i$). The region-by-year fixed effects control for time-varying region-specific trends common to all people within a region, such as evolving economic conditions. For instance, economic trajectories vary across regions and may shape environmental awareness differently.²² While it may absorb region-level responses to floods, such as increased environmental campaigns, my goal is to identify the effect of personal flood exposure, conditional on these regional responses. I exploit variation in the precise distance between where people live and where floods occur to achieve this. The flood risk-by-year fixed effects control for trends in environmental outcomes and flood exposure that are common across people facing the same flood risk. I use a continuous measure of flood risk in the main analysis and consider alternative measures in robustness checks.

The identifying assumption is that flood exposure is random within areas that face the same level of flood risk. Under this assumption, flood exposure is unrelated to other determinants of green behaviors, conditional on individual, region-by-year, and flood risk-by-year fixed effects. This implies that, absent flood exposure, people who were flooded would have followed the same trend as those from the same region with the same flood risk but who were not flooded.

To support this assumption, I compare the trends in green donations across three groups: directly treated, indirectly treated, and the control group. Since the comparison is made within regions and flood risk areas, I first remove year-specific effects shared by people from the same region and facing the same level of flood risk, by regressing green donation on region-by-year and flood risk-by-year fixed effects, and retain the residuals. I then calculate the yearly average residual green donation separately for each group, excluding observations when treated individuals were actually exposed to a flood. Fig. D.3 in Supplementary Material shows that, without flooding, the three groups follow roughly similar trends. As a more rigorous test, I find no statistically significant differences in pre-flood changes between the treatment and control groups, as shown in Fig. 9.

To ensure the robustness of the estimation, I perform two additional sets of checks. First, recognizing the small size of the treatment group and potential serial or spatial correlation, I conduct a nonparametric randomization test, whose inference does not rely on asymptotic assumptions. The results support my main estimation. Second, I use more restrictive control groups for comparison.²³ Specifically, I make comparisons among people from the same postcode area with the same level of flood risk, by including postcode-area-by-year fixed effects to account for year effects specific to an area.²⁴ I also narrow the sample by only including those residing 200 to 400 meters from the floods as the control group, as they are more likely to share similar characteristics if living in places with similar flood risk. I discuss the results in detail in the robustness section.

The two-way fixed effects regression can produce biased estimates, as it involves using people treated earlier as controls for those treated later (Goodman-Bacon, 2021; De Chaisemartin and d'Haultfoeuille, 2023; Roth et al., 2023). This issue arises when treatment effects vary across individuals and over time, as those treated earlier may follow different trends in their post-treatment periods compared to those treated later, making them unsuitable as a comparison group. Additionally, the common trend assumption might not hold because I define treatment status based only on floods occurring after 2009. If someone in the control group experienced a flood before 2009 and treatment effects vary over time, their trends may differ from those who were treated later. To address these concerns, I show in Fig. 6 and Appendix Fig. F.1 in Supplementary Material that the two-way fixed effects estimates align with alternative heterogeneity-robust estimators.

Finally, I address the problem of movers and sample attrition. Unlike most studies that make comparisons at the administrative unit level, I compare individuals directly and hence avoid the issue of changing population compositions within a unit. However, for CAF donors, I only have addresses at the time of registration. If an individual moved to a postcode after it was affected by a flood, or left a postcode before a flood occurred, they would be incorrectly allocated to the treatment group. Relatedly, for survey responses, moving could lead to sample attrition, potentially biasing the results if those who stay respond differently from those who move after

²¹ I choose the absorbing specification to ensure a consistent estimation framework across all outcomes, including those observed too sparsely to estimate an event-study specification. For instance, environmental beliefs are measured only in two waves six years apart. The specification should be interpreted as capturing the average change in behavior before and after one's first flood exposure within the observed period, rather than as assuming strictly permanent effects.

²² For example, previous research suggests that people are more likely to prioritize the environment under good economic conditions (Gagliarducci et al., 2019; Hoffmann et al., 2022).

²³ I cannot directly test whether flooded and non-flooded people are comparable in their demographics, since I do not observe donor characteristics.

²⁴ In the UK, postcodes are hierarchical. A full postcode (e.g., BS8 1TU) identifies a small group of addresses—the smallest geographic unit in the system. The first one or two letters form the *postcode area*, which is the largest unit in the system and typically corresponds to a major city or region. For example, BS denotes the Bristol postcode area. There are 124 postcode areas in the UK. These areas are nested within broader administrative regions. In England, these are the nine standard regions: North East, North West, Yorkshire and the Humber, East Midlands, West Midlands, East of England, London, South East, and South West.

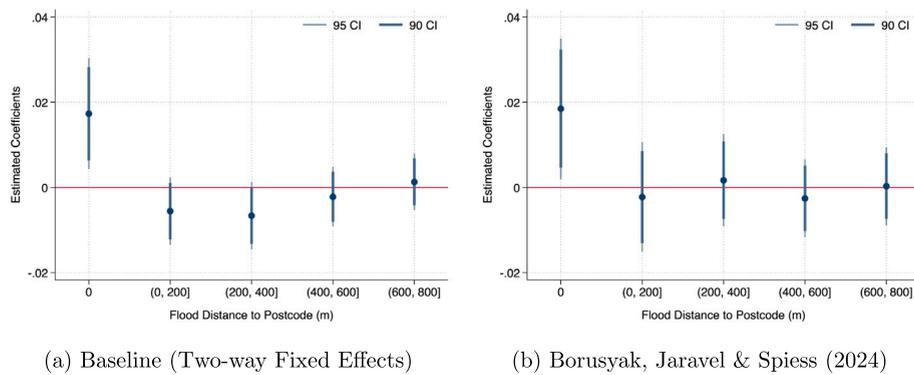


Fig. 6. The effect of flood exposure on green donation. *Notes:* This figure plots the estimated effects of flood exposure at various distances on the probability of giving to environmental charities. The subfigures plots the coefficients obtained using the two-way fixed effects model, and the imputation-based approach proposed by Borusyak et al. (2024) with the Stata command `did_imputation`. The figure presents point estimates along with their corresponding 90% and 95% confidence intervals, with standard errors clustered at the postcode level. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

a flood. To address these concerns, I show in Appendix Table F.12 in Supplementary Material that flood exposure does not affect relocation by looking at those who changed their address but remained in the survey. I also show that flood exposure is not correlated with survey attrition in Appendix Table F.13 in Supplementary Material.

4. Results

4.1. The effect of flood exposure on environmental behaviors

This section reports the results of the effects of flood exposure on environmental behaviors. I visualize the main estimates below and report them in full in Appendix F.1 in Supplementary Material.

4.1.1. Environmental donations

Fig. 6 shows that people are two percentage points (ppt) more likely to give to environmental charities after exposure to a flood directly affecting their own postcode. However, there is no effect on green giving after indirect exposure to a flood affecting their neighbors. Fig. 6(a) shows the results from the baseline two-way fixed effects model. Despite its flexibility, the method has limitations in designs where people are exposed to floods at different times. To address the concern, I show consistent results in Fig. 6(b) using an imputation-based estimator proposed by Borusyak et al. (2024),²⁵ and in Appendix Fig. F.1 in Supplementary Material using estimators by others.²⁶

Given that only six percent of people in the control group give to environmental causes, the effect of direct exposure on the probability of green giving is substantial.²⁷ In contrast, Fig. 6 shows no significant impact from floods occurring at distances of 200, 400, 600, and 800 meters. I also cannot reject the hypothesis that all coefficients of exposure to a flood between 200 and 800 meters are equal to zero, given the F-statistic of 1.26, reported in Appendix Table F.1 in Supplementary Material. This suggests an “only-in-my-backyard” phenomenon, where people act only when their immediate interests are threatened. This might explain the paradox of widespread recognition of climate change as a severe threat in the UK, yet insufficient action toward tackling climate change.

