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Climate Change and Individual Behavior

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Abstract

This paper studies the causal effect of providing information about climate change on individuals' willingness to pay to offset carbon emissions in a randomized control trial. Receiving truthful information about ways to reduce CO2 emissions increases individuals' willingness to pay for voluntary CO2 offsetting relative to the control group. Individuals' responses vary depending on their socio-demographic characteristics and along a rich set of prior beliefs and concerns regarding climate change. In a follow-up survey, we study the endogenous information acquisition of survey participants and show individuals choose information that aligns with their views.

Keywords: Climate change, information treatment, willingness to pay, CO2 compensation, information acquisition.

JEL classification: D10, D83, D91, Q54

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1 Introduction

Climate change is one of the most pressing challenges of our times and has the potential to affect the life and livelihood of virtually every individual, with large economic costs to governments and societies (IPCC, 2014). Reducing carbon dioxide (CO2) emissions is the only feasible strategy to mitigate climate change (Nordhaus, 2019) and Household consumption contributes a substantial fraction to CO2 emissions (Hertwich and Peters, 2009). Hence, individuals can help mitigate climate change directly by changing their everyday activities and consumption behavior and also indirectly by supporting policies aimed at reducing CO2 emissions. The extent to which individuals support or take action to contain climate change may depend on their information on climate change and the ways to mitigate it, their views towards society, their own financial circumstances, their experience with extreme climate events, the behavior of their peers or moral pressure to adhere to social norms. Yet, so far little evidence exists on how individuals change their behavior in response to the provision of information about climate change and whether different framings of identical information are differentially effective in changing individuals' behavior.

In this paper we study how information about ways to reduce carbon emissions induces survey participants to take costly actions to fight climate change, the willingness to pay (WTP) for voluntary offsetting CO2 emissions in our setting. Our analysis is based on a large representative survey of the German population, the Bundesbank Online Panel Households (BOP-HH). In the first part of our study, we administer a survey experiment in which we provide information on ways to reduce individuals' CO2 emissions and find individuals' increase their WTP after the information provision. In a follow-up survey, we study the endogenous information acquisition of individuals and find it largely reflects their prior views on important topics for society.

In the main experiment, we randomly assign individuals to four treatment groups and one control group. The treatment groups receive identical, truthful information on ways individuals may reduce her own CO2 emissions, but we vary the framing of

the treatments. Two groups receive information framed as scientific research, either general research or research by the federal government *(scientific* framing). The other two groups receive information on the behavior of people similar to them, either Germans in their age cohort or Germans in general (*peer* framing). We elicit individuals' willingness to purchase carbon offsets both before and after the information provision to study whether subjects in the treatment groups adjust their willingness to pay differentially compared to survey participants in the control group. In addition, we elicit a rich set of attitudes and concerns about climate change and society as well as preferences.

Because survey participants dislike answering the same question twice (Coibion, Gorodnichenko, and Weber, 2019), we elicit prior and posterior WTP in different formats, for intra-European flights for the prior and for transatlantic flights for the posterior. Hence, we expect the average posterior WTP to be larger than the prior. We indeed find the average posterior WTP is about €47 higher than the prior. Yet, the control group allows us to control for this unconditional difference between prior and posterior WTP.

Unconditionally, we find that providing information on actions to fight climate change increases individuals' WTP for voluntary carbon offsetting by €15 compared to the change in the control group, which corresponds to about one-third of the overall increase in WTP for carbon offsetting. We then study heterogeneity in the treatment effects across different treatment arms. All four treatments result in an economically and statistically significant increase in the WTP relative to the control group. Across treatment arms, we find that the *peer* framing increases the WTP on average by €18, whereas the *scientific* framing increases the average WTP by €12. Within the *scientific* framing, the *government* framing increases WTP by about € 3 more than the *general research* framing but little variation exists within the *peer* framing.

These differences in point estimates are economically sizable but we cannot reject the null hypothesis that all four treatment arms result in identical point estimates likely because of a lack of statistical power. Future research should investigate

whether a *peer* framing adds a peer pressure component in addition to the information component, which might be more effective in changing individuals' behavior compared to a simple scientific framing.

In the cross section of survey participants, we find the effect varies along several demographic characteristics. Women react more strongly to the provided signal, similar to findings in other information experiments such as D'Acunto, Malmendier, and Weber (2021). Moreover, individuals with a secondary school certificate but no tertiary education are most responsive, as are older survey participants. We also find a role for financial and liquidity constraints. Survey participants earning below €2,000 do not adjust their WTP after the treatments, similar to participants who lost or expect to lose income due to the pandemic, possibly due to precautionary savings motives (Coibion, Gorodnichenko, and Weber, 2020a).

Moreover, survey participants that were ex ante already more likely to be positively disposed towards taking actions to fight climate change display a larger reaction to our information treatments. Specifically, individuals with a higher prior WTP, a higher degree of climate concerns, and those with a strong environmental stance are more responsive. In contrast, individuals with a high degree of coronavirus concerns react slightly less to the information treatments.

For a small subset of survey participants we also observe their political leaning. Supporters of the center-right party (CDU/ CSU) do not react at all to our information treatments, nor do supporters of other smaller parties including the far-right party (AfD). Supporters of the center-left party (SPD) increase their WTP by more than €30 in response to the information treatments. The treatment effect for supporters of the Green party is similar in magnitude but only marginally significant.

We do find economically sizable differences in the average treatment effects across treatment arms, which might be due to differences in the fractions of treated subjects reacting to the provided information (extensive margin of adjustment) or, conditional on treatment, treated subjects might react to a different extent (intensive margin of adjustment). In the data, we find a similar fraction of respondents adjusting their willingness to pay across different treatments and the difference in point

estimates comes from heterogeneity in the intensive margin of reaction.

So far, we have documented that providing information to individuals has the potential to change their WTP for climate change mitigation but we do not know whether individuals would actively acquire this type of information in real life. In a follow-up survey, we administer an endogenous information experiment to study whether people are interested in acquiring information about climate change. In the first step of the experiment, survey participants face an information selection choice.[1] They have a choice between one article about climate change and one about population aging, but they can also choose not to see any piece of information to resemble a real world situation. We find about half of the sample is interested in reading and learning more about climate change, whereas only one third selects the article about population aging. Studying the source of this heterogeneity in information selection, individuals choose information that aligns with their prior stance towards a topic and disregard information that might challenge their existing beliefs: While individuals with more positive environmental attitudes are more likely to select the article about climate change, conservative voters are significantly less likely to select it as compared to Green voters.

In the second step of the endogenous information experiment, we study whether making physical risks from climate change salient increases individuals' WTP. We randomly split the sample of respondents selecting the climate article in half and provide each of the two subsamples with one article with either a "positive" or a "negative" spin on climate change.[2] The article with the positive spin discusses the physical consequences and risks of climate change, whereas the article with the negative spin questions the human-made origin of climate change, thus downplaying its importance as a global issue, the related risks, and the need to act against it. We find no significant difference in WTP between these two groups, on average. This average non-response largely reflects the strong priors of those choosing the climate

[1] Capozza, Haaland, Roth, and Wohlfart (2021) provide an excellent overview of the literature on endogenous information acquisition in finance and economics.

[2] We use the terms "positive" and "negative" to mean consistency or inconsistency with the scientific consensus that climate change is anthropogenic and poses risks to the environment.

change article. Respondents who have strong negative or positive priors toward climate change do not react at all to the different spins similar to other settings in which individuals with strong political views do not update their views on election outcomes when receiving objective polling data (Coibion, Gorodnichenko, and Weber, 2020b). Yet, respondents who do not have strong opinions about climate change react when climate change risk is made salient and increase their WTP by €3 if they read the article with the positive spin. Overall, the results from the information acquisition experiment demonstrate that individuals largely choose to acquire information that confirms their prior views. This confirmation bias has the potential to amplify differences in beliefs about climate change and further polarize the debate about climate change.

Successful campaigns to reduce individuals' carbon footprints cannot purely rely on providing information but also have to find creative ways to reach individuals that normally would not actively search for this information. Hence, similar to the challenges central banks face in their communication with laypeople who typically do not actively acquire information about monetary policy, governments have to design messages and find channels that reach broader populations instead of relying on traditional media as a transmission mechanism (D'Acunto, Hoang, Paloviita, and Weber, 2020).

Our paper contributes to several strands of the literature. First, it is closely related to the literature studying the role of information and norms in motivating individuals to fight climate change. Steg (2016) reviews the literature on factors influencing and encouraging pro-environmental actions by individuals and households and discusses the psychological mechanisms behind them. Closer to our analysis, Andre, Boneva, Chopra, and Falk (2021) examine the role of moral values, economic preferences and individual beliefs about social norms in fighting climate change. They find informing individuals about the prevalence of norms related to climate change increases their willingness to mitigate it. Bolsen, Leeper, and Shapiro (2014) study the role of pro and con norms in affecting beliefs and intended behavior with respect

to global warming.[3]

Our paper is also closely related to a growing literature that estimates the WTP for voluntary offsetting carbon emissions in the context of air travel (Brouwer, Brander, and van Beukering, 2008; MacKerron, Egerton, Gaskell, Parpia, and Mourato, 2009; Lu and Shon, 2012; Sonnenschein and Mundaca, 2019; Sonnenschein and Smedby, 2019), car usage (Achtnicht, 2012; Hulshof and Mulder, 2020), and emission trading schemes (Diederich and Goeschl, 2014; Löschel, Sturm, and Uehleke, 2017). These studies primarily aim to estimate the WTP for carbon emissions per se and to this end most of them concentrate on particular user groups.[4] We on the other hand use a large representative survey that allows us to study the heterogeneity in WTP across individuals and to estimate causal effects.[5]

Furthermore, besides the sociodemographic factors previous studies have considered, we also elicit attitudes towards and awareness of climate change, as well as aspects of conditional cooperation as potential drivers of individual offsetting activities. We add to this literature by studying how providing information on effective measures to mitigate climate change affects the WTP to offset CO2 emissions. Importantly, in doing so, we provide a framework that allows clean estimation of causal effects and study both exogenous and endogenous information acquisition and their effects on behavior.

Methodologically, we build on recent literature that studies the role of providing information in influencing individuals' expectations and decisions. Many of these studies use information provision experiments in surveys to establish causality, e.g., Cavallo, Cruces, and Perez-Truglia (2017), Coibion et al. (2019), Armona, Fuster, and Zafar (2019), and D'Acunto, Fuster, and Weber (2021). Haaland, Roth, and Wohlfart

[3] This literature is also related to studies examining interventions in motivating individuals to conserve energy, for example, Allcott (2011).

[4] Achtnicht (2012) and Hulshof and Mulder (2020) use samples of potential car buyers, Brouwer et al. (2008) and Lu and Shon (2012) survey air travelers, Löschel et al. (2017) samples citizens of a single city, and MacKerron et al. (2009) focuses on higher-educated individuals from a specific age group, respectively, while Sonnenschein and Mundaca (2019) and Sonnenschein and Smedby (2019) rely on population-representative, but small samples (n=500).

[5] Diederich and Goeschl (2014) also use a larger sample (n=2,440) that is representative of the Internet-using population of voting-aged Germans to estimate the WTP per ton of abated carbon emissions and correlate it to observed covariates.

provide an excellent review of this fast-growing body of literature.

Most studies exogenously provide information to a random subset of the sample. Following Fuster, Perez-Truglia, Wiederholt, and Zafar (2020), in a follow-up experiment, we also endogenize the process of information acquisition to better understand whether individuals might actively acquire information in real life. Our finding that individuals select information in line with their priors shows the importance of addressing motivated beliefs in the design of information-provision campaigns.

We also contribute to the growing body of work in finance that studies climate change. Giglio, Kelly, and Stroebel (2021) and Hong, Karolyi, and Scheinkman (2020) label this emerging literature “Climate Finance" and provide excellent reviews of it. Theoretical papers show that the arrivals of major climate disasters change household perceived risk and WTP for mitigation (Hong, Wang, and Yang, 2020). Growing attention to regulatory and physical climate risk affects beliefs of investors and firms (Ramadorai and Zeni, 2019), and hence asset prices in equity markets (Engle, Giglio, Kelly, Lee, and Stroebel, 2020; Choi, Gao, and Jiang, 2020; Alok, Kumar, and Wermers, 2020) and bond markets (Baker, Bergstresser, Serafeim, and Wurgler, 2018; Painter, 2020; Huynh and Xia, 2021). Moreover, increased salience of physical climate risks reduces prices of properties more exposed to rising sea levels, hurricanes, or wildfires (Bernstein, Gustafson, and Lewis, 2019; Giglio, Maggiori, Stroebel, and Weber, 2021; Baldauf, Garlappi, and Yannelis, 2020; Gibson and Mullins, 2020; McCoy and Walsh, 2018). We complement this literature by demonstrating that making physical climate risks more salient increases the WTP for climate mitigation of individuals. More generally, studying how information on climate change reaches and motivates individuals to actively fight climate change is also relevant to this literature, as individuals need to be informed in an effective manner and understand the financial risks associated with climate change.

2 Data and Survey Design

In this section we describe the survey, the various treatments, and provide descriptive statistics for the pre-treatment WTP and its relation to covariates.

2.1 Bundesbank Online Panel Households

We use data from the Bundesbank Online Panel Households (BOP-HH). The monthly survey focuses on eliciting individuals' perceptions and expectations. The structure and focus are similar to the New York Fed Survey of Consumer Expectations. Besides recurring core questions, the BOP-HH allows researchers to include special-purpose modules.[6]

The BOP-HH typically surveys around 2,000 individuals in each wave, with a panel component. A leading European survey company, Forsa, administers the survey and selects the gross sample using random sampling from the forsa.omninet database, with quotas for age, gender and level of educational attainment. The sampling frame of the forsa.onminet database is individuals aged 16 years or older with internet access living in Germany.[7] Weights are provided to make the sample representative of this population, which we use for descriptive statistics and for our main regression analysis to make the results representative.

We designed a special module that includes a randomized control trial (RCT) consisting of four information treatments and one control group, questions on the WTP for voluntary offsetting CO2 emissions elicited before and after the treatment, as well as questions on environmental and societal attitudes and values. Our survey module for the core analysis was administered in August 2020. We also administered a follow-up survey in March 2021 to study endogenous information acquisition. In the following, we describe the August 2020 survey module and describe the follow-up

[6] For a detailed description of the survey, see Beckmann and Schmidt (2020).

[7] The forsa.omninet database consists of 75,000 individuals that were recruited by telephone. This offline recruitment allows respondents who are less internet-savvy to be included in the sample and thus reduces a potential online selection bias. Participants of the BOP-HH receive 100 bonus points for the forsa reward system as an incentive for their participation in the survey. The bonus points can be redeemed for various small items similar to an airline award catalog.

survey modules in Section 5.

2.2 Eliciting pre-Treatment WTP

At the beginning of the questionnaire we elicit respondents' WTP for carbon offsets (pre-treatment WTP):

When traveling by air, there is the option to offset the CO2 emissions of a flight with a voluntary payment to climate protection projects - e.g., 6 to 18 euros for a return flight from Germany to Mallorca. What amount would you be willing to pay for CO2 compensation for such a flight?

The wording of the question serves several purposes. First, it yields a direct quantitative estimate of the WTP. Second, it refers to a realistic setting - Mallorca is the most popular holiday destination among Germans. Third, it also provides a typical price range for voluntary carbon offsetting, thus reducing survey noise and random answering because most survey participants have no idea of a typical price for carbon offsetting.[8] Fourth, the setting of a continental flight rules out viable transport alternatives with lower emissions and hence the WTP estimate is not affected by cross-price elasticities between air and alternative travel options. Last, the hypothetical framing also allows us to elicit WTP for those survey participants that do not travel to Mallorca or do not travel by plane at all.

2.3 Treatments

After respondents answered additional questions unrelated to climate change from the core Bundesbank survey, we randomly assign them to one of five equally-sized groups: a control group and four treatment groups. All treatment groups receive identical, truthful information about measures to reduce CO2 emissions. Because the treatments refer to individuals' efforts to reduce CO2 emissions, an implicit call for individual action against climate change is present in all treatments. In order to test potential framing effects, we vary the framing of the information between

[8] Note our within-subjects design that we detail below ensures that a pure anchoring to the provided value cannot drive our results.

groups: (*scientific* vs. *peer* framing). Additionally, we vary a) the specific source of the information within the *scientific* framing groups, and b) the social context within the *peer* framing groups. The information treatments read as follows:

***Scientific* framings: General Research (T1) / Government Research (T2)**
Carbon emissions are commonly regarded as the main cause of climate change. [Studies / Studies by the Federal Government] show that an individual's carbon emissions can be reduced by avoiding excessive meat consumption as well as unnecessary flights and journeys by car.

***Peer framings*: Other People (T3) / Own Age Cohort (T4)**
Carbon emissions are commonly regarded as the main cause of climate change. [Many people in Germany / Many people aged between [X & Y]] are therefore trying to reduce their individual carbon emissions by avoiding excessive meat consumption as well as unnecessary flights and journeys by car.[9]

Several theoretical and practical considerations gave rise to the design of our treatments. Standard economic theory predicts that rational actors might not pay for a public goods, such as mitigating climate change, due to the free-rider problem. Yet, empirical evidence shows people cooperate in social dilemma situations and are willing to pay for voluntary carbon offsetting (Brouwer et al., 2008). Internalized norms may explain why individuals contribute to a public good. The norm activation model of Schwartz (1977) and Schwartz and Howard (1981) suggests climate-friendly behavior is encouraged by the activation of internalized personal norms, referring to feelings of moral obligation to perform actions. Personal norms are activated if individuals become aware of the environmental consequences of their actions and ascribe responsibility for these consequences to themselves. Therefore, we would expect individuals who receive information that their own actions affect the climate to increase their WTP to mitigate climate change.

[9]The age brackets encompass the age of the survey respondent.

The aim of the different framings is to test whether some formulations are more effective than others in invoking these mechanisms. In the *scientific* framing groups we make respondents aware of climate-damaging emissions and inform them about research studies showing that individuals can *effectively* reduce their emissions *by avoiding excessive meat consumption as well as unnecessary flights and journeys by car.* Coibion et al. (2019) show the credibility of news sources can modulate the effect of information treatments on household beliefs. We expect respondents' WTP to be higher if they perceive the source of scientific information to be more trustworthy. To investigate this possibility, we vary the reliability of the source. In the first group, we quote the German Federal government - an institution that is widely seen as credible and trustworthy - as the source of the scientific information, whereas we only refer to research studies in general in the second group.

Adherence to social norms like reciprocity can explain why individuals are willing to pay for voluntary carbon offsetting. If an individual has reciprocal preferences, they reward cooperation and punish free-riding of others (Falk and Fischbacher, 2006). Thus, if they learn that others contribute to the mitigation of climate change, they should be more likely to do so as well. To test this prediction, we provide one of the *peer* framing groups with the information that *many people in Germany* engage in actions aimed at reducing individual carbon emissions, whereby we refer to the same list of actions as in the *scientific* framing groups.

Moreover, descriptive norms can affect people's willingness to fight climate change through informational social influence.[10] Descriptive norms refer to the perception of the prevalence of a certain behavior, that is, what the majority does (Demarque, Charalambides, Hilton, and Waroquier, 2015). An individual conforms to descriptive norms as they desire to be correct, that is, they expect following the majority will lead to a correct outcome. This informational social influence of behavior of others will typically be stronger if they observe it within their own reference group. The focus theory of normative conduct postulates that norms affect behavior primarily if they are made salient (Cialdini, Reno, and Kallgren, 1990). Thus, an individual who be-

[10] Allcott (2011) shows providing people with information on their neighbors' energy consumption causally affects their own energy demand.

lieves climate-friendly behavior is the social norm in their reference group should exhibit a higher WTP for voluntary carbon offsetting. To test this prediction, we inform one of the *peer* framing groups that many people in the respondent's age cohort engage in actions aimed at reducing individual carbon emissions.[11] The information is based on a pilot study administered in April 2020, showing that across age groups many people indeed try to limit their carbon footprint in their everyday lives.[12]

Our control group read some sentences unrelated to climate change to ensure that all respondents spend about the same time reading texts before moving on in the survey. We report the treatments as part of the questionnaire in Appendix A and provide a summary in Table D.1 in Appendix D. Table D.2 in Appendix D shows the different treatment groups are comparable along observable household and individual characteristics.

2.4 Eliciting post-Treatment WTP

Following the treatments, we pose a question unrelated to climate change to reduce survey demand effects.[13] Afterwards, we ask respondents again about their WTP, but this time for an intercontinental return flight from Germany to the USA instead of a flight to Mallorca, to avoid asking the same question and hence to reduce survey fatigue:

Imagine that you are taking a return flight from Germany to the United States for €400. How much more would you be willing to pay to offset the carbon emissions of the flight?

The survey question allows us to measure the instantaneous change in the WTP after the information treatments relative to the control group. Stated preference

[11] We implicitly assume that respondents' reference group overlaps with their own age cohort on average, making use of the fact that people's personal networks are homogeneous with regard to many sociodemographic characteristics including, among others, age (D'Acunto, Rossi, and Weber, 2022).

[12] In April 2020, we asked participants of the BOP-HH survey whether they have personally taken actions to protect the climate in their everyday lives over the past six months prior to the coronavirus pandemic. See Figure C.1 in Appendix C.

[13] We ask respondents about their marginal propensity to consume out of income shocks directly after the treatment.

studies generally find higher WTP estimates than revealed preference studies, possibly due to hypothetical, strategic or social desirability bias in surveys.[14] By comparing the WTP in the treatment groups relative to a control group, we can effectively eliminate these possible biases.

2.5 Additional Variables

To study possible heterogeneity in the treatment effects, we ask additional questions related to respondents' attitudes and values towards climate change, the environment, and society. We elicit these directly after the question on the pre-treatment WTP. Other questions of the core Bundesbank survey unrelated to climate change were elicited between these attitudes questions and the information treatments, ensuring responses to these questions are not affected by the information treatments and vice versa.

Environmental friendliness We elicit respondents' stance towards the climate and the environment using eight items that express attitudes and values related to climate change or the environment on five-point Likert scales.[15] We extract the first principal component from these answers, which we label "environmental friendliness". Table D.3 in Appendix D reports the loadings. For ease of interpretation, we standardize the corresponding environmental friendliness scale to have a mean of zero and a standard deviation of one.[16]

Concerns about the climate and the coronavirus To separate the importance of climate change from other social problems during the period we fielded our survey, we ask respondents about their perception of climate change and other current eco-

[14] In Appendix B we further investigate how survey-elicited WTPs are related to actual choices of individuals to fight climate change. See also the discussion on stated and revealed preference approaches in Sonnenschein and Smedby (2019).

[15] We report the item batteries on attitudes and values in Appendix A.1.

[16] Bernard and Tzamourani (2022) discuss in detail the values, attitudes, and behaviors related to the environment and climate change of the population in Germany as elicited in the BOP-HH in 2020-2021.

nomic and political issues (e.g., coronavirus, Brexit, the economy), again on a Likert scale.

Household and individual-specific characteristics At the end of questionnaire, we elicited information on demographic characteristics such as age, gender, employment status, education, home-ownership status, household income, and household size.

2.6 Descriptive Statistics

Pre-treatment WTP Table 1 reports summary statistics of the WTP for voluntary C02 compensation for a continental flight before any information treatment, the WTP for C02 compensation for an intercontinental flight after information treatments and the difference between the two, as well as sociodemographics. To minimize the impact of outliers we truncate both measures of WTP (pre and post) at the 95^{th} percentile. The resulting unconditional average pre-treatment WTP for carbon offsetting for a return flight from Germany to Mallorca is €14 - corresponding to an average WTP of about €25 per tCO2e.

The post-treatment WTP for an intercontinental return flight from Germany to the USA equals €64 for the full sample. This corresponds to an average WTP estimate of around €18 per tCO2e.[17]

These averages mask substantial heterogeneity in WTP across respondents. Figure 1 plots the distribution of the willingness to pay for CO2 compensation for a continental flight before any information treatment (upper left), the willingness to pay for CO2 compensation for an intercontinental flight after information treatments (upper right) and the difference between the two (lower panel). Around 23% of respondents are not willing to pay anything, whereas 28% of respondents are willing to pay €20 or more (before any information treatments). The distribution exhibits

[17]The costs to offset the climate impact of a direct flight (round trip) from Frankfurt am Main to Palma de Mallorca (568 kg CO2) and to New York (3,652 kg CO2) are €14 and €84, respectively, according to https://www.atmosfair.de.

bunching at multiples of five, which is common in surveys (D'Acunto, Hoang, Paloviita, and Weber, 2019).

Concerns about climate change Respondents are very concerned about climate change: 85% of survey participants rate it 6 or above on a scale from 1 to 10, with 1 indicating not a serious problem at all and 10 indicating a very serious problem. Importantly, respondents are more concerned about the climate than about the economic situation, the refugee situation in Europe, or Brexit (with 80%, 78% and 43% of respondents rating each problem at 6 or above, respectively). Only the coronavirus pandemic scores slightly higher (89% of respondents rate it at 6 or above).

Determinants of pre-treatment WTP Table 2 documents how respondents' climate concerns, values, pro-environmental attitudes, and climate actions are associated with their pre-treatment WTP. The table reports results from an OLS regression of the WTP on respondents' sociodemographic characteristics (column 1) and on the scales and indices, respectively, related to these concepts (columns 2 to 5).

The pre-treatment WTP correlates significantly with several sociodemographic characteristics (column 1). However, most of them lose significance once we include measures for respondents' values and attitudes (columns 2 to 6). In line with findings in the literature, women have a significantly higher WTP for voluntary carbon offsetting in our sample. The gender effect vanishes once we control for attitudes and values, possibly because women typically exhibit higher environmental concern (Franzen and Meyer, 2010).

The WTP also increases with education but neither income, proxies for wealth (housing status), employment status, nor household structure explain variation in WTP. Individuals reporting they have reduced their consumption during the coronavirus crisis due to realized or expected income losses do not differ with respect to their WTP. Among the sociodemographics, only the place of residence has a robust effect. Individuals living in large cities exhibit a significantly higher WTP, even after controlling for attitudes and values.