Fig. 7(a) shows that the increase in donations is primarily directed toward charities addressing broader, non-local environmental issues related to climate change. Focusing on the ten largest environmental charities, none of which address specific local concerns such as floods, and most of which have missions or activities linked to climate change, I find that people are more likely to support these organizations following exposure to a flood affecting their postcode. In addition, using the National Council for Voluntary Organizations’ classification of charities that primarily benefit local areas, I show that the rise in donations is not directed toward local charities, such as those focused on waterway conservation. Finally, due to the lack of a refined classification system for environmental charities, I manually reviewed the mission statements, programs, and campaigns of the top 100 environmental charities, which account

²⁵ This method uses data from untreated observations—both untreated individuals and untreated time periods for treated individuals—to predict counterfactual outcomes for each treated individual-year observation. The actual outcomes are then compared with the predicted counterfactuals to estimate the treatment effects. This approach is equivalent to fitting a regression of the outcome on individual and time fixed effects using only untreated observations, and then using that regression to predict the counterfactual outcomes for treated observations. When the parallel trends assumption holds across all periods, it has greater efficiency compared to other heterogeneity-robust estimators (Roth et al., 2023).

²⁶ Callaway and Sant’Anna (2021) propose an estimator using the never or not-treated as the control group for each treated group. The method is designed for staggered, absorbing treatment settings. Similar but applicable to a wider setting, the estimator proposed by De Chaisemartin and d’Haultfoeuille (2024) compares the evolution of outcomes for treated individuals from the last untreated period to those whose treatment status was the same as the treated group but remained unchanged.

²⁷ I also report the effect on the size of green donation conditional on giving to environmental charities in Appendix Table F.2 in Supplementary Material. I do not find systematic changes at the intensive margin.

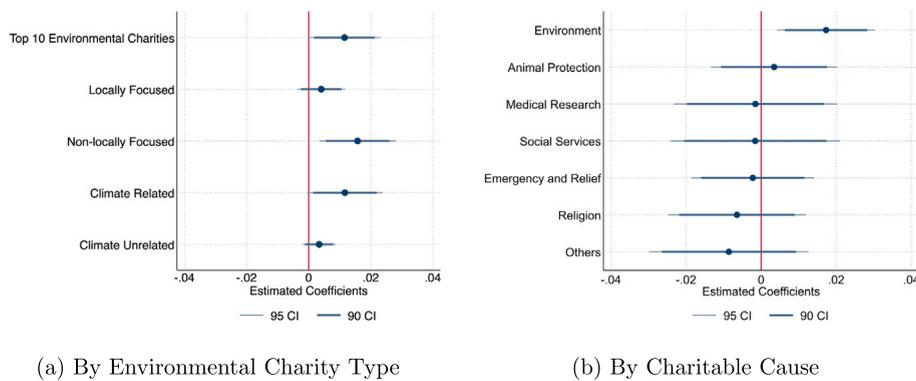


Fig. 7. The effect of direct flood exposure on the probability of giving. *Notes:* I plot the coefficients of direct flood exposure on giving to different groups of environmental charities and to charities working in various cause areas, along with confidence intervals. Standard errors are clustered at the postcode level. Specifically, panels (a) and (b) plot coefficients from separate regressions that share the same specification format but use different outcome variables. The outcomes for panel (a) include: whether the donor gave to the top ten environmental charities; whether the donor gave to environmental charities that primarily benefit local or non-local areas, based on classifications from the National Council of Voluntary Organizations; and whether the donor gave to climate-related or non-climate-related charities. I manually classify the top 100 environmental charities based on whether their missions, activities, or campaigns explicitly mention climate change. In panel (b), charities are mapped to their cause areas according to the international classification of non-profit organizations.

for 95% of all environmental donations. I classify a charity as climate-related if its materials explicitly reference climate change. The results show that donations to these climate-focused organizations increase, while donations to other environmental charities remain largely unchanged.²⁸

In addition, Fig. 7(b) shows that direct flood exposure increases support for climate change without reducing support for other cause areas. First, people are not more likely to donate to charities involved in post-flood aid, such as social service or emergency relief organizations, perhaps because these services in the UK are typically provided by the government. Second, contrary to [Sinding Bentzen \(2019\)](#), who argues that people may turn to religion to make sense of unexpected events, I do not find significant changes in donations to religious charities. This suggests that if people link floods to climate change, they may not turn to religiosity for explanation. Finally, donations to charities less likely connected to floods, such as those focused on animal protection or medical research, remain unaffected, which also validates my results through placebo outcomes. This pattern differs from the case of health shocks: [Black et al. \(2021\)](#) show that experiencing one leads people to shift their donations from other causes to health charities.

Are people as responsive to additional flood experiences as they are to their first? Repeated exposure can amplify concerns about the severity of floods affecting themselves, increasing environmental actions. On the other hand, it may feel less shocking and undermine belief in the effectiveness of individual actions, reducing their effort. Among CAF donors, 149 people experienced floods more than once over the decade (20% of those directly affected). I compare their donations following the first and second exposures to their donations prior to the first exposure. Fig. 8 shows that the second exposure increases green giving by 3.8 percentage points, in addition to the effect of first exposure. It is nearly double the first exposure effect. In contrast, seeing neighbors being flooded multiple times does not have a significant effect. This suggests that people become more pro-environment, the more they are personally affected by environmental disasters.

Finally, I examine the persistence of the effect, using the estimator from [De Chaisemartin and d'Haultfoeuille \(2024\)](#). This method uses the last untreated period for treated individuals as the baseline. It then compares the evolution of outcomes from the baseline period to a given year t between treated individuals (treatment group) and those who were untreated both at the baseline and in year t (control group). The estimator aggregates treatment effects across groups by the number of years since their initial treatment. When estimating the effects of direct exposure, people exposed to floods indirectly are excluded from the sample to ensure they are not part of the control group. Similarly, when estimating the effects of indirect exposure, those directly flooded are excluded.

Fig. 9 shows that the treatment effect remains positive in magnitude six years after the flood, while the pattern suggests that the effect is diminishing over time. Within two years after direct flood exposure, the average yearly probability of giving to environmental charities increases by 1.7 percentage points (reported in Appendix Table F.6 in Supplementary Material). The rise in green giving is statistically significant during the first three years following exposure; in the fourth year, the effect becomes insignificant, with a p -value close to 10%. The loss of significance reflects both a decaying effect and the limited sample size, as donors exposed in later years are less likely to be observed four years post-treatment. I show that most donors, once they give to a specific charity, do so for only one consecutive year, with 70% giving to the same charity for two or fewer consecutive years (Appendix Fig. D.2 in Supplementary Material). This suggests that the persistence in green giving is less likely to be driven by the inherent tendency of highly engaged donors to give continuously. Additionally, Appendix Fig. F.2 in Supplementary Material shows no significant difference in green donations over time between individuals living 200 to 800 meters from flood zones and those living farther away. This provides

²⁸ There is also the possibility that charities focusing on climate change are larger and more established organizations and therefore more visible to the public, with greater fundraising capacity. Such organizational capacity may itself shape public responses to environmental disasters.