The WTP for voluntary offsetting strongly correlates with climate concerns. A

one-standard-deviation increase in climate concerns is associated with a €4 increase in the WTP (column 2). Individuals' stance towards the environment also matters: A one-standard-deviation increase in the environmental friendliness scale is associated with a €4 increase in the WTP. Lastly, reported climate-friendly behavior correlates positively with the WTP for carbon offsetting (column 4). Hence, environmentally-oriented individuals generally do not reject the idea of compensating for carbon emissions.[18] In sum, our survey results on the pre-treatment WTP are broadly consistent with those of other studies. Yet, the prior WTP and its associations with observables are difficult to interpret because they are jointly determined and we cannot interpret these associations causally.

3 Econometric Framework

To test for the causal effect of different information treatments on individuals' WTP for voluntary carbon offsetting, we follow Coibion et al. (2019) and estimate the following equation:

$$WTP_i^{post} - WTP_i^{pre} = \alpha + \sum_{s=1}^{S} \beta_s \times Treatment_{s,i} + \boldsymbol{\delta} \boldsymbol{X_i} + error, \tag{1}$$

where i indexes respondents and WTP_i^{post} and WTP_i^{pre} are the post- and pre-treatment WTP for voluntary carbon offsetting of respondent i, respectively. $Treatment_{s,i}$ is an indicator variable equal to one if respondent i received information treatment s and zero otherwise. The β_s coefficients provide an estimate of the average effect of each treatment on the change in the WTP relative to the control group. $\boldsymbol{X_i}$ is a vector of household/individual-specific characteristics. Individual characteristics are gender, age (indicator variable for each group), unemployment indicator, and education (indicator variable for each group). Household characteristics are home-ownership

[18] One concern about the WTP for carbon offsetting as a measure for peoples' willingness to mitigate climate change might be that environmentally-friendly people denounce the idea of carbon offsetting as a sale of indulgences, since they might think that paying for emissions from flights is no substitute for not flying in the first place. The strong correlations between the environmental friendliness scale and the pre-treatment WTP for carbon offsetting rules out this concern.

status, household income (indicator variable for each category), household size (indicator variable for each size), indicator for living in the former East Germany and city size (indicator variable for each category). Given the randomized nature of the treatments, control variables are not necessary but they reduce the uncertainty in the estimates.

4 Treatment Effects

This section studies how different treatments affect the WTP for voluntary carbon offsetting of individuals.

4.1 Average Treatment Effects on WTP

We first examine the average treatment effect on the WTP for voluntary carbon offsetting. Table 3 reports regression results for different specifications of Equation 1. For each panel, the first column reports the average treatment effects (the β_s coefficient) without including covariates. The second column reports the average treatment effects when controlling for household and individual-specific characteristics. We report robust standard errors in parentheses.

In Panel A, we pool all treatment groups. Informing respondents about effective measures to reduce CO2 emissions significantly increases their WTP by about €15 on average relative to the control group. This effect is large in economic terms as it corresponds to an increase of about a third relative to the overall difference between the pre- and post-treatment WTP.

In Panel B, we separate the *scientific* (T1+T2) and *peer* treatments (T3+T4) to analyze how the framing of information affects the WTP. Framing the information on ways to reduce CO2 emission as research findings increases respondents WTP by about €12. When we instead frame the treatment as actions others undertake, we find that respondents increase their WTP by about €18. While the point estimate is larger by 50%, we cannot reject the null hypothesis that the two treatment coeffi-

cients are equal.[19]

These results suggest that individuals increase their willingness to engage in voluntary carbon offsetting when they receive information on ways to reduce their carbon footprint. Survey participants increase their WTP independent of whether we present the information as scientific evidence and stressing the effectiveness of these actions, in line with the norm activation model, or if we frame the information as ways in which others in their social environment engage in such actions and also contribute to climate-change mitigation. We take the results as evidence that providing information about climate change on average increase their WTP. The larger point estimates for the *peer* framing begets additional research on whether such framing adds a peer pressure component in addition to the information effect (Charles, Hurst, and Roussanov, 2009; Bailey, Cao, Kuchler, and Stroebel, 2018; D'Acunto et al., 2022).

In panel C, we report the effect of each treatment separately. We find the *Government Research* (T2) framing drives the overall effect of the scientific framing compared to the *General Research* (T1) treatment. This finding is consistent with individuals reacting more to concrete sources and suggests that the credibility of the information source matters.

Comparing the *peer* treatments (T3 & T4), we find that respondents react slightly more to information on climate-friendly behavior of people in their age cohort (T4) than to information on climate-friendly behavior of the general population (T3). The larger reaction might suggest the WTP is more strongly influenced by respondents' desire to conform with descriptive norms of their own reference group than by reducing the social uncertainty with respect to the cooperation of other people. The larger effect is also consistent with the adherence to peer pressure, which matters for individual decision-making (D'Acunto et al., 2022).

4.2 Heterogeneity in Treatment Effects

We now move on to study possible heterogeneity in the response across different subsamples.

[19] p-value=0.43 of the respective t-test.

Sample splits Table 2 shows the pre-treatment WTP varies substantially with age, gender and education, as well as with values and attitudes towards climate change. In this section, we analyze whether the reaction to information treatments is heterogeneous as well. To this end, we compare point estimates of the treatment effects on the change in WTP across different subsamples in Figure 2.[20] We pool all treatment groups in the following analysis to increase statistical power.

The point estimates of the treatment effect vary systematically across sociodemographic groups (Panel A) even though not all differences are statistically significant in the subsample tests given the smaller sample sizes. Women exhibit a higher pre-treatment WTP and also react more strongly to information treatments than men.[21] Individuals with at most a secondary school degree but no tertiary education (general education), or vocational secondary education, react up to two times more to information on climate change than university graduates (bachelor degree and above).

Further, the elderly react more than twice as strongly compared to young and middle-aged individuals. The estimated treatment effect is also statistically different for the middle-aged and and the elderly (p-value < 0.01). We also find systematic differences in responses to information depending on individuals' economic means. Lower-income individuals (with a household income below €2000) do not react at all, whereas individuals with a household income of €2000 and above do. In a similar vein, individuals who report they have reduced their consumption during the Covid-19 pandemic due to realized or expected income losses do not respond at all, whereas others do respond. The treatment coefficients are also statistically different from each other across these sub-samples (p-values < 0.05). Having access to financial resources appears to be a necessary condition to pay for carbon offsetting, suggesting that it might be a luxury good.

The lack of treatment effects for low-income and constrained individuals also alleviates concerns that survey respondents only report values to please the experimenter, known as demand effects, because demand effects would not vary by the level of constrainedness. Moreover, de Quidt, Haushofer, and Roth (2018) show that

[20] Table D.4 and Table D.5 in Appendix D report regression results corresponding to Figure 2.
[21] Respondents' pre-treatment WTP is reported in Table D.4 and Table D.5 in Appendix D.

in settings like ours survey demand effects tend to be small.

In Panel B, we explore whether the treatment effect varies with respondents' pre-treatment WTP, their environmental friendliness, their concerns about climate change and the coronavirus pandemic, as well as their political leaning. Respondents in the middle and upper third of the pre-treatment WTP distribution show a strong response to the treatment, whereas those in the lowest third do not react at all. The difference in the treatment coefficients is large in economic terms and statistically significant, indicating that the treatment effect is contingent on factors that influence the pre-treatment WTP.[22] Environmental friendliness also matters for how individuals react to information about climate change: respondents in the middle and top of the environmental friendliness scale exhibit a higher pre-treatment WTP and react more strongly to information, whereas those at the bottom of the scale hardly react.[23] Similarly, concerns about climate change amplify the effect of informing individuals about effective ways to reduce carbon emissions. Individuals who consider climate change a very serious problem exhibit a higher pre-treatment WTP and react three times more than others (p-value < 0.05).[24] In contrast, splitting respondents by their concerns about the Covid-19 pandemic, we find those who are highly concerned respond slightly less to the information treatments.

Finally, we differentiate respondents by their political preferences.[25] Environmentally-oriented voters (*Green Party*) and left-leaning voters (*SPD*/ *The Left*) have a significantly higher pre-treatment WTP and react strongly to information on climate change, whereas conservative voters (*CDU*/ *CSU*) and supporters of other parties do not re-

[22] The difference in the treatment coefficients between the lowest and upper third is significant at the 10% significance level (p-value=.056).

[23] The difference in the treatment coefficients between the lowest and upper third is significant at the 10% significance level (p-value=0.07).

[24] We differentiate between individuals who rate the seriousness of climate change as 10 on a scale from 1 to 10 and individuals who give a lower rating. Results are similar for alternative splits.

[25] For a small subset of the sample of panelists that also participated in a follow-up wave in September 2020 (BOP-HH wave 9), we observe their stated political party preferences, that is, which party they would vote for if there was a general election on the following Sunday. To avoid problems with small samples we pool supporters of the Social Democratic Party (*SPD*) and the Left Party (*Die Linke*) as well as supporters of the liberal, Free Democratic Party (*FDP*), the far-right Alternative for Germany (*AFD*), other small parties and non-voters.

act at all. The point estimates are imprecisely estimated, likely because of the limited number of observations, but the treatment coefficients for left-leaning and conservative voters are statistically different from each other (p-value < 0.05).

To sum up, these results indicate that increasing people's WTP by informing them about how to fight climate change is contingent on people's ideological orientation and prior stance towards the environment.

Intensive and Extensive Margin Empirically, we find the point estimates differ across different treatment arms. This heterogeneity might reflect differences in the number of treated individuals reacting (extensive margin) or differences in the reaction conditional on reacting (intensive margin). We identify the extensive margin through a positive change in the WTP after treatments, that is, we create a dummy variable that equals one if the post-treatment WTP is larger than the pre-treatment WTP.[26]

Around 63% of respondents in the control group exhibit a positive change in WTP. Columns (3) and (4) in Table 4 report marginal effects from a logistic regression of the probability of having a positive change in WTP on the pooled *peer* and *scientific* information treatments.[27] Receiving either *scientific* or *peer* information on climate change increases the probability of a positive change in WTP by 9 percentage points compared to the control group. The extensive margin is almost identical across both treatment groups suggesting that any difference in the average change in the WTP across the two groups must originate from a different average change in the WTP conditional on updating the WTP.

To study the intensive margin, we regress the change in WTP on the treatments conditional on a positive change in the WTP. Columns (5) and (6) illustrate the intensive margin is economically significant as well, albeit less precisely estimated. The intensive margin for the *peer* information about climate change is relatively stronger than for the *scientific* information. Hence, the intensive margin drives the stronger overall treatment effect of the *peer* information compared to the *scientific* informa-

[26] Table D.6 in Appendix D shows the results are qualitatively similar when we create a dummy variable that equals one if the change between the pre- and post-treatment WTP is larger than the change in the control group.

[27] Columns (1) and (2) in Table 4 replicate the baseline results from Table 3 for comparison.

tion in columns (1) and (2). These results suggest the framing matters for how much people react to the information but it does not result in a different fraction of the population reacting to the information.

5 Information Acquisition and Salience of Climate Risks

So far, we have studied how individuals react to information that we provide in a survey. One concern is that individuals in real life have a choice of whether or not to actively acquire and read information about climate change. Hence, we administer an endogenous information experiment in the spirit of D'Acunto et al. (2021) and Fuster et al. (2020) to study whether people are interested in acquiring information about climate change. A secondary goal of the experiment is to check whether simply raising the salience of physical climate risk induces a treatment effect comparable to providing information on effective actions to mitigate climate change.

We fielded our follow-up survey in the March 2021 wave of the BOP-HH. In the first step of the experiment, we offer survey participants a choice between different pieces of information: a short introduction informs participants that they would see an excerpt from a newspaper article on a frequently discussed political topic and that they would receive a few questions about the article subsequently. We offer them the choice between articles about climate change and population aging, but they could also choose not to see any information.

In the second step, we generate exogenous variation in the salience of climate change risks. For those that chose the climate change topic, we randomly split the sample in half and provide each of the two subsamples with an article on climate change with a different spin: One half receives an article discussing the threats that climate change poses to the population in Europe. The article makes climate change risks particularly salient by stating that *"around 350 million Europeans could be exposed to harmful extremes of climate each year"*. We refer to this article as the positive spin article. The other half, instead, receives an article discussing claims by academics that climate change had been observed before in history and is caused

by natural processes and cosmic influences, thereby inherently disputing the associated climate change risks. We refer to this article as the negative spin one, as it is intended to downplay the problem of climate change. The population aging article discusses the overall aging of German society over the next decades.

All texts are excerpts of about 120 words from articles published in the same newspaper, the Frankfurter Allgemeine Zeitung (FAZ), one of the most well-regarded newspapers in Germany, ensuring that any differences across treatments could not be attributed to differences in the credibility of the source of the article (Coibion et al., 2019).

In the third step, we elicit respondents' interest in the article on a Likert scale and their WTP for a return flight to Mallorca in the same way as in the August 2020 wave.