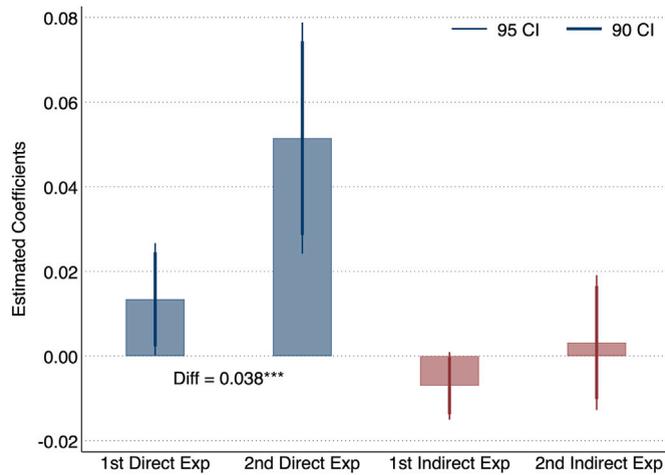


Fig. 8. The effect of multiple flood exposures on green donation. *Notes:* First flood exposure (1st Exp) indicates the period following an individual’s first exposure to a flood but before their second experience. Second flood exposure (\geq 2nd Exp) denotes the period after their second flood experience. Around 80% of people are exposed to floods directly only once, while 20% are exposed more than once. I report the number of people by the number of times they have been exposed to floods in Appendix Table E.1 in Supplementary Material. The estimation is to compare behaviors post first and post second flood experience to behaviors before the first exposure, controlling for individual fixed effects, year-specific flood risk effects, and region-by-year fixed effects. Standard errors are clustered at the postcode level. The vertical line plots the 90% and 95% confidence intervals. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

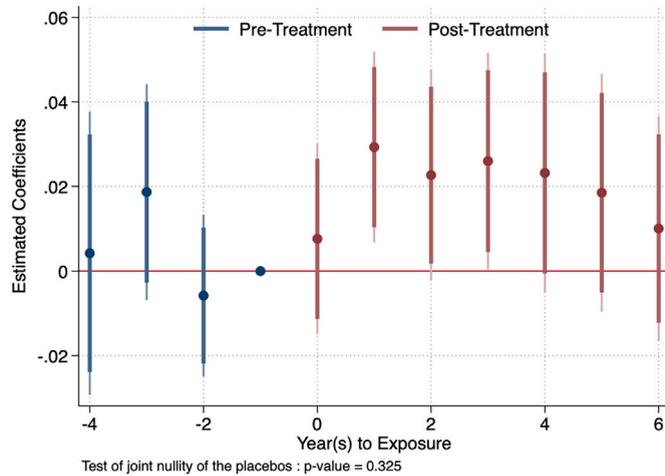


Fig. 9. Event study of direct flood exposure on green donations. *Notes:* I use the estimator proposed by De Chaisemartin and d’Haultfoeuille (2024). The year before flood exposure is set as the baseline period. I then compare the changes in outcomes from the baseline period to t years later between those who were treated and those who remain untreated by t years after the baseline. I plot the point estimates and the 90% and 95% confidence intervals, with standard errors clustered at the postcode level. The three years before the baseline are chosen as the placebo period, and the p-value for the joint test that all placebo coefficients are equal to zero is reported at the bottom. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

further support for the main result: people do not become more pro-environmental in their giving behavior after floods that affect nearby neighbors but not themselves.

Direct flood exposure has a more lasting effect on green donations, compared with the existing literature. Previous studies show that donations to fundraising appeals for major disaster reliefs last only up to 15 weeks (Jayaraman et al., 2023; Scharf et al., 2022). The transient response likely reflects the temporary and immediate need for post-disaster aid. By contrast, the more persistent effect in my setting may reflect the fact that climate change is an enduring challenge, in the sense that flood exposure can heighten concerns about the personal consequences of climate change for a longer period. Allcott and Rogers (2014) show that personalized energy feedback with social comparison information can reduce electricity usage within days, though these effects often fade after a few months. They also find that repeated interventions have effects five times smaller than the initial treatment—unlike the incremental effect of repeated flood exposures, which is greater than the first exposure. Both Scharf et al. (2022) and Allcott and Rogers (2014) attribute these short-lived effects to a cue-based mechanism, where behavior reverts to baseline once the salient cue is removed. Similarly, Ito et al. (2018) find that moral persuasion affects energy use for only three months beyond the treatment period, whereas economic

incentives last longer. Much like the appeal of personal economic benefits, my findings suggest that climate-related experiences with personal stakes can be powerful motivators for more sustained pro-environmental actions.

4.1.2. Green party support and everyday green behavior

Fig. 10(a) shows that direct flood exposure increases support for the Green Party by two ppt, which is a large effect considering only 1.6% of people support the Green Party. However, indirect exposure has no effect. Moreover, in Appendix Table F.3 in Supplementary Material, I show that people are three ppt (p-value = 0.16) more likely to support the Labour Party, with no obvious change for the Conservative Party. This aligns with the Labour Party’s greener stance on environmental policies. Additionally, I show that flooded people do not become more interested in politics, implying that flood exposure heightens public awareness of environmental issues. It is worth noting that the UKHLS sample is more representative of the UK population, and the result suggests that the localized response is likely a more general pattern rather than one specifically driven by donors.

Using data from all three waves (2009, 2012, and 2018) that survey everyday green activities, Fig. 10(b) shows an increase in daily green activities after a flood affects one’s own postcode. However, this increase is not statistically significant, which could be due to the large gap between waves when people are surveyed. For instance, among the mere 200 people who were directly flooded during this period, I only observe later outcomes at the time of the survey for those who were treated earlier. If the treatment effect decays over time, I might not observe changes in everyday behavior despite its presence.

Fig. 10(b) shows that exposure to a flood affecting neighbors within 200 meters might increase everyday green behavior. However, when testing the null hypothesis that all coefficients of indirect exposure within 800 meters are equal to zero, I cannot reject this hypothesis, as indicated by an F-statistic of 0.957, reported in Table F.1 in Supplementary Material. Furthermore, in Table F.16 in Supplementary Material, when controlling for postcode area-by-year fixed effects, the effect of indirect exposure within 200 meters loses its statistical significance. This suggests that when comparing people living in the same city, there is no differential trend of everyday activities between those indirectly flooded and those not flooded after a flood. Therefore, I caution against interpreting the indirect exposure effect as definitive evidence.

4.1.3. Discussion

First, I consider whether economic constraints might explain the results. If floods negatively affected household income, standard economic theory would predict a decline in charitable giving. However, using UKHLS data, I find no significant impact of either direct or indirect flood exposure on self-reported income (Appendix Table F.5 in Supplementary Material) or on the amount of total giving (Appendix Table F.10 in Supplementary Material). This is consistent with the UK context, where flood insurance coverage is high and premiums are tied to property values rather than flood risk, as the risk component of insurance is subsidized by the government.

A second set of possible channels relates to how charities and the media respond to floods. Their actions may influence giving behavior, but these mechanisms are less likely to fully explain the highly localized responses observed in the data.

Floods may prompt charities to step up fundraising and target households in affected areas. An analysis of tweets from major environmental organizations between 2017 and 2022 indicates that charities are more likely to mention floods and climate change in weeks when floods occur, relative to other weeks in the same month and year (see Appendix Table F.4 in Supplementary Material). This suggests that charities use social media to raise climate awareness. Yet while such messaging is broadly visible, my data show behavioral responses only among those directly affected by flooding. This contrast provides suggestive evidence that social media messaging may increase general awareness, but only those directly affected translate it into action. Regarding targeted fundraising, charities may adjust campaigns based on observable characteristics such as location or wealth, but such strategies are unlikely to selectively reach donors on the basis of personal traits or moral values.

Local media coverage can also raise awareness of flood events and may influence public environmental behavior. However, such effects are unlikely to be the main driver of my results. Local media typically span entire cities or regions, so broad responses to such

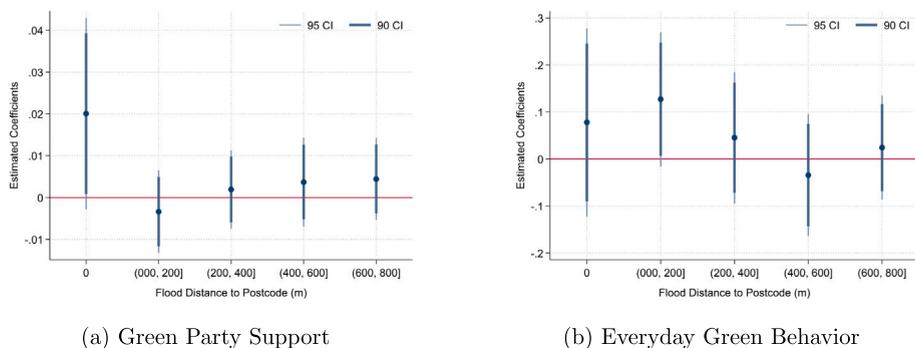


Fig. 10. The effect of flood exposure on other green behaviors. Notes: Green party support indicates if one considers himself a supporter of the green party. Everyday green behavior is a standardized outcome, measuring the overall environmental friendliness of people’s everyday activities related to transportation, recycling, and energy consumption. The x-axis represents the distance at which they were exposed to a flood. I plot the coefficients from estimating Eq. (1) and the 90% and 95% confidence interval. Standard errors are clustered at the postcode level. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