At the beginning of the survey, that is, before the intervention, we elicit individuals' attitudes towards the environment but also population aging. We create principal components summarizing individuals' attitudes as in the August 2020 wave.[28] One month later, in the April wave of the BOP-HH, we again elicit the WTP in an identical way to test for longer-lasting effects of the treatment.[29]

5.1 Endogenous Information Selection

Figure 3 depicts the article choices of respondents. 47% of the sample chose the climate change article, 36% chose the article about aging, and 17% did not want to read any article. Hence, survey participants display a widespread interest in climate change with about half of the survey population interested in reading about it. However, the other half of the population does not want to acquire further information on climate change, illustrating that respondents differ in their information choices.

To explore the source of this heterogeneity in information selection, we study multivariate relationships between the choice of a certain topic, such as climate change

[28] Table D.7 in the Online Appendix reports descriptive statistics for this survey wave. Table D.8 in Appendix D reports the loadings from the principal component analysis of the items measuring attitudes towards the environment or climate change and an aging society. We again standardize the attitudes scales.

[29] Appendix A.2 and Appendix A.3 provide the questionnaire of our survey modules that we fielded in March and April 2021.

and sociodemographics, attitudes, political leaning, as well as prior WTP for voluntary carbon offsetting. Each column of Table 5 reports regression results from a linear probability model using a dummy equal to one if individual i selected the topic indicated in the column header as dependent variable.[30]

Individuals' attitudes towards the environment and population aging significantly predict their article choices: A one-standard-deviation increase in the environmental attitudes scale is associated with a 10 percentage point increase in the probability of choosing the climate change article, whereas a corresponding increase in the attitudes towards aging is associated with a 9 percentage point decrease in the probability. These effects are statistically and economically significant given that about half of the sample selects the climate article. Moreover, university educated and younger survey participants are more likely to choose the climate change article and less likely to choose the aging article than others. Women, on the other hand, display a higher propensity to choose the article about population aging. Finally, for a small subset of respondents that participated in previous waves, in particular in September 2020 (wave 9) and October 2020 (wave 10), we also observe their political leaning and their prior WTP for voluntary carbon offsetting. Relative to supporters of the Green party, all others tend to be less likely to choose the article about climate change. The prior WTP is also a strong predictor of choosing the climate change article.

Hence, these correlations suggest individuals choose articles that largely align with their prior stance towards certain topics and avoid information that might challenge their existing beliefs, in line with motivated beliefs and dissonance avoidance in particular (Festinger, 1957).[31]

5.2 Salience of Climate Risk and WTP for Climate Mitigation

The previous subsection indicates individuals choose articles whose topics largely align with their predisposition towards certain issues. We now want to understand

[30] Table D.10 in Appendix D shows that multinomial logit regressions yield similar results.

[31] The theory of cognitive dissonance suggests that people feel uncomfortable if they are exposed to information that is inconsistent with their existing beliefs (Festinger, 1957). See also the discussion on motivated beliefs in Bénabou and Tirole (2016) and Faia, Fuster, Pezone, and Zafar (2021).

whether simply changing the tone and spin regarding a certain topic has the potential to affect individuals' views on it. To that end, we compare the WTP for voluntary carbon offsetting elicited immediately after but also one month after the intervention between those who read the climate change article with the positive spin highlighting the risk of climate change for people in the European Union, and those who read the article with the negative spin questioning human-made climate change.[32]

Table 6 reports results from a regression of the WTP on a dummy equal to one if individual i reads the positive spin article using the sample restricted to those who selected climate change topic. The immediate WTP is higher by only about €1 for those that received the article with the positive spin compared to the negative spin. The difference is not statistically significant and vanishes after one month.

The small reaction to the article with the positive spin seems somewhat puzzling at first sight, given that climate-friendly individuals, who are more likely to select themselves into the endogenous information provision, react more strongly in the exogenous information experiment. The insignificant result is consistent with the idea that individuals with strong priors towards climate change do not change their view when reading a single article questioning human-made nature of climate change.

Next, we investigate whether those that have a weaker stance towards climate change have higher WTP after reading the article with the positive spin compared to reading the article with the negative spin. Exploiting the variation in the extent to which people support fighting climate change, we split the sample of survey participants choosing the climate change article along tertiles of the environmental attitudes scale in Table 7. The higher the respondents' score on this scale, the more they are willing to pay for climate mitigation unconditionally. Reading the article with the positive spin increases the WTP of those in the middle third of the environmental attitudes scale by €3 which is statistically significant. For respondents in the bottom and top third of the scale, we do not find an effect of reading the positive article compared to reading the article with the negative spin.

Hence, although those who have strong negative or positive priors towards cli-

[32] Table D.11 in Appendix D shows the covariates do not differ significantly across the two samples that choose to read an article about climate change.

mate change do not react on information making human-made climate change risks salient, those with a weaker stance towards the topic do react.

Finally, Table 8 shows in another way that individuals digest the same piece of information in opposite ways if they differ in their priors. Within the sample of survey participants choosing the climate change articles, we compare peoples' attitudes towards the environment across groups rating the same article either as interesting or not.[33] Among those who read the article with the positive spin, the respondents that report that they found the article interesting, have higher scores on the environmental attitudes scale than those that did not find the article interesting.[34] Conversely, among those who read the article with the negative spin, respondents who have a low interest in the article score significantly lower on the environmental attitudes scale than those that reported no interest. These results suggest people prefer information that reinforces their views towards climate change and dismiss information conflicting with their views.[35]

6 Conclusion

We examine how information on actions to mitigate climate change affects the willingness to pay for CO2 emissions. We implement a randomized control trial on a large, representative sample of German households. Providing information on ways to reduce CO2 emissions causally increases the willingness to pay for voluntary carbon offsetting. Individuals receiving information framed as behavior of peers react somewhat stronger compared to those receiving information framed as scientific research. The treatment effect varies with sociodemographic characteristics and individuals' prior stance towards climate change.

In a subsequent endogenous information acquisition experiment, we find about

[33] We define being interested in the article as dummy variable that takes the value of 1 if an individual rates the article as 4 or higher on a Likert scale from 1 ("no interesting at all") to 8 ("very interesting").

[34] Recall that we elicited the environmental attitudes before providing the articles.

[35] The finding that the same piece of information is given diametrically opposite ratings if individuals have opposing priors can be interpreted as example of *asymmetric Bayesianism* (Glaeser and Sunstein, 2013).

half of the sample is interested in reading and learning more about climate change, whereas only one-third selects an article about population aging. Individuals with more positive environmental attitudes are more likely to select the article about climate change, suggesting that individuals choose information that largely aligns with their prior stance towards a topic and disregard information that might challenge their existing beliefs. Conditional on choosing an article on climate change, varying the content of the article with respect to the salience of climate change does not result in differences in the average WTP across groups. Yet, respondents who do not hold strong prior opinions about climate change do increase their WTP when climate change risk is made salient.

Overall, our results suggest that informing individuals of ways to combat climate change can be a powerful tool in persuading them to reduce their carbon footprint. Appealing to internalized personal norms, or invoking adherence to social norms, beyond the information content, can be effective in motivating individuals towards more climate-friendly behavior.

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Tables and Figures

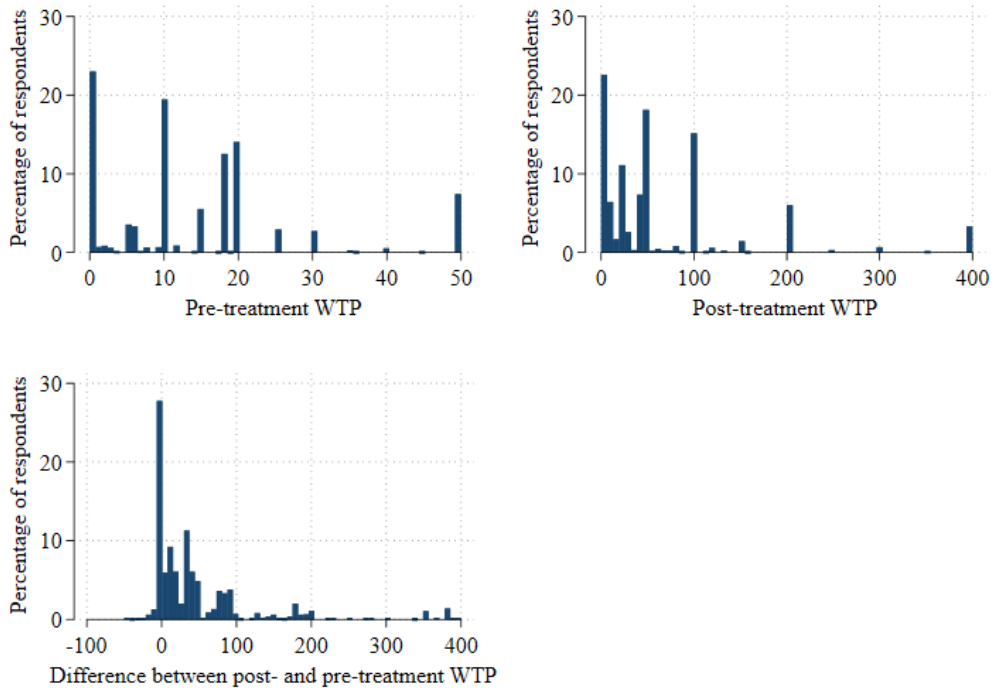

Figure 1: Distribution of the willingness to pay for CO2 compensation

Source: BOP-HH wave 8.
Note: This figure plots the distribution of the willingness to pay for voluntary CO2 compensation for a continental flight before any information treatment (upper left), the willingness to pay for voluntary CO2 compensation for an intercontinental flight after information treatments (upper right) and the difference between these two (lower panel). Data are weighted.

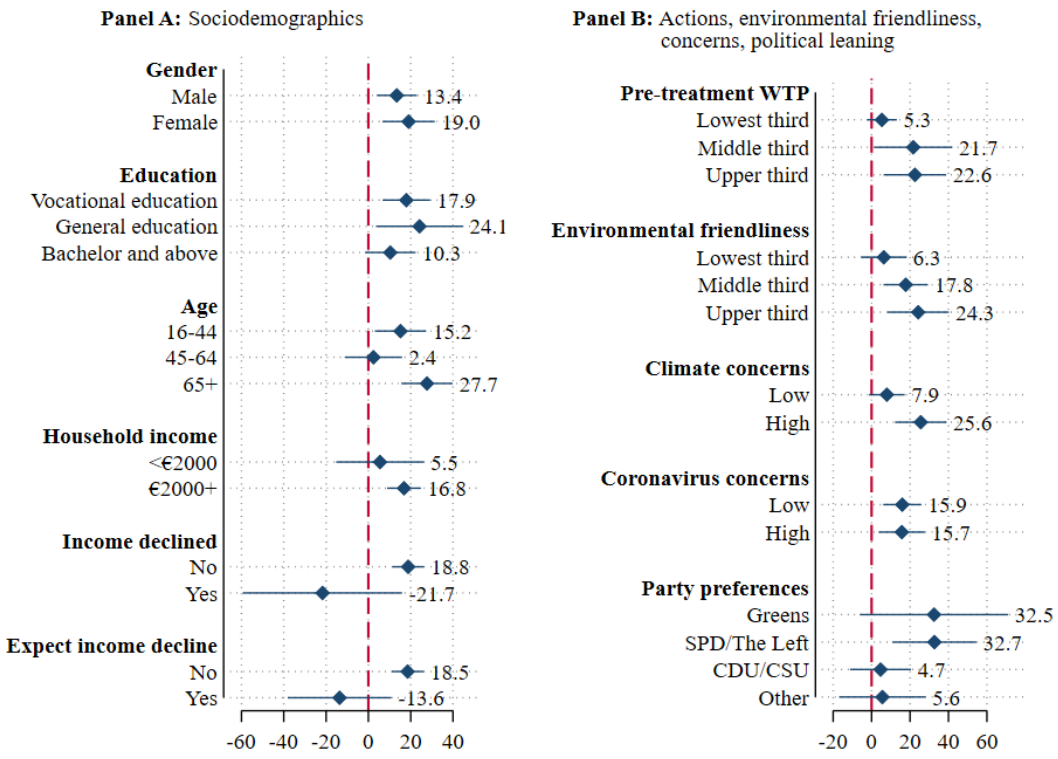

Figure 2: Treatment effect heterogeneity

Source: BOP-HH wave 8.

Note: This figure shows point estimates of the pooled treatment effect (T1-T4) for different subsamples. Solid lines indicate 95% confidence intervals. "Income declined" and "expect declining income" refer to individuals who report they have reduced their consumption during the coronavirus crisis due to realized or expected income losses. Table D.4 and Table D.5 in Appendix D report the corresponding regression results. The point estimates of the treatment coefficients are statistically different from each other across subgroups for the following variables: Age (45-64 vs. 65+), income declined, expect declining income, pre-treatment WTP (bottom vs. top third), environmental friendliness (bottom vs. top third), climate concerns, party preferences (SPD/The Left vs. CDU/CSU & Other).