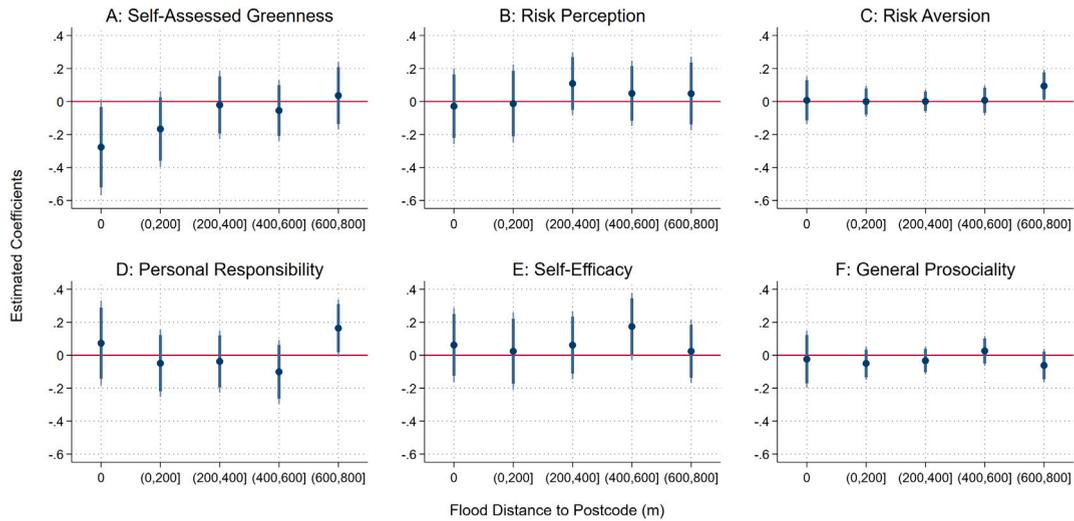


Fig. 11. The effect of flood exposure on environmental beliefs and preferences. *Notes:* I plot coefficients and 90% and 95% confidence level from estimating Eq. (1) on beliefs and preferences. All outcome variables are standardized, and from the UKHLS. *Self-assessed greenness* indicates whether one considers oneself environmentally friendly enough; *Risk perception* refers to the belief in whether people in the UK will be affected by climate change; *Personal responsibility* relates to the belief that one ascribes the responsibility for climate change to themselves; *Self-efficacy* denotes one's belief in their own capacity to behave in ways necessary to attenuate climate change. *Risk aversion* is proxied by the purchase of contents insurance; *General prosociality* is proxied by whether an individual makes a donation in the year. Standard errors are clustered at the postcode level.

reporting would likely be absorbed by region-by-year or city-by-year fixed effects. The fact that the rise in donations is concentrated only among those living directly within the flooded postcode—even compared with nearby residents within 400 meters—suggests that the effect primarily reflects direct exposure to floods rather than media spillovers.

4.2. The effect of flood exposure on beliefs and preferences

I explore mechanisms behind the green reaction, presenting the effect on environmental beliefs and preferences in Fig. 11, with full results in Appendix F.2 in Supplementary Material.

4.2.1. Self-assessed greenness

I show that people whose postcodes are affected by floods are 0.305 standard deviations less likely to view themselves as mostly environmentally friendly, whereas neighboring floods do not have a statistically significant effect on self-evaluation. Self-assessment depends on both individuals' actual efforts and their expectations of what they should do. Since their green behavior did not decrease, the lower self-assessment likely reflects a rise in expectations about the range of activities considered sufficient. In other words, experiencing environmental shocks with personal consequences may prompt people to update their expectations of environmental behavior. Appendix Table F.7 in Supplementary Material shows that the result loses significance at the 10% level (p -value = 0.12) when standard errors are clustered at the postcode area level, but remains statistically significant when using Conley standard errors adjusted for spatial correlation. The coefficient is robust when adjusting for multiple hypothesis testing.²⁹ The result is robust to two alternative measures of self-assessed greenness: one based on the simple average of the two relevant variables, and the other constructed using principal component analysis of only the two questions, retaining the first component (see Appendix Table F.8 in Supplementary Material). Considering the small number of treated individuals, I perform a randomization test (Roth et al., 2023), which does not rely on asymptotic assumptions about data correlation, and it also shows the result is statistically significant (p -value = 0.088).³⁰

4.2.2. Risk perception and risk preferences

Fig. 11(B) shows that flood exposure does not change perceptions of general climate threat affecting the UK, as the effects of both direct and indirect exposure are close to zero. The precise null effect suggests that failing to reject the null hypothesis is not due to weak statistical power from the small sample size. This finding aligns with the fact that a large portion of the UK population already acknowledges the threat of climate change (as shown in Fig. 1) and that climate change denial is minimal in the UK (as shown in

²⁹ I apply Bonferroni corrections across the four main environmental belief outcomes, constructed from the 11 belief questions in the UKHLS survey and shown in Fig. 4. The effect on self-assessed greenness remains statistically significant ($p = 0.020$) when using Conley standard errors.

³⁰ The analyses also suggest that the effect on self-assessed greenness is less likely to be a random coefficient. First, this measure is constructed as a meaningful component that underlies multiple variables. Second, the randomization test suggests that the observed effect is less likely driven by chance.

Appendix Table A.1 in Supplementary Material). These results are consistent with Deryugina (2013), who shows that updates in risk perception may depend on the initial level of risk perception.

I also do not find changes in financial behaviors that are indicative of risk preference. I look at the purchase of household contents insurance as a proxy, following what is common in the literature (Gao et al., 2020; Shai, 2022). In the UK, insurance premiums are not expected to change significantly after floods, as the effect of flood incidents on insurance premiums is transferred to the government. Therefore, any change in insurance purchases is unlikely due to a price effect. Additionally, I use the proportion of investments in high-risk assets, such as company stocks, and low-risk assets, like national savings, as alternative indicators for risk preference. Appendix Table F.9 in Supplementary Material shows that none of these measures change in a statistically significant way after flood exposure.

4.2.3. Personal responsibility, self-efficacy and prosociality

Subfigures D and E in Fig. 11 show that neither direct nor indirect flood exposure within 200 meters alters people's beliefs about their contribution to climate change or the efficacy of their actions in influencing its trajectory. Specifically, exposure to a flood within 600 meters of one's postcode has no effect on the recognition of personal responsibility, despite a positive effect from floods occurring between 600 and 800 meters. When testing the joint coefficients for flood exposure within 200 to 800 meters, I cannot reject the hypothesis that they are all zero. Therefore, I advise caution in interpreting this as consistent evidence of a change in personal responsibility. Similarly, I find little evidence that flood exposure affects self-efficacy perceptions.

Another possible explanation is that disasters enhance prosociality by fostering solidarity, empathy, and cooperative recovery efforts (Douty, 1972; Rao et al., 2011). However, Fig. 7(b) shows no statistically significant change in giving to non-environmental causes. Similarly, self-reported UKHLS data show no increase in the probability of giving or donation size, as reported in Appendix Table F.10 in Supplementary Material. While UKHLS provides a representative sample for assessing general prosocial behavior, it does not specify donation recipients. These findings suggest the observed increase in green giving reflects a specific rise in environmentally prosocial behavior rather than an increase in broader prosociality.

4.3. Robustness checks

This section discusses results from robustness checks.