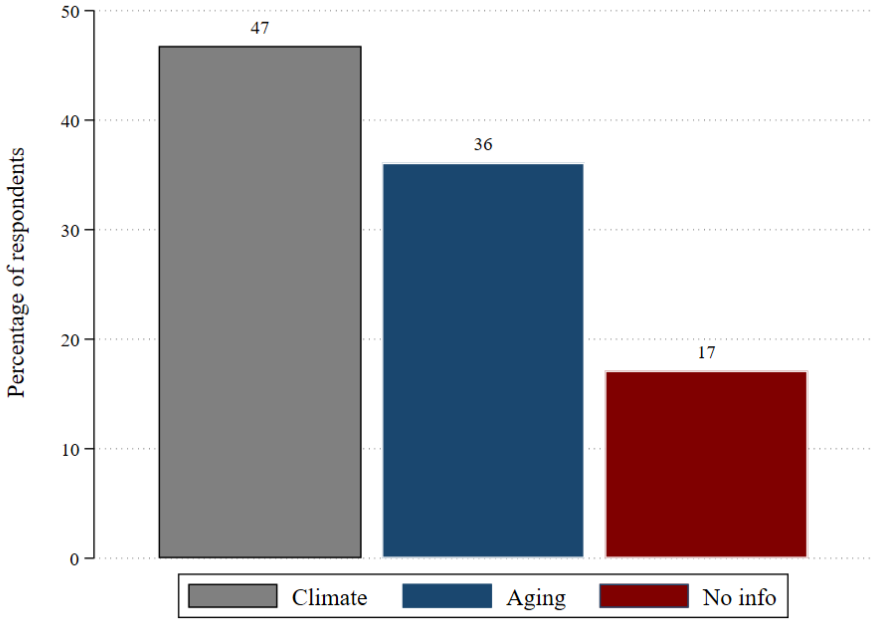

Figure 3: Selected information

Source: BOP-HH wave 15.

Note: This figure reports the percentage of respondents that chose to read information on climate change, aging of society, and no information, respectively. Data are weighted.

Table 1: Summary statistics

	Mean	SD	Median	Min	Max	Obs.
Pre-treatment WTP	14.08	13.26	10.00	0.00	50.00	1916
Post-treatment WTP	64.44	84.95	40.00	0.00	400.00	1886
Δ WTP (post-pre)	47.27	76.42	20.00	-50.00	400.00	1818
Age	47.01	17.81	48.00	16.00	80.00	2023
Female	0.48	0.50	0.00	0.00	1.00	2023
Unemployed	0.02	0.13	0.00	0.00	1.00	2023
Vocational education	0.53	0.50	1.00	0.00	1.00	2021
General education	0.14	0.35	0.00	0.00	1.00	2021
College and more	0.33	0.47	0.00	0.00	1.00	2021
Homeowner	0.55	0.50	1.00	0.00	1.00	2022
HHinc <€1500	0.12	0.32	0.00	0.00	1.00	1945
HHinc €1500-3000	0.35	0.48	0.00	0.00	1.00	1945
HHinc €3000-5000	0.36	0.48	0.00	0.00	1.00	1945
HHinc €5000+	0.17	0.37	0.00	0.00	1.00	1945
HHsize 1	0.25	0.43	0.00	0.00	1.00	2019
HHsize 2	0.38	0.49	0.00	0.00	1.00	2019
HHsize 3+	0.37	0.48	0.00	0.00	1.00	2019
East Germany	0.19	0.39	0.00	0.00	1.00	2023
City size < 20k	0.37	0.48	0.00	0.00	1.00	2023
City size 20k-100k	0.29	0.45	0.00	0.00	1.00	2023
City size 100k+	0.34	0.47	0.00	0.00	1.00	2023
Income declined	0.09	0.28	0.00	0.00	1.00	2022
Expect declining income	0.10	0.31	0.00	0.00	1.00	2022
Climate concerns	8.05	2.27	9.00	1.00	10.00	2021
Corona concerns	8.29	2.01	9.00	1.00	10.00	2022
Environmental friendliness	-0.00	1.02	0.17	-4.42	1.23	2019
Climate actions	-0.06	1.02	0.14	-2.28	3.36	2022

Source: BOP-HH wave 8.

Notes: Cases with pre- or post-treatment WTP larger than the 95th percentile (i.e. €50 and €400, respectively) are set to missing. Income declined and expect declining income refer to individuals who report they have reduced their consumption during the coronavirus crisis due to realized or expected income losses. Variables measuring environmental friendliness and climate actions are standardized to have a mean of zero and a standard deviation of one. Data are weighted.

Table 2: Determinants of pre-treatment WTP

	(1)	(2)	(3)	(4)	(5)
Age 35-44	−1.28	−0.63	−0.72	−1.14	−0.60
	(1.37)	(1.32)	(1.37)	(1.34)	(1.34)
Age 45-54	0.25	0.70	0.42	0.06	0.50
	(1.42)	(1.35)	(1.38)	(1.37)	(1.34)
Age 55-64	0.24	−0.23	−0.32	−0.40	−0.58
	(1.47)	(1.44)	(1.44)	(1.40)	(1.42)
Age 65-74	0.30	−0.06	−0.17	−0.71	−0.64
	(1.37)	(1.35)	(1.34)	(1.31)	(1.32)
Age 75+	2.20	1.28	1.43	0.43	0.50
	(1.91)	(1.88)	(1.88)	(1.89)	(1.87)
Female	2.14**	0.66	0.47	1.13	0.11
	(0.87)	(0.82)	(0.80)	(0.82)	(0.78)
General education	4.56***	3.43**	3.51**	3.49**	2.93*
	(1.75)	(1.64)	(1.69)	(1.63)	(1.60)
Bachelor and above	2.40***	1.40	1.68*	1.47*	1.06
	(0.92)	(0.89)	(0.90)	(0.87)	(0.87)
Unemployed	−0.98	−0.47	−1.11	−1.16	−0.79
	(2.81)	(2.64)	(2.51)	(2.72)	(2.54)
HHinc €1500-3000	−1.27	−0.73	−1.31	−1.10	−0.85
	(1.68)	(1.61)	(1.64)	(1.66)	(1.62)
HHinc €3000-5000	−0.39	−0.37	−0.75	−0.25	−0.45
	(1.75)	(1.65)	(1.64)	(1.69)	(1.63)
HHinc €5000+	0.42	0.46	0.01	0.37	0.27
	(2.00)	(1.86)	(1.91)	(1.91)	(1.84)
Homeowner	−0.26	0.24	0.31	−0.34	0.21
	(0.96)	(0.91)	(0.96)	(0.92)	(0.92)
HHsize 2	−0.48	−0.10	−0.35	−0.88	−0.37
	(1.26)	(1.19)	(1.18)	(1.19)	(1.17)
HHsize 3+	0.75	0.89	0.41	0.43	0.57
	(1.70)	(1.68)	(1.76)	(1.69)	(1.74)
East Germany	−1.44	−0.87	−1.12	−1.48	−1.02
	(1.21)	(1.20)	(1.22)	(1.18)	(1.20)
City size 20k-100k	0.08	0.04	0.70	−0.03	0.20
	(0.91)	(0.88)	(0.89)	(0.88)	(0.90)
City size 100k+	2.30**	2.42**	2.38**	2.54**	2.50**
	(1.11)	(1.08)	(1.13)	(1.11)	(1.10)
Income declined	−2.11	−2.02	−2.36	−2.64*	−2.41*
	(1.60)	(1.39)	(1.54)	(1.51)	(1.39)
Expect declining income	1.07	0.91	0.80	0.17	0.45
	(1.46)	(1.40)	(1.38)	(1.39)	(1.35)
Climate concerns		4.15***			2.68***
		(0.40)			(0.50)
Environmental friendliness			3.84***		1.32*
			(0.57)		(0.68)
Climate actions				3.10***	1.53***
				(0.51)	(0.47)
Constant	11.78***	12.21***	12.95***	13.68***	13.43***
	(1.90)	(1.84)	(1.86)	(1.87)	(1.80)
Adjusted R^2	0.03	0.12	0.11	0.08	0.14
Observations	1842	1841	1838	1841	1836

Source: BOP-HH wave 8.

Notes: The table reports results from OLS regressions of the pre-treatment WTP on covariates. Column (1) only considers individual and household characteristics, while the remaining columns additionally take into account respondents' concerns about climate change (column 2), environmental friendliness (column 3), and actions to fight climate change (column 4), as well as all covariates jointly (column 5). Income declined and expect declining income refer to individuals who report they have reduced their consumption during the coronavirus crisis due to realized or expected income losses. Variables measuring concerns, environmental friendliness and actions to fight climate change are standardized to have a mean of zero and a standard deviation of one. Data are weighted. Robust standard errors are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Average treatment effect on ΔWTP_i

	(1)		(2)	
	β	SE	β	SE
Panel A:				
Treatment (T1-T4)	14.97**	(6.46)	15.95***	(6.07)
Adjusted R^2	0.01		0.03	
Panel B:				
Research (T1+T2)	11.91*	(6.66)	13.49**	(6.15)
Others (T3+T4)	17.94**	(7.72)	18.32**	(7.48)
Adjusted R^2	0.01		0.03	
Panel C:				
T1: General	10.23	(7.18)	11.68*	(6.73)
T2: Government	13.72*	(8.01)	15.41**	(7.41)
T3: In Germany	17.10**	(8.13)	16.92**	(7.62)
T4: Own age cohort	18.73*	(10.33)	19.63*	(10.15)
Adjusted R^2	0.01		0.03	
Sociodemographics	No		Yes	
Observations	1752		1752	

Source: BOP-HH wave 8.

Notes: The table reports average effects of different information treatments on the change in WTP relative to the control group. Panel A pools all treatment groups (T1-T4). Panel B compares the *scientific* (T1+T2) and the *peer* information framing (T3+T4). Panel C considers all treatments groups separately. Even columns control for socio-demographics. Data are weighted. Robust standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 4: Extensive and intensive margins

	ΔWTP_i		I($\Delta WTP_i > 0$)		$\Delta WTP_i \mid \Delta WTP_i > 0$	
	(1)	(2)	(3)	(4)	(5)	(6)
Scientific info	11.91*	13.49**	0.09**	0.09**	8.80	12.47
	(6.66)	(6.15)	(0.04)	(0.04)	(8.97)	(8.44)
Peer info	17.94**	18.32**	0.09**	0.09**	16.84	18.92*
	(7.72)	(7.48)	(0.04)	(0.04)	(10.28)	(10.01)
Sociodemographics	No	Yes	No	Yes	No	Yes
Observations	1752	1752	1752	1752	1214	1214

Source: BOP-HH wave 8.

Notes: Columns (1) and (2) report average effects of different information treatments on the change in WTP relative to the control group. Columns (3) and (4) report the extensive margin of treatment effects defined as the probability of a positive change in WTP (marginal effects from a logistic regression of a dummy equal to one if the change in WTP is positive on the treatments). Columns (5) and (6) report the intensive margin of treatment effects (OLS regression), defined as the size of the change in a respondent's WTP conditional on a positive change in WTP. Even columns control for sociodemographics. Data are weighted. Robust standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 5: Determinants of information selection

	Climate (1)	Aging (2)	No info (3)
A: Attitudes			
Environmental attitudes	0.09***	−0.03***	−0.06***
	(0.01)	(0.01)	(0.01)
Aging attitudes	−0.09***	0.10***	−0.00
	(0.01)	(0.01)	(0.01)
Sociodemographics	Yes	Yes	Yes
Adjusted R^2	0.10	0.05	0.05
Observations	2434	2434	2434
Unconditional average	0.49	0.37	0.14
B: Party affiliation			
SPD/The Left	−0.10	0.13	−0.03
	(0.09)	(0.08)	(0.05)
CDU/CSU	−0.31***	0.25**	0.06
	(0.09)	(0.08)	(0.05)
Other	−0.37***	0.28**	0.09
	(0.09)	(0.09)	(0.06)
Sociodemographics	Yes	Yes	Yes
Adjusted R^2	0.08	0.06	0.01
Observations	263	263	263
Unconditional average	0.52	0.38	0.10
C: Prior WTP			
WTP (€10)	0.05**	−0.04**	−0.00
	(0.01)	(0.01)	(0.01)
Sociodemographics	Yes	Yes	Yes
Adjusted R^2	0.02	0.01	0.02
Observations	618	618	618
Unconditional average	0.51	0.39	0.10

Source: BOP-HH wave 9, 10, and 15.

Notes: This table reports results from an OLS regression using a dummy variable as outcome variable that equals one if information on climate change, population aging, and no information was selected, respectively. Panel A reports coefficients from a multivariate regression on environmental attitudes and attitudes towards population aging using the BOP-HH wave 15 data set. For ease of interpretation, the attitudes scales are standardized to have a mean of zero and a standard deviation of one. Panel B reports coefficients from a multivariate regression on party affiliation (Greens as base level) and using the matched BOP-HH wave 9 and 15 data set. Panel C reports coefficients from a multivariate regression on WTP (units are €10) using the matched BOP-HH wave 10 and 15 data set. All regressions control for sociodemographics. The full list of regressors is reported in Table D.9 in the Online Appendix. Robust standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 6: Average effect of spinning on WTP

	Immediate WTP		WTP after one month	
	(1)	(2)	(3)	(4)
Positive spin	0.94	0.96	0.28	0.21
	(0.88)	(0.89)	(1.17)	(1.17)
Sociodemographics	No	Yes	No	Yes
Adjusted R^2	0.00	0.02	-0.00	0.02
Observations	1109	1109	564	564
Unconditional average	16.80	16.80	15.39	15.39

Source: BOP-HH wave 15 and 16.