Adjusted Standard Errors. I report standard errors clustered at the postcode area level and Conley standard errors adjusted for spatial correlation when estimating the effect on main environmental outcomes (see Tables F.1 and F.7 in Supplementary Material). Clustering at higher geographic levels often accounts for within-area correlation but may reduce efficiency due to the smaller number of clusters. A further limitation is that this approach does not capture spatial correlation across geographic boundaries. This is particularly relevant in England, where geographic boundaries, such as those for NHS regions, local authorities, and parliamentary constituencies, often do not align. Conley standard errors help address this by accounting for spatial dependence based on geographic proximity. I adjust for spatial correlation within 100 kilometers, a threshold that is likely sufficient given that the distance between the northernmost and southernmost points of England is approximately 850 kilometers. For the main outcomes, green donations, green politics, and self-assessed greenness, Conley standard errors are smaller than those clustered at either the postcode or postcode area level. For other outcomes, the results remain statistically insignificant.³¹

Randomization Test. I have a small number of people exposed to floods, indicating that the asymptotic inference that works in large samples may not work here (Roth et al., 2023). I run a non-parametric permutation test on $\beta = 0$, which represents a null effect of flood exposure. I randomly select individuals affected by flooding, while preserving the number of flooded individuals for each year and the distribution of flood risk characteristics among those affected. This permutation is performed 1000 times, and I plot the empirical probability distribution of the coefficients estimated with placebo shocks in Fig. 12. The p-value indicates the proportion of estimated coefficients more extreme than the coefficient estimated with actual floods. The small p-values in the plots suggest that the treatment effect does not appear by chance. This test does not rely on the asymptotic distribution of the data, which additionally addresses the concern that standard errors might be biased if the variables are serially correlated (Bertrand et al., 2004).

Alternative Measures of Flood Risk. My identification strategy relies on the assumption that flood exposure is random within areas of the same flood risk. To account for this, I include flood risk-by-year fixed effects to ensure comparisons are made among individuals facing the same risk level. The main analysis defines flood risk as the annual probability that flood depth exceeds 10 centimeters at a given location. First, I examine the sensitivity of the results to the functional form of flood risk. Instead of using a continuous measure, I group individuals into three bins based on their flood risk levels and include risk-bin-by-year fixed effects to relax the linearity assumption. Results reported in Appendix Table F.14 in Supplementary Material show that the coefficients on green donations, support for Green Party, and self-evaluated greenness remain statistically significant. Second, I explore alternative flood risk measures, including a higher flood depth threshold of 25 centimeters and a publicly available measure from the government based on river and sea flood risk. As shown in Appendix Table F.15 in Supplementary Material, the results remain consistent with the baseline.

³¹ I also check Conley standard errors using distance cut-offs of 50 km, 100 km, and 150 km. The corresponding p-values for the effect of direct flood exposure are reported in Appendix Table F.11 in Supplementary Material. The results are largely consistent with the baseline. In particular, when using the larger cut-offs (100 km and 150 km), for which residual spatial correlation is less likely to be a concern, the estimated effects on green donations, green party support, everyday green behavior, and self-assessed greenness remain statistically significant or close to the 10% level.

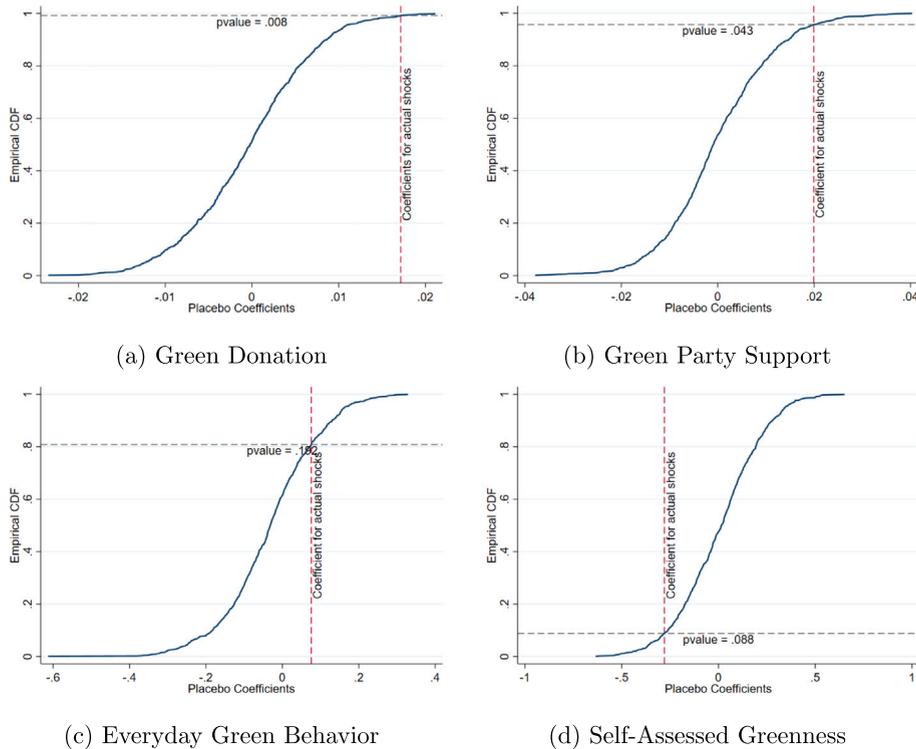


Fig. 12. The randomization test. *Notes:* I run a non-parametric permutation test on $\beta = 0$, which represents a null effect of flood exposure. I randomly select individuals affected by flooding, while maintaining the number of flooded individuals for each year and preserving the distribution of flood risk characteristics among those affected. This permutation is performed 1000 times, and I plot the empirical probability distribution of the coefficients estimated with placebo shocks. The vertical line shows the coefficients estimated with actual floods, and the p-value is the proportion of placebo estimates that are more extreme than the real estimate.

Alternative Comparison Groups. First, I compare people within the same postcode areas by including postcode-area-by-year fixed effects. This addresses the concern that region-by-year fixed effects may not fully capture differences in trends or shocks experienced by people living in the same local area. Appendix Table F.16 in Supplementary Material presents the results, showing that the effects of flood exposure on green donations, support for the Green Party, and self-assessed greenness remain robust.

Second, the main figures show that flood exposure has no significant effect on people living 200 to 400 meters away from a flood site, with effect sizes close to zero. People living in such close proximity to flooded areas are likely to share similar demographic characteristics with those directly or indirectly affected, provided they face similar flood risk. I therefore re-estimate the main specification using only people in the 200–400 meter range as the control group. The results, reported in Appendix Table F.17 in Supplementary Material, remain robust for green donations and Green Party support. However, the effect on self-assessed greenness is no longer significant (p -value = 0.174). This is likely due to limited statistical power and the fact that the outcome is observed only twice, in surveys conducted six years apart. Nonetheless, I interpret the result as suggestive evidence.

4.4. Heterogeneous responses by moral value

I further explore the lack of pro-environmental responses to neighboring floods, focusing on the role of moral values. Individuals with universalist values, who prioritize the well-being of all people equally (Schwartz, 2007, 2012), often show greater concern for global challenges, whereas those with communitarian values tend to focus on local issues. Previous research has highlighted a strong correlation between moral universalism and support for environmental protection (Cappelen et al., 2022; Enke et al., 2023).

The degree of universalism shapes whom people direct their altruism toward. Neighboring floods may elicit two types of altruistic responses: communitarian altruism, where individuals provide direct help to their in-groups (e.g., close neighbors), or universalist altruism, where floods are viewed as part of a broader global challenge requiring collective action. I hypothesize that individuals with universal moral values are more likely to engage in pro-environmental activities in response to neighboring floods compared to those with communitarian values.