Notes: This table reports the average treatment effect of reading an article about climate change with a positive spin on WTP for voluntary CO2 compensation using negative spinning as the control group. Columns (1) and (2) report the immediate responses (wave 15). Columns (3) and (4) report the responses of panel households after one month (wave 16). Even columns control for sociodemographics. Robust standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 7: Spinning effect by environmental attitudes

	Lowest third	Middle third	Upper third
Positive spin	–0.38	3.36**	–0.63
	(1.64)	(1.54)	(1.35)
Sociodemographics	Yes	Yes	Yes
Adjusted R^2	0.02	0.06	0.01
Observations	282	357	468
Unconditional average	9.48	18.17	20.17

Source: BOP-HH wave 15.

Notes: This table reports the effect of reading an article about climate change with a positive spin on WTP for voluntary CO2 compensation for the lowest third, middle third and upper third of the pro-environmental attitudes scale, as compared to those who read an article about climate change with a negative spin. All regressions include controls for sociodemographics. Robust standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 8: Environmental attitudes by spinning and interest in climate change article

	Interested in article			
	Yes	No	Difference	P-value
Positive spin	0.40	-0.19	0.59	0.00
Negative spin	0.00	0.24	-0.24	0.00

Source: BOP-HH wave 15.

Notes: This table reports the average of the environmental attitudes scale for the different treatment groups (positive and negative spinning of climate change article) split by whether respondents rated the provided article as interesting. Column (3) reports the row-wise difference in means. Column (4) reports a p-value from a t-test on the equality of means. The environmental attitudes scale is standardized to have a mean of zero and a standard deviation of one. Being interested in the article is defined as rating the article as 4 or higher on a Likert scale from 1 ('not interesting at all') to 8 ('very interesting'). The sample is restricted to those respondents who choose to read information about climate change.

A Appendix - Survey Questionnaire

Below we provide the original survey questions translated into English.

A.1 Main questionnaire (BOP-HH wave 8)

Q1. WTP (pre-treatment)

When traveling by aeroplane, there is the possibility of offsetting the flight's CO2 emissions by making a voluntary payment to climate protection projects – for example, €6 to €18 for a return flight from Germany to Mallorca. What amount would you be prepared to pay to offset the CO2 emissions for such a flight?

[Input field] euro

Q2. Attitudes and intentions

Below you will see some statements on various subjects. How far do you agree or disagree with the following statements? Please select an answer for each row.

1 = Strongly agree, 2 Generally agree, 3 = Neither agree nor disagree, 4 = Generally disagree, 5 = Strongly disagree

a *Priority should be given to economic growth and creating jobs, even if this is sometimes harmful for the environment.*
b *Many of the things said about climate change posing a threat to humanity and the natural world are exaggerations.*
c *Even as an individual member of the public, I can play a part in climate protection in Germany.*

Q3. Personal importance of different topics

Please state below how important the various points are for you personally and for society at large. Please state first how important the following points are for you personally: Please select an answer for each row.

1 = Not at all important, 2 = Generally not important, 3 = Neither important nor unimportant, 4 = Generally important, 5 = Very important

a *Combating climate change*
b *Protecting endangered animal and plant species*
c *Climate-friendly production of clothing*
d *Climate-friendly food production*

Q5. Perceived problems

To what extent do you think the following developments/matters are a serious problem at present? Please select the answers that apply.

1 = No problem at all 2 -> 9 [no label], 10 = An extremely serious problem

a *Climate change*
b *Brexit*
c *Coronavirus pandemic*
d *Refugee situation in Greece, Syria and Turkey*
e *The economy*

Q6. Information Treatments

Group A and group B are split randomly into five groups each. [AGE_TEXT] will take the following values:

IF age <30 "Many people below 30"
IF age >=30 AND age <40 > "Many 30 to 39-year-olds"
IF age >=40 AND age <50 > "Many 40 to 49-year-olds"
IF age >=50 AND age <60 > "Many 50 to 59-year-olds”
IF age >=60 AND age <70 > "Many 60 to 69-year-olds"
IF age >=70 > "Many people older than 70"

CONTROL GROUP (T0): *Now let's move on to another topic. Next we would like to ask you a few more questions about how you view your spending and consumption behaviour. Please answer the following questions.*

TREATMENT GROUP RESEARCH GENERAL (T1): *Now let's move on to another topic. Carbon emissions are commonly regarded as the main cause of climate change. Studies show that an individual's carbon emissions can be effectively reduced by avoiding excessive meat consumption as well as unnecessary flights and journeys by car.*

TREATMENT GROUP RESEARCH GOVERNMENT (T2): *Now let's move on to another topic. Carbon emissions are commonly regarded as the main cause of climate change. Studies by the Federal Government show that an individual's carbon emissions can be effectively reduced by avoiding excessive meat consumption as well as unnecessary flights and journeys by car.*

TREATMENT GROUP PEOPLE IN GERMANY (T3): *Now let's move on to another topic. Carbon emissions are commonly regarded as the main cause of climate change. Many people in Germany are therefore trying to reduce their individual carbon emissions by avoiding excessive meat consumption as well as unnecessary flights and journeys by car.*

TREATMENT GROUP OWN AGE COHORT (T4): *Now let's move on to another topic. Carbon emissions are commonly regarded as the main cause of climate change. [AGE_TEXT] in Germany are therefore trying to reduce their individual carbon emissions by avoiding excessive meat consumption as well as unnecessary flights and journeys by car.*

Q7. Marginal propensity to consume

Imagine that you unexpectedly receive a one-off payment from the government, with no repayment obligation, in the amount of your monthly household income. What proportion of this amount would you use for each of the following purposes over the next twelve months? Note: Please allocate 100 points among the five specified uses.

a *Saving for future expenditure* [Input field]
b *Repaying debt* [Input field]
c *Purchasing durable goods (e.g., cars, furniture, TV, etc.)* [Input field]
d *Modernising your house / apartment* [Input field]
e *Purchasing short-lived consumer goods and services (e.g., food, clothing, holiday, etc.)* [Input field]

Q8. WTP (post-treatment) *Imagine that you are taking a return flight from Germany to the United States for €400. How much more would you be prepared to pay to offset the carbon emissions of the flight?*

[Input field] euro

A.2 Questionnaire Follow Up I (BOP-HH wave 15)

Q1. Attitudes *In the following, you will see several statements on various topics. To what extent do you agree or disagree with the following statements? Please select one answer for each row.*

1 = Strongly agree, 2 = Generally agree, 3 = Neither agree nor disagree 4 = Generally disagree 5 = Strongly disagree

a *Priority should be given to economic growth and creating jobs, even if this is sometimes at the expense of the environment.*
b *Many of the things said about climate change posing a threat to humanity and the environment are exaggerations.*
c *Even as an individual member of the public, I can play a part in climate protection in Germany.*
d *Carbon offsetting makes an important contribution to climate protection.*
e *Population aging in Germany means that the pension system will have to be reformed.*
f *There is a connection between environmental destruction and the spread of contagious diseases.*
g *Population aging will represent a considerable challenge for Germany in the near future.*

Q2. Info selection

We will now show you a short extract from a newspaper article about a frequently discussed issue. We will then ask you some more questions. You can decide whether you would rather receive information about climate change or population aging.

a *Climate change*
b *Population aging*
c *Neither topic – I don't want to see any information.*

IF Q2 = a OR b

Q3. Info provision

TREATMENT POSITIVE SPIN (50% of respondents who select "climate change")

Risk of sharp rise in deaths resulting from extreme weather conditions? (Frankfurter Allgemeine Zeitung (FAZ), 5 August 2017)
A study shows that, by the end of this century, extreme weather in Europe could claim fifty times as many lives as it does today. [. . .] Unless we take urgent action in the fight against global warming, by the end of the century, "around 350 million Europeans could be exposed to harmful extremes of climate each year," the researchers write. This would be two-thirds of the total projected population for the continent in 2100. The research shows that in the reference period from 1981 to 2010, around 25 million Europeans per year were affected by extreme weather events such as heatwaves, cold snaps, forest fires or flooding – i.e. around 5% of the population.

TREATMENT NEGATIVE SPIN (50% of respondents who select "climate change")

Climate change – in the words of the deniers (Frankfurter Allgemeine Zeitung (FAZ), 1 March 2015)

There are, in fact, a number of academics with publications in peer-reviewed journals who do not believe that climate change is caused by humans. [...] An article published in 2003 in Climate Research claimed that the rise in temperature witnessed in the 20th century was similar to periods of warming in the pre-industrial era, and that it was therefore the result of natural processes. Even Nicola Scafetta, who was adjunct assistant professor at Duke University for a time, attributes the warming process that took place in the 20th century to cosmic influences. According to Scafetta the two large planets Jupiter and Saturn may cause oscillations in the solar interior that affect the sun's luminosity, and thus the Earth's climate.

TREATMENT POPULATION AGING (respondents selecting "population aging")
Germany no longer shrinking (Frankfurter Allgemeine Zeitung (FAZ), 1 February 2017)
Besides immigration, rising birth rates will also offset the decline in the population in the future. [...] But there is one thing population researchers are not expecting to change – the significant ageing of the population. This is shown by the old-age dependency ratio, which describes how many people over 65 there are in relation to 100 people of working age (between 20 and 64). While this ratio stood at 35 in 2015, projections for 2035 alone put it at between 40 and 50. These assumptions have a major impact on developments in the statutory pension insurance scheme.

Q4. Interest in article

How interesting did you find the article?

1 = Not interesting at all, 2-7 [no label], 8 = Very interesting

Q5. WTP for carbon offsetting

In the air travel sector, passengers can offset the CO2 emissions of a flight by making a voluntary payment to climate protection projects – between €6 and €18 for a flight from Germany to Mallorca and back, for example. How much would you be prepared to pay to offset your CO2 emissions for a flight like this?

[Input field] euro

A.3 Questionnaire Follow Up II (BOP-HH wave 16)

Q1. WTP for carbon offsetting

In the air travel sector, passengers can offset the CO2 emissions of a flight by making a voluntary payment to climate protection projects – between €6 and €18 for a flight from Germany to Mallorca and back, for example. How much would you be prepared to pay to offset your CO2 emissions for a flight like this?

[Input field] euro

Q2. Flights in the past

How many flights did you take in 2019?

a *1 to 2 flights*
b *3 to 6 flights*
c *More than 6 flights*
d *No flights at all*

IF Q4 = a OR b OR c

Q3. Offsetting in the past

For how many of these flights did you pay to offset your CO2 emissions?

a *No flights*

b *One flight*

c *Several flights*

B Appendix - Compensation of Flights in the Past

In the main analysis we only elicit survey respondents' WTP in surveys and we do not have direct evidence on whether individuals indeed take actions in their actual lives. Previous research using German survey data indicates that stated consumption propensities in surveys closely line up with actual consumption choices (D'Acunto, Hoang, and Weber, forthcoming). To shed some direct light on whether heterogeneity in individuals' WTP lines up with their actual decisions to limit their own carbon footprint, we elicited in the April 2021 BOP-HH wave whether individuals offset their emissions by paying for CO2 compensation in 2019, that is, before travel restrictions were put in place because of the COVID-19 pandemic.

Figure C.2 shows that more than 40% of our sample flew at least once in 2019. Table D.12 conditions on those survey respondents that flew at least once in 2019 and shows that more than 17% of them already compensated for the CO2 emissions of at least one of their flights in 2019 (column 1). Consequently, a considerable fraction of the German population was familiar with the concept of carbon compensation at least as of 2019. The average WTP for carbon compensation of a hypothetical return flight from Germany to Mallorca in March 2021 is higher by almost €9 for those who did compensate in 2019 compared to those who did not (column 2). Finally, column (3) shows that only 3% of survey participants that compensated CO2 emissions have a 0 WTP, whereas it is 32% in the complementary sample. Taken together, these results show that survey-elicited WTPs are strong predictors of actual choices of individuals to fight climate change.

C Appendix - Additional Figures

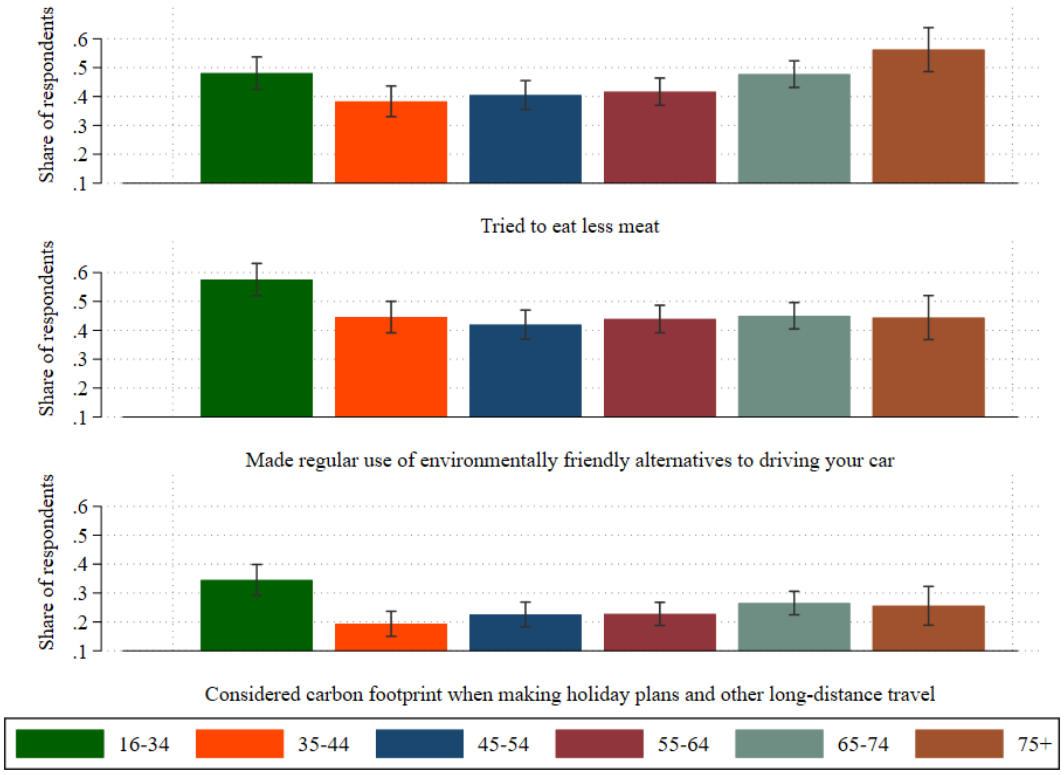

Figure C.1: Actions to fight climate change by age group

Source: BOP-HH wave 4.
Note: This figure shows respondents' actions to protect the climate in their everyday lives across age groups. The exact survey question was as follows: "Did you personally do one or more of the following things to protect the climate in the six months prior to the coronavirus pandemic?" Respondents could select multiple items. These included, inter alia, "Made regular use of environmentally friendly alternatives to driving your car, e.g., walking, cycling, public transport or car sharing" (upper panel), "When making your holiday plans and for other long-distance travel, taken into account the carbon footprint of the mode of transport" (middle panel), "Tried to eat less meat" (lower panel). Data are weighted.

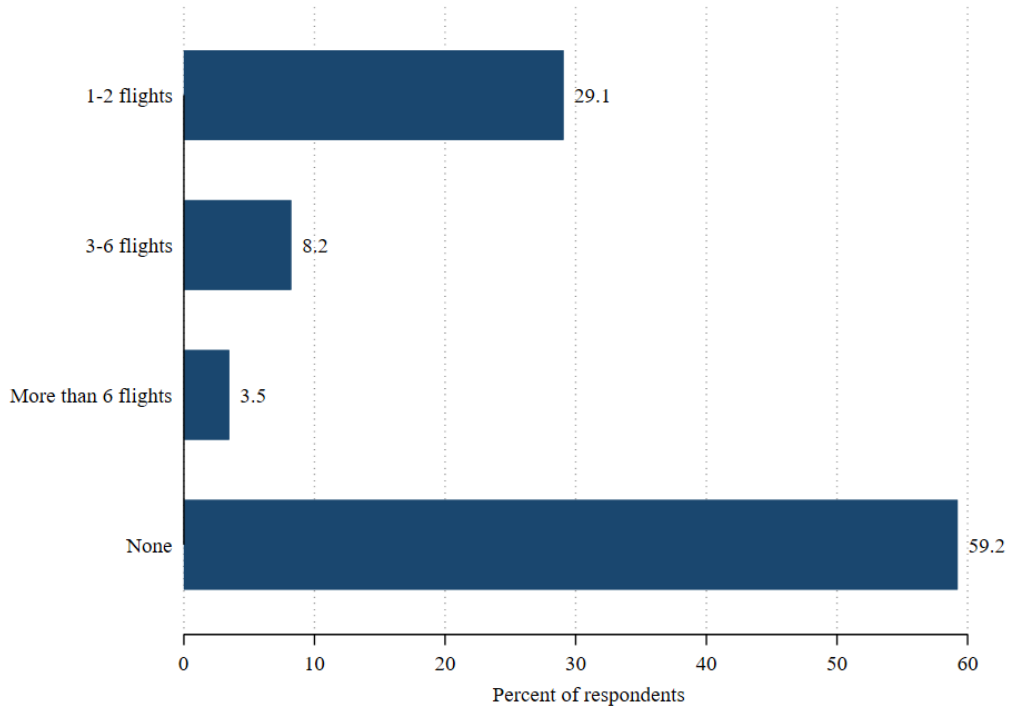

Figure C.2: Number of flights per individual in 2019

Source: BOP-HH wave 16.
Note: This figure reports survey responses to the question: *"How many flights did you take in 2019?"*. Data are weighted.

D Appendix - Additional Tables

Table D.1: Description of treatments

Treatment	Info on climate	Framing	Source of information
T0 (Control group)	no	-	-
T1 (General research)	yes	*scientific*	research studies
T2 (Government research)	yes	*scientific*	studies by the government
T3 (People in Germany)	yes	*peer*	people in Germany
T4 (Own reference group)	yes	*peer*	respondent's age cohort

Notes: This table reports information provided in each treatment.

Table D.2: Balance of treatment groups

	Full sample	Control	T1	T2	T3	T4
Pre-treatment WTP	14.08	12.76	13.79	13.21	15.73	14.85
Post-treatment WTP	64.44	51.14	61.89	65.50	71.17	71.91
Δ WTP (post-pre)	47.27	35.37	45.38	48.46	54.11	52.60
Age	47.01	47.24	46.30	48.05	48.69	45.02
Female	0.48	0.40	0.50	0.48	0.50	0.53
Unemployed	0.02	0.01	0.02	0.01	0.02	0.03
Vocational education	0.53	0.53	0.51	0.52	0.57	0.53
General education	0.14	0.13	0.12	0.16	0.13	0.17
College and more	0.33	0.34	0.37	0.31	0.30	0.31
Homeowner	0.55	0.54	0.55	0.56	0.59	0.51
HHinc <€1500	0.12	0.14	0.07	0.14	0.11	0.12
HHinc €1500-3000	0.35	0.31	0.37	0.34	0.35	0.39
HHinc €3000-5000	0.36	0.35	0.38	0.37	0.35	0.37
HHinc €5000+	0.17	0.19	0.18	0.15	0.19	0.12
HHsize 1	0.25	0.26	0.24	0.22	0.24	0.29
HHsize 2	0.38	0.35	0.37	0.39	0.42	0.36
HHsize 3+	0.37	0.39	0.40	0.39	0.34	0.35
East Germany	0.19	0.17	0.22	0.18	0.17	0.19
City size < 20k	0.37	0.31	0.42	0.36	0.38	0.39
City size 20k-100k	0.29	0.33	0.27	0.27	0.26	0.31
City size 100k+	0.34	0.35	0.31	0.37	0.35	0.31
Observations	2023.00	406.00	405.00	400.00	406.00	406.00
F-statistic	.	1.09	1.43	1.13	1.02	1.26
p-value	.	0.35	0.11	0.31	0.43	0.21

Source: BOP-HH wave 8.

Notes: Columns (1) to (6) report sample averages for the full sample (column 1) , the control group (column 2), treatment group *T1: General research* (column 3), treatment group *T2: Government research* (column 4), treatment group *T3: People in Germany* (column 5), and treatment group *T4: Own age cohort* (column 6). The last two rows report F-statistic for the joint statistical significance of b from estimating the following linear-probability regression for each group k indicated in the column header separately: $Group_i^{(k)} = \boldsymbol{X}_i b^{(k)} + \epsilon$, where i indexes respondents, $Group_i^{(k)}$ is a dummy variable equal to one if household i is a member of group k indicated in the column header and zero otherwise, and $\boldsymbol{X}$ is a vector of household/individual characteristics. Individual characteristics are gender, age, age squared, retired indicator, unemployment indicator, and education (indicator variable for each group). Household characteristics are homeowner, household income (indicator variable for each category), household size (indicator variable for each size), indicator for living in the former East Germany and city size (indicator variable for each category). Data are weighted.

Table D.3: Principal component analysis for environmental friendliness scale

	Component loadings
Jobs before climate	0.33
Climate change exaggerated	0.35
Individual role for climate	0.31
Fight climate change	0.44
Protect animals and plants	0.35
Climate-friendly fashion production	0.42
Climate-friendly food production	0.43

Source: BOP-HH Wave 8.

Notes: Principal components with eigenvalue below 1 not shown. The scale of the first two items is inverted such that a high value indicates higher environmental friendliness.

Table D.4: Heterogeneity in treatment effect: Sociodemographics

	By gender		By education			By age			By income		Consume less since income declined		Consume less since expect declining income	
	Male	Female	Vocational education	General education	Bachelor and above	16-44	45-64	65+	< €2000	>= €2000	No	Yes	No	Yes
Treatment	13.42***	19.01***	17.95***	24.14**	10.35*	15.18**	2.38	27.66***	5.49	16.83***	18.80***	–21.68	18.55***	–13.63
	(4.84)	(6.31)	(5.73)	(10.42)	(6.09)	(6.17)	(6.90)	(6.17)	(10.55)	(4.07)	(3.83)	(18.99)	(3.90)	(12.39)
Sociodemographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1045	707	750	229	773	516	679	557	291	1461	1615	137	1589	163
Adjusted R^2	0.00	0.02	0.04	0.02	0.00	0.02	0.02	0.06	0.04	0.02	0.02	0.09	0.02	0.05
Pre-treatment WTP	13.58	15.52	12.70	16.38	15.38	14.35	14.19	14.59	13.41	14.55	14.47	13.06	14.45	13.54

Source: BOP-HH wave 8.

Notes: This table reports regression results corresponding to Panel A in Figure 2. The last row reports the average pre-treatment WTP for the sample indicated in the column header. Robust standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table D.5: Heterogeneity in treatment effect: Actions, concerns, political leaning

	Pre-treatment WTP			Environmental friendliness			Climate concerns		Coronavirus concerns		Party preferences			
	Lowest third	Middle third	Upper third	Lowest third	Middle third	Upper third	Low	High	Low	High	Greens	SPD/The Left	CDU/CSU	Other
Treatment	5.34	21.69**	22.56***	6.33	17.76***	24.27***	7.94*	25.59***	15.93***	15.71**	32.49*	32.69***	4.66	5.58
	(3.94)	(10.32)	(8.29)	(5.98)	(5.88)	(8.11)	(4.74)	(6.82)	(5.07)	(6.11)	(19.52)	(11.05)	(8.04)	(11.39)
Sociodemographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	889	366	497	605	585	560	1095	656	1096	656	147	164	210	166
Adjusted R^2	0.03	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.08	0.01	0.00
Pre-treatment WTP	4.61	16.89	29.95	8.78	15.43	19.28	11.58	19.03	13.85	15.21	19.20	14.73	13.14	10.52

Source: BOP-HH wave 8.

Notes: This table reports regression results corresponding to Panel B in Figure 2. The last row reports the average pre-treatment WTP for the sample indicated in the column header. Robust standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table D.6: Robustness: Alternative definition of extensive margin

	ΔWTP_i		I(ΔWTP_i >0)		$\Delta WTP_i \mid \Delta WTP_i$ >0	
	(1)	(2)	(3)	(4)	(5)	(6)
Scientific info	11.91*	13.49**	0.08**	0.09**	5.99	11.00
	(6.66)	(6.15)	(0.04)	(0.04)	(13.93)	(12.94)
Peer info	17.94**	18.32**	0.11***	0.11***	14.84	20.53
	(7.72)	(7.48)	(0.04)	(0.04)	(15.54)	(14.36)
Sociodemographics	No	Yes	No	Yes	No	Yes
Observations	1752	1752	1752	1752	659	659

Source: BOP-HH wave 8.