To measure universalism, I construct a constituency-level indicator using PCA on two variables: belief in globalization as a positive force and a sense of belonging to the local community. They tend to represent opposing ends of the universalist-communitarian spectrum. The first principal component captures stronger globalization beliefs alongside weaker local attachment. I validate this measure by showing its alignment with universalist (as opposed to communitarian) behaviors. Specifically, it correlates positively with

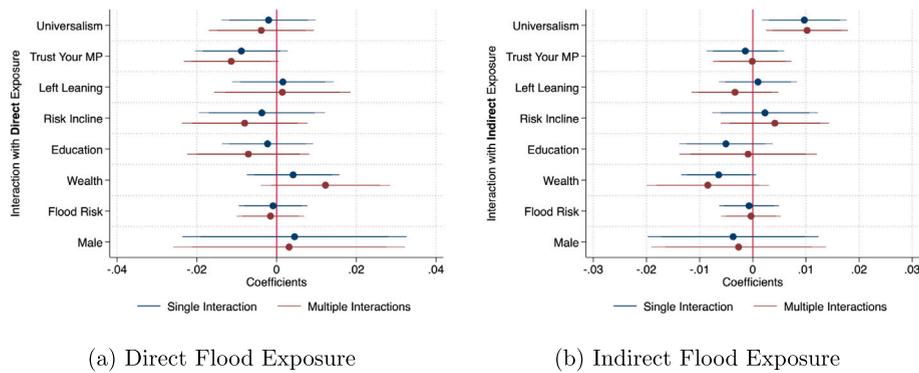


Fig. 13. Heterogeneous effect of flood exposure on environmental donations. *Notes:* The figure plots coefficients with 90% and 95% confidence intervals for interaction terms. In the “single interaction” models, each regression includes interactions of both direct and indirect flood exposure with a single variable. In the “multiple interactions” model, all interaction variables are included in a single regression. All variables, except for three, are at the constituency level and sourced from the British Election Study. Wealth and flood risk data are at the postcode level, while gender is at the individual level. All variables are standardized, except for gender.

support for EU integration, immigration, and equality, and negatively with local identity, national defense, and opposition to overseas aid and minority rights. Details on the PCA and correlations are provided in Appendix Table F.18 and Fig. F.3 in Supplementary Material.

Fig. 13 shows that a one standard deviation increase in universalism is associated with a one-percentage-point rise in green donations in response to nearby floods. In the regression estimating heterogeneous responses, I interact direct and indirect flood exposure from Eq. (1) with individual potential moderating factors in separate regressions and with all factors in a single regression. The results show that the moderating role of universalism on indirect flood exposure remains significant, even when controlling for political orientation and socio-economic variables such as wealth and education.

These findings are in line with the idea that universalists apply moral values broadly, extending beyond self or group interests, to address global challenges like environmental protection. For instance, Fig. F.3 in Supplementary Material shows that universalism is positively associated with agreement that governments should prioritize environmental protection over economic growth and negatively associated with the belief that environmental protection has gone too far. This aligns with research showing that universal moral values, but not in-group-focused benevolence, are linked to stronger climate action commitments (Andre et al., 2024), greater recognition of climate change’s consequences, and lower levels of climate skepticism (Prati et al., 2018). As Andre et al. (2024) highlight, climate action represents a global cooperation challenge, disproportionately affecting lower-income countries and spanning present and future generations, which makes universalist individuals more likely to advocate for environmental protection irrespective of direct personal impact.

5. Conclusion

This paper presents new insights into the relationship between experiences of climate disasters and green behaviors. By precisely identifying the distance between a person’s postcode and flooded areas, I show that the effect of floods on environmental behaviors is highly localized, suggesting that personal experience plays a crucial role in catalyzing behavioral change. The pronounced effect of direct experience indicates that efforts to encourage green behavior may be more effective if people are made aware of the personal consequences of climate change. Framing and communication strategies that make these consequences vivid and personally relatable could therefore be important. At the same time, it remains unclear whether belief in personal consequences, absent direct exposure, would be equally effective, a question that remains open for future research.

The study also finds that the increase in green behaviors following flood exposure does not coincide with changes in general perceptions of climate risk or in overall prosociality. There is, however, suggestive evidence that flood exposure may affect how people evaluate their own lifestyles, lowering their self-assessments even as they engage in more green actions. This points to a potential channel through which climate shocks shape behavior: by prompting people to reflect more critically on their own actions. Future research could examine whether similar patterns arise in response to more severe events or in different social contexts, and whether such introspection leads to longer-term behavioral change.

I find that the effect of direct flood exposure on green donations is broadly consistent across subgroups: there are no systematic differences by flood risk, risk preferences, trust in government, political ideology, education, wealth, or gender. By contrast, while most people do not respond to neighboring floods, individuals with stronger moral universalist values, those who care about the welfare of all people equally, are more likely to increase their green donations. This suggests that people with greater moral universalism may interpret their neighbors’ floods as part of a wider, global climate issue, whereas others are motivated to act only when climate change is perceived as a personal threat.

These findings are robust across multiple checks, but three points help to contextualize their interpretation. First, the analysis focuses on CAF donors, who are wealthier and more active in charitable giving than the general population; future work should examine whether similar patterns hold among people who typically do not donate. Second, the floods studied here are modest in scale compared with major natural disasters; research is needed to study how the severity of such events shapes media and public responses—for example, whether attention is directed more toward immediate economic losses rather than links to climate change. Finally, the UK context, characterized by high recognition of climate change but relatively infrequent severe climate shocks, may resemble other high-income countries but not necessarily lower-income or more disaster-prone settings, and comparative research is needed to understand how institutional and cultural contexts shape heterogeneous responses to climate shocks.

Declaration of generative AI in scientific writing

During the preparation of this work the author(s) used ChatGPT in order to proofread the articles. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the published article.

Declaration of funding sources

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

I am grateful for the advice and support from my PhD supervisors, Sarah Smith and Yanos Zylberberg. I would also like to thank Uta Bolt, Adam Gill, Teresa Harrison, Daniel Hungerman, Michel Serafinelli, Rachel Tan and other conference and seminar participants at the Bristol PhD Seminar, Essex PhD Conference in Applied Economics, and 2025 ASSA Annual Meeting for their comments. I acknowledge the help from Charities Aid Foundation, especially Kate Hammond, for making their donation data available, Oliver Wing and Jeffrey Neal from Fathom UK for making the flood risk data available. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Appendix A. Supplementary materials

Supplementary material for this article can be found online at doi:[10.1016/j.jeem.2026.103300](https://doi.org/10.1016/j.jeem.2026.103300).

Data availability

The authors do not have permission to share data.

References

- Akerlof, G.A., Kranton, R.E., 2000. Economics and identity. *Q. J. Econ.* 115 (3), 715–753.
- Akerlof, G.A., Kranton, R.E., 2005. Identity and the economics of organizations. *J. Econ. Perspect.* 19 (1), 9–32.
- Allcott, H., Rogers, T., 2014. The short-run and long-run effects of behavioral interventions: experimental evidence from energy conservation. *Am. Econ. Rev.* 104 (10), 3003–3037.
- Andre, P., Boneva, T., Chopra, F., Falk, A., 2024. Misperceived social norms and willingness to act against climate change. *Rev. Econ. Stat.* 1–46.
- Andreoni, J., 2006. Philanthropy. *Handb. Econ. Giving Altruism Recip.* 2, 1201–1269.
- Baccini, L., Leemann, L., 2021. Do natural disasters help the environment? How voters respond and what that means. *Polit. Sci. Res. Methods* 9 (3), 468–484.
- Baltruszewicz, M., Steinberger, J.K., Paavola, J., Ivanova, D., Brand-Correa, L.L., Owen, A., 2023. Social outcomes of energy use in the United Kingdom: household energy footprints and their links to well-being. *Ecol. Econ.* 205, 107686.
- Bandura, A., 1982. Self-efficacy mechanism in human agency. *Am. Psychol.* 37 (2), 122.
- Bandura, A., 1991. Social cognitive theory of self-regulation. *Organ. Behav. Hum. Decis. Process.* 50 (2), 248–287.
- Beattie, G., 2022. Measuring social benefits of media coverage: how coverage of climate change affects behavior. Available at SSRN 4211879.
- Berkowitz, L., 1984. *Advances in Experimental Social Psychology*. Academic Press.
- Bertrand, M., Duflo, E., Mullainathan, S., 2004. How much should we trust differences-in-differences estimates? *Q. J. Econ.* 119 (1), 249–275.
- Betts, R.A., Brown, K., 2021. Introduction. In: Betts, R.A., Haward, A.B., Pearson, K.V. (Eds.), *The Third UK Climate Change Risk Assessment Technical Report*. Climate Change Committee, London.
- Biais, B., Hilton, D., Mazurier, K., Pouget, S., 2005. Judgemental overconfidence, self-monitoring, and trading performance in an experimental financial market. *Rev. Econ. Stud.* 72 (2), 287–312.
- Binder, M., Blankenberg, A.-K., 2017. Green lifestyles and subjective well-being: more about self-image than actual behavior? *J. Econ. Behav. Organ.* 137, 304–323.
- Black, N., De Gruyter, E., Petrie, D., Smith, S., 2021. Altruism born of suffering? The impact of an adverse health shock on pro-social behaviour. *J. Econ. Behav. Organ.* 191, 902–915.
- Bordalo, P., Gennaioli, N., Shleifer, A., 2020. Memory, attention, and choice. *Q. J. Econ.* 135 (3), 1399–1442.
- Bordalo, P., Gennaioli, N., Shleifer, A., 2022. Saliency. *Annu. Rev. Econ.* 14, 521–544.
- Borusyak, K., Jaravel, X., Spiess, J., 2024. Revisiting event-study designs: robust and efficient estimation. *Rev. Econ. Stud.* rdae007.
- Botzen, W.W., van den Bergh, J.C., 2012. Risk attitudes to low-probability climate change risks: WTP for flood insurance. *J. Econ. Behav. Organ.* 82 (1), 151–166.
- Bourdeau-Brien, M., Kryzanowski, L., 2020. Natural disasters and risk aversion. *J. Econ. Behav. Organ.* 177, 818–835.

- Brown, P., Daigneault, A.J., Tjernström, E., Zou, W., 2018. Natural disasters, social protection, and risk perceptions. *World Dev.* 104, 310–325.
- Brownback, A., Novotny, A., 2018. Social desirability bias and polling errors in the 2016 presidential election. *J. Behav. Exp. Econ.* 74, 38–56.
- Bulut, H., Samuel, R., 2024. The influence of the 2021 European flooding on pro-environmental attitudes and partial behaviour transition. *NPJ Clim. Action* 3 (1), 22.
- Burks, S.V., Carpenter, J.P., Goette, L., Rustichini, A., 2013. Overconfidence and social signalling. *Rev. Econ. Stud.* 80 (3), 949–983.
- Callaway, B., Sant'Anna, P.H., 2021. Difference-in-differences with multiple time periods. *J. Econ.* 225 (2), 200–230.
- Cameron, L., Shah, M., 2015. Risk-taking behavior in the wake of natural disasters. *J. Hum. Resour.* 50 (2), 484–515.
- Cappelen, A.W., Enke, B., Tungodden, B., 2022. Universalism: global evidence. Technical report. CESifo Working Paper.
- Capstick, S.B., Demski, C.C., Sposato, R.G., Pidgeon, N.F., Spence, A., Corner, A.J., 2015. Public perception of climate change in Britain following the winter 2013/2014 flooding. Unpublished report, Cardiff University.
- Carlsson, F., He, H., Martinsson, P., 2013. Easy come, easy go: the role of windfall money in lab and field experiments. *Exp. Econ.* 16, 190–207.
- Climate Action Tracker, 2024. United Kingdom. (Accessed 3 July 2024).
- Climate Change Committee, 2020. The sixth carbon budget: the UK's path to net zero. (Accessed 12 May 2024).
- Coury, M., 2023. Climate risk and preferences over the size of government: evidence from California wildfires. *Rev. Econ. Stat.* 1–46.
- De Chaisemartin, C., d'Haultfoeuille, X., 2024. Difference-in-differences estimators of intertemporal treatment effects. *Rev. Econ. Stat.* 1–45.
- De Chaisemartin, C., d'Haultfoeuille, X., 2023. Two-way fixed effects and differences-in-differences with heterogeneous treatment effects: a survey. *Econom. J.* 26 (3), C1–C30.
- De Quidt, J., Vesterlund, L., Wilson, A.J., 2019. Experimenter demand effects. In: *Handbook of Research Methods and Applications in Experimental Economics*. Edward Elgar Publishing, pp. 384–400.
- Dechezleprêtre, A., Fabre, A., Kruse, T., Planterose, B., Chico, A.S., Stantcheva, S., 2023. Fighting climate change: international attitudes toward climate policies. Technical report. National Bureau of Economic Research.
- Department for Communities and Local Government, 2014. Flood support schemes - revised guidance. (Accessed 5 January 2024).
- Deryugina, T., 2013. How do people update? The effects of local weather fluctuations on beliefs about global warming. *Clim. Change* 118, 397–416.
- Deryugina, T., Marx, B.M., 2021. Is the supply of charitable donations fixed? Evidence from deadly tornadoes. *Am. Econ. Rev.: Insights* 3 (3), 383–398.
- Deryugina, T., Shurchkov, O., 2016. The effect of information provision on public consensus about climate change. *PLoS One* 11 (4), e0151469.
- Djurelova, M., Durante, R., Motte, E., Patacchini, E., 2024. Experience, narratives, and climate change beliefs. Working Paper.
- Douty, C.M., 1972. Disasters and charity: some aspects of cooperative economic behavior. *Am. Econ. Rev.* 62 (4), 580–590.
- Dufo, E., 2024. Keynote lecture 2: climate change compensation. video lecture. (Accessed 31 October 2024).
- Eisensee, T., Strömberg, D., 2007. News droughts, news floods, and US disaster relief. *Q. J. Econ.* 122 (2), 693–728.
- Ekström, M., 2012. Do watching eyes affect charitable giving? Evidence from a field experiment. *Exp. Econ.* 15, 530–546.
- Enke, B., Rodríguez-Padilla, R., Zimmermann, F., 2023. Moral universalism and the structure of ideology. *Rev. Econ. Stud.* 90 (4), 1934–1962.
- Fathom, 2021. Fathom-UK: methodological documentation. Available from: <https://www.fathom.global/product/global-flood-map/uk-flood-map/>.
- Festinger, L., 1957. *A Theory of Cognitive Dissonance*. Stanford University Press, Stanford, CA.
- Flood Re, 2023. A flood re-insurance scheme. <https://www.floodre.co.uk>. (Accessed 26 December 2023).
- Frondel, M., Simora, M., Sommer, S., 2017. Risk perception of climate change: empirical evidence for Germany. *Ecol. Econ.* 137, 173–183.
- Gagliarducci, S., Paserman, M.D., Patacchini, E., 2019. Hurricanes, climate change policies and electoral accountability. NBER Working Paper.
- Gallagher, J., 2014. Learning about an infrequent event: evidence from flood insurance take-up in the United States. *Am. Econ. J.: Appl. Econ.* 206–233.
- Gao, M., Liu, Y.-J., Shi, Y., 2020. Do people feel less at risk? Evidence from disaster experience. *J. Financ. Econ.* 138 (3), 866–888.
- Garbarino, N., Guin, B., et al., 2022. The effects of subsidized flood insurance on real estate markets. Bank of England Working Paper.
- Goebel, J., Krekel, C., Tiefenbach, T., Ziebarth, N.R., 2015. How natural disasters can affect environmental concerns, risk aversion, and even politics: evidence from Fukushima and three European countries. *J. Popul. Econ.* 28, 1137–1180.
- Goodman-Bacon, A., 2021. Difference-in-differences with variation in treatment timing. *J. Econom.* 225 (2), 254–277.
- Grothmann, T., Patt, A., 2005. Adaptive capacity and human cognition: the process of individual adaptation to climate change. *Glob. Environ. Change* 15 (3), 199–213.
- Hazlett, C., Mildemberger, M., 2020. Wildfire exposure increases pro-environment voting within democratic but not republican areas. *Am. Polit. Sci. Rev.* 114 (4), 1359–1365.
- Herrnstadt, E., Muehlegger, E., 2014. Weather, salience of climate change and congressional voting. *J. Environ. Econ. Manag.* 68 (3), 435–448.
- Hoffmann, R., Muttarak, R., Peisker, J., Stanig, P., 2022. Climate change experiences raise environmental concerns and promote green voting. *Nat. Clim. Change* 12 (2), 148–155.
- Hu, Z., 2022. Social interactions and households' flood insurance decisions. *J. Financ. Econ.* 144 (2), 414–432.
- IPCC, 2023. Climate change 2023: synthesis report. <https://www.ipcc.ch/report/ar6/syr/>.
- Ito, K., Ida, T., Tanaka, M., 2018. Moral suasion and economic incentives: field experimental evidence from energy demand. *Am. Econ. J.: Econ. Policy* 10 (1), 240–267.
- Jayaraman, R., Kaiser, M., Teirlinck, M., 2023. Charitable donations to natural disasters: evidence from an online platform. *Ox. Econ. Pap.* 75 (4), 902–922.
- Jolliffe, I.T., 1995. Rotation of principal components: choice of normalization constraints. *J. Appl. Stat.* 22 (1), 29–35.
- Kahneman, D., Tversky, A., 1982. The psychology of preferences. *Sci. Am.* 246 (1), 160–173.
- Kew, S.F., McCarthy, M., Ryan, C., Pirret, J.S., Murtagh, E., Vahlberg, M., Amankona, A., Pope, J.O., Lott, F., Claydon, O., Coonan, B., Pinto, I., Barnes, C., Philip, S., 2024. Scientific report on UK storms: autumn and winter storms over UK and Ireland are becoming wetter due to climate change. Technical report. Royal Netherlands Meteorological Institute (KNMI), Met Office, Met Éireann, British Red Cross, Red Cross Red Crescent Climate Centre, Grantham Institute, Imperial College London.
- Koletsou, A., Mancy, R., 2011. Which efficacy constructs for large-scale social dilemma problems? Individual and collective forms of efficacy and outcome expectancies in the context of climate change mitigation. *Risk Manag.* 13, 184–208.
- Landmark Information Group, 2022. Sample flood report. (Accessed 29 May 2024).
- Leviston, Z., Uren, H.V., 2020. Overestimating one's "green" behavior: better-than-average bias may function to reduce perceived personal threat from climate change. *J. Soc. Issues* 76 (1), 70–85.
- Li, H., Liang, J., Xu, H., Liu, Y., 2019. Does windfall money encourage charitable giving? An experimental study. *Volunt.: Int. J. Volunt. Nonprofit Organ.* 30, 841–848.
- Li, Y., Johnson, E.J., Zaval, L., 2011. Local warming: daily temperature change influences belief in global warming. *Psychol. Sci.* 22 (4), 454–459.
- Liao, Y., Junco, P.R., 2022. Extreme weather and the politics of climate change: a study of campaign finance and elections. *J. Environ. Econ. Manag.* 111, 102550.
- Lohmann, P.M., Kontoleon, A., 2023. Do flood and heatwave experiences shape climate opinion? Causal evidence from flooding and heatwaves in England and Wales. *Environ. Resour. Econ.* 1–42.
- Méon, P.-G., Verwimp, P., 2022. Pro-social behavior after a disaster: evidence from a storm hitting an open-air festival. *J. Econ. Behav. Organ.* 198, 493–510.
- Office for National Statistics, 2023. Postal geographies. (Accessed 29 May 2024).
- Poortinga, W., 2022. Review of environmental attitudes and behaviour questions in the understanding society survey.
- Prati, G., Pietrantonio, L., Albanesi, C., 2018. Human values and beliefs and concern about climate change: a Bayesian longitudinal analysis. *Qual. Quant.* 52, 1613–1625.
- Rao, L.-L., Han, R., Ren, X.-P., Bai, X.-W., Zheng, R., Liu, H., Wang, Z.-J., Li, J.-Z., Zhang, K., Li, S., 2011. Disadvantage and prosocial behavior: the effects of the Wenchuan earthquake. *Evol. Hum. Behav.* 32 (1), 63–69.
- Reinstein, D., Riener, G., 2012. Decomposing desert and tangibility effects in a charitable giving experiment. *Exp. Econ.* 15, 229–240.
- Reisinger, J., 2022. Subjective well-being and social desirability. *J. Public Econ.* 214, 104745.
- Ritchie, H., 2024. There are huge inequalities in global CO2 emissions. Our World in Data. (Accessed 03 Nov 2024).
- Roth, J., Sant'Anna, P.H., Bilinski, A., Poe, J., 2023. What's trending in difference-in-differences? A synthesis of the recent econometrics literature. *J. Econom.* 235 (2), 2218–2244.

- Salamon, L.M., Anheier, H.K., 1996. The International Classification of Nonprofit Organizations: ICNPO-Revision 1, 1996. Johns Hopkins University Institute for Policy Studies Baltimore.
- Scharf, K., Smith, S., Ottoni-Wilhelm, M., 2022. Lift and shift: the effect of fundraising interventions in charity space and time. *Am. Econ. J.: Econ. Policy* 14 (3), 296–321.
- Schwartz, S.H., 2007. Universalism values and the inclusiveness of our moral universe. *J. Cross-Cult. Psychol.* 38 (6), 711–728.
- Schwartz, S.H., 2012. An overview of the schwartz theory of basic values. *Online Read. Psychol. Cult.* 2 (1), 11.
- Shai, O., 2022. Out of time? The effect of an infrequent traumatic event on individuals' time and risk preferences, beliefs, and insurance purchasing. *J. Health Econ.* 86, 102678.
- Shupp, R., Loveridge, S., Skidmore, M., Lim, J., Rogers, C., 2017. Risk, loss, and ambiguity aversion after a natural disaster. *Econ. Disasters Clim. Change* 1, 121–142.
- Sinding Bentzen, J., 2019. Acts of god? religiosity and natural disasters across subnational world districts. *Econ. J.* 129 (622), 2295–2321.
- Skouralis, A., Lux, N., 2023. The Impact of Flood Risk on England's Property Market. Real Estate Research Centre, Bayes Business School, City University of London.
- Sonenshein, S., DeCelles, K.A., Dutton, J.E., 2014. It's not easy being green: the role of self-evaluations in explaining support of environmental issues. *Acad. Manag. J.* 57 (1), 7–37.
- Spence, A., Poortinga, W., Butler, C., Pidgeon, N.F., 2011. Perceptions of climate change and willingness to save energy related to flood experience. *Nat. Clim. Change* 1 (1), 46–49.
- Stern, P.C., 2000. New environmental theories: toward a coherent theory of environmentally significant behavior. *J. Soc. Issues* 56 (3), 407–424.
- Stern, P.C., Dietz, T., Abel, T., Guagnano, G.A., Kalof, L., 1999. A value-belief-norm theory of support for social movements: the case of environmentalism. *Hum. Ecol. Rev.* 81–97.
- Thompson, V., Dunstone, N.J., Scaife, A.A., Smith, D.M., Slingo, J.M., Brown, S., Belcher, S.E., 2017. High risk of unprecedented UK rainfall in the current climate. *Nat. Commun.* 8 (1), 1–6.
- UKHLS, 2022. Understanding society: waves 1-12, 2009-2021. [data collection]. <https://doi.org/10.5255/UKDA-SN-6614-18>. 17th. SN: 6614.
- UNEP, 2022. Climate change 2022: mitigation of climate change. <https://www.unep.org/resources/emissions-gap-report-2022>.
- van Valkengoed, A.M., Abrahamse, W., Steg, L., 2022. To select effective interventions for pro-environmental behaviour change, we need to consider determinants of behaviour. *Nat. Hum. Behav.* 1–11.
- Whitmarsh, L., 2008. Are flood victims more concerned about climate change than other people? The role of direct experience in risk perception and behavioural response. *J. Risk Res.* 11 (3), 351–374.
- Woodland Trust, 2024. The northern forest. (Accessed 29 May 2024).
- World Risk Poll, 2021. 2021 Lloyd's register foundation world risk poll methodology. (Accessed 15 May 2024).