Notes: This table replicates results from Table 4 using an alternative definition of the extensive margin. Column (1) and (2) report average effects of different information treatments on the change in WTP relative to the control group. Column (3) and (4) report the extensive margin of treatment effects defined as the probability of a change in WTP larger than the average change in WTP of the control group (marginal effects from a logistic regression of a dummy equal to one if the change in WTP is larger than €34). Columns (5) and (6) report the intensive margin of treatment effects (OLS regression), defined as the size of the change in a respondent's WTP conditional on a change in WTP larger than the average change in WTP for the control group (€ 34). Even columns control for socio-demographics. Data are weighted. Robust standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table D.7: Summary statistics

	Mean	SD	Median	Min	Max	Obs.
WTP CO2	13.66	13.01	10.00	0.00	50.00	2383
Info on climate change selected	0.47	0.50	0.00	0.00	1.00	2541
Info on aging selected	0.36	0.48	0.00	0.00	1.00	2541
No info selected	0.17	0.38	0.00	0.00	1.00	2541
Positive spin	0.49	0.50	0.00	0.00	1.00	1230
Interested in article	0.66	0.47	1.00	0.00	1.00	2158
Age	47.66	17.50	49.00	16.00	80.00	2541
Female	0.49	0.50	0.00	0.00	1.00	2541
Unemployed	0.02	0.14	0.00	0.00	1.00	2541
Vocational education	0.53	0.50	1.00	0.00	1.00	2537
General education	0.12	0.33	0.00	0.00	1.00	2537
College and more	0.35	0.48	0.00	0.00	1.00	2537
Homeowner	0.58	0.49	1.00	0.00	1.00	2539
HHinc <€1500	0.12	0.33	0.00	0.00	1.00	2446
HHinc €1500-3000	0.35	0.48	0.00	0.00	1.00	2446
HHinc €3000-5000	0.37	0.48	0.00	0.00	1.00	2446
HHinc €5000+	0.17	0.37	0.00	0.00	1.00	2446
HHsize 1	0.24	0.43	0.00	0.00	1.00	2533
HHsize 2	0.42	0.49	0.00	0.00	1.00	2533
HHsize 3+	0.35	0.48	0.00	0.00	1.00	2533
East Germany	0.19	0.39	0.00	0.00	1.00	2541
City size < 20k	0.38	0.49	0.00	0.00	1.00	2541
City size 20k-100k	0.30	0.46	0.00	0.00	1.00	2541
City size 100k+	0.32	0.47	0.00	0.00	1.00	2541
Environmental attitudes	-0.02	0.99	0.14	-4.24	1.69	2532
Aging attitudes	-0.01	0.98	0.11	-4.35	2.38	2532

Source: BOP-HH wave 15.

Notes: This table reports summary statistics for the sample from BOP-HH wave 15. Data are weighted.

Table D.8: Principal component analysis for statements on attitudes

	Environmental attitudes	Attitudes towards population aging
Jobs before climate	0.43	–0.38
Climate change exaggerated	0.51	–0.27
Individual role for climate	0.49	–0.05
CO2 compensation important	0.42	0.03
Pension reform required	0.24	0.62
Population aging is a challenge	0.27	0.63

Source: BOP-HH wave 15.

Notes: Components with Eigenvalue below one are not shown. The scale of the first two items is inverted such that a high value indicates higher environmental attitudes.

Table D.9: OLS regression of information selection

	Climate				Aging				No info			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Age 35-44	−0.10*	−0.09*	−0.28*	−0.21*	0.05	0.05	0.25*	0.19*	0.05	0.04	0.03	0.02
	(0.04)	(0.04)	(0.12)	(0.08)	(0.04)	(0.04)	(0.11)	(0.08)	(0.03)	(0.03)	(0.06)	(0.05)
Age 45-54	−0.11**	−0.09*	−0.16	−0.15	0.08*	0.07	0.15	0.16*	0.03	0.02	0.01	−0.01
	(0.04)	(0.04)	(0.12)	(0.08)	(0.04)	(0.04)	(0.11)	(0.08)	(0.03)	(0.03)	(0.06)	(0.04)
Age 55-64	−0.07	−0.06	−0.29*	−0.15	0.05	0.05	0.30**	0.18*	0.01	0.01	−0.01	−0.03
	(0.04)	(0.04)	(0.11)	(0.08)	(0.04)	(0.04)	(0.10)	(0.08)	(0.03)	(0.03)	(0.06)	(0.04)
Age 65-74	−0.09*	−0.09*	−0.22	−0.15	0.05	0.05	0.17	0.13	0.04	0.03	0.06	0.01
	(0.04)	(0.04)	(0.12)	(0.08)	(0.04)	(0.04)	(0.11)	(0.08)	(0.03)	(0.03)	(0.07)	(0.05)
Age 75+	−0.13**	−0.11*	−0.31*	−0.22*	0.07	0.07	0.16	0.07	0.06	0.04	0.15	0.15*
	(0.05)	(0.04)	(0.14)	(0.09)	(0.04)	(0.04)	(0.13)	(0.09)	(0.03)	(0.03)	(0.11)	(0.07)
Female	−0.08***	−0.11***	0.03	−0.01	0.06**	0.07***	−0.03	0.01	0.03	0.04**	−0.00	−0.00
	(0.02)	(0.02)	(0.07)	(0.04)	(0.02)	(0.02)	(0.07)	(0.04)	(0.01)	(0.01)	(0.04)	(0.03)
General education	0.08*	0.07	−0.13	0.05	−0.05	−0.05	0.18	−0.01	−0.03	−0.02	−0.05	−0.04
	(0.04)	(0.04)	(0.12)	(0.08)	(0.03)	(0.03)	(0.12)	(0.08)	(0.03)	(0.03)	(0.04)	(0.05)
College+	0.09***	0.07**	−0.11	0.05	−0.01	−0.00	0.04	−0.01	−0.08***	−0.06***	0.07	−0.04
	(0.02)	(0.02)	(0.07)	(0.05)	(0.02)	(0.02)	(0.07)	(0.05)	(0.02)	(0.02)	(0.04)	(0.03)
Unemployed	−0.03	−0.02	−0.21	−0.07	0.03	0.02	0.37	0.12	−0.00	0.00	−0.15	−0.05
	(0.09)	(0.09)	(0.24)	(0.17)	(0.09)	(0.09)	(0.26)	(0.17)	(0.07)	(0.07)	(0.10)	(0.03)
HHincome €1500-3000	−0.00	−0.01	−0.20	−0.09	0.08*	0.07	0.32**	0.07	−0.08*	−0.07*	−0.11	0.03
	(0.04)	(0.04)	(0.12)	(0.09)	(0.04)	(0.04)	(0.11)	(0.08)	(0.03)	(0.03)	(0.11)	(0.04)
HHincome €3000-5000	0.04	0.02	−0.11	−0.11	0.05	0.05	0.20	0.06	−0.09**	−0.08*	−0.09	0.05
	(0.04)	(0.04)	(0.13)	(0.09)	(0.04)	(0.04)	(0.12)	(0.09)	(0.04)	(0.04)	(0.12)	(0.05)
HHincome €5000+	0.12*	0.10*	0.01	−0.02	0.02	0.02	0.15	0.04	−0.14***	−0.12***	−0.16	−0.02
	(0.05)	(0.05)	(0.15)	(0.10)	(0.05)	(0.05)	(0.14)	(0.09)	(0.04)	(0.04)	(0.13)	(0.05)
Homeowner	−0.01	0.00	0.05	−0.03	0.01	0.00	−0.03	0.02	−0.00	−0.01	−0.02	0.00
	(0.02)	(0.02)	(0.07)	(0.05)	(0.02)	(0.02)	(0.07)	(0.05)	(0.02)	(0.02)	(0.05)	(0.03)
HHsize 2	−0.05	−0.04	−0.04	−0.01	0.03	0.02	0.03	−0.03	0.02	0.02	0.01	0.03
	(0.03)	(0.03)	(0.08)	(0.05)	(0.03)	(0.03)	(0.08)	(0.05)	(0.02)	(0.02)	(0.06)	(0.03)
HHsize 3+	−0.01	−0.01	−0.10	0.03	−0.03	−0.03	0.13	−0.05	0.03	0.03	−0.02	0.02
	(0.03)	(0.03)	(0.10)	(0.07)	(0.03)	(0.03)	(0.09)	(0.06)	(0.03)	(0.02)	(0.06)	(0.04)
East Germany	−0.05	−0.02	−0.04	−0.00	0.02	0.01	−0.02	−0.03	0.02	0.01	0.06	0.03
	(0.03)	(0.03)	(0.08)	(0.05)	(0.03)	(0.03)	(0.07)	(0.05)	(0.02)	(0.02)	(0.06)	(0.03)
City size: 20-100k	0.02	0.02	−0.09	−0.06	−0.01	−0.01	0.11	0.08	−0.01	−0.01	−0.02	−0.02
	(0.02)	(0.02)	(0.08)	(0.05)	(0.02)	(0.02)	(0.07)	(0.05)	(0.02)	(0.02)	(0.05)	(0.03)
City size: 100k+	0.01	−0.02	−0.19*	−0.10	0.02	0.03	0.22**	0.12*	−0.02	−0.02	−0.03	−0.03
	(0.03)	(0.02)	(0.08)	(0.05)	(0.02)	(0.02)	(0.07)	(0.05)	(0.02)	(0.02)	(0.05)	(0.03)
Environmental attitudes		0.09***				−0.03***				−0.06***		
		(0.01)				(0.01)				(0.01)		
Aging attitudes		−0.09***				0.10***				−0.00		
		(0.01)				(0.01)				(0.01)		
SPD/The Left			−0.10				0.13				−0.03	
			(0.09)				(0.08)				(0.05)	
CDU/CSU			−0.31***				0.25**				0.06	
			(0.09)				(0.08)				(0.05)	
Other			−0.37***				0.28**				0.09	
			(0.09)				(0.09)				(0.06)	
WTP (€10)				0.05**				−0.04**				−0.00
				(0.01)				(0.01)				(0.01)
Constant	0.54***	0.56***	1.22***	0.71***	0.23***	0.23***	−0.36*	0.21	0.22***	0.20***	0.13	0.08
	(0.05)	(0.05)	(0.17)	(0.12)	(0.05)	(0.05)	(0.16)	(0.11)	(0.04)	(0.04)	(0.13)	(0.06)
Adjusted R^2	0.03	0.10	0.08	0.02	0.01	0.05	0.06	0.01	0.02	0.05	0.01	0.02
Observations	2441	2434	263	618	2441	2434	263	618	2441	2434	263	618
Unconditional average	0.49	0.49	0.52	0.51	0.37	0.37	0.38	0.39	0.14	0.14	0.10	0.10

Source: BOP-HH Wave 9, 10, and 15.

Notes: This table reports OLS regression results for all regressors used in Table 5, using a dummy variable that equals one if the individual selected information on climate change (column 1 through 4), population aging (column 5 though 8), and no information (column 9 though 12) as the dependent variable, respectively. Column 1, 2, 5, 6 , 9 and 10 report coefficients from a multivariate regression on sociodemographics, as well as on environmental attitudes and attitudes towards population aging using the BOP-HH wave 15 data set. For ease of interpretation, the attitudes scales are standardized to have a mean of zero and a standard deviation of one. Column 3, 7 and 11 report coefficients from OLS regressions on party affiliation (Greens as base level) and sociodemographics using the matched BOP-HH wave 9 and 15 data set. Column 4, 8, 12 report coefficients from a OLS regressions on WTP (in Wave 10) and sociodemographics using the matched BOP-HH wave 10 and 15 data set. Robust standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table D.10: Robustness: Marginal effects from multinomial logit model of information selection

	Attitudes scores			Party affiliation (wave 9)			Prior WTP (wave 10)		
	Climate	Aging	No info	Climate	Aging	No info	Climate	Aging	No info
Age 35-44	−0.09*	0.05	0.04	−0.30*	0.29*	0.01	−0.22*	0.20*	0.02
	(0.04)	(0.04)	(0.03)	(0.12)	(0.12)	(0.03)	(0.09)	(0.08)	(0.05)
Age 45-54	−0.10*	0.08*	0.02	−0.16	0.15	0.01	−0.16	0.17*	−0.01
	(0.04)	(0.04)	(0.03)	(0.11)	(0.11)	(0.02)	(0.08)	(0.08)	(0.04)
Age 55-64	−0.07	0.06	0.01	−0.33**	0.33**	−0.00	−0.16*	0.18*	−0.03
	(0.04)	(0.04)	(0.02)	(0.11)	(0.11)	(0.03)	(0.08)	(0.08)	(0.04)
Age 65-74	−0.10*	0.06	0.04	−0.21	0.20	0.02	−0.15	0.14	0.01
	(0.04)	(0.04)	(0.03)	(0.11)	(0.11)	(0.03)	(0.08)	(0.08)	(0.04)
Age 75+	−0.12*	0.08	0.04	−0.27	0.23	0.04	−0.22*	0.09	0.13*
	(0.05)	(0.05)	(0.03)	(0.15)	(0.14)	(0.04)	(0.10)	(0.09)	(0.06)
Female	−0.13***	0.08***	0.04**	0.04	−0.04	0.00	−0.01	0.02	−0.00
	(0.02)	(0.02)	(0.01)	(0.08)	(0.08)	(0.02)	(0.05)	(0.04)	(0.02)
General education	0.07	−0.06	−0.01	−0.17	0.22	−0.05*	0.05	−0.01	−0.04
	(0.04)	(0.04)	(0.03)	(0.14)	(0.14)	(0.02)	(0.09)	(0.08)	(0.04)
College+	0.07**	−0.01	−0.06***	−0.11	0.07	0.04	0.05	−0.02	−0.03
	(0.02)	(0.02)	(0.02)	(0.08)	(0.07)	(0.03)	(0.05)	(0.05)	(0.02)
Unemployed	−0.03	0.02	0.00	−0.14	0.51	−0.37***	0.38*	0.48**	−0.86***
	(0.09)	(0.09)	(0.05)	(0.28)	(0.27)	(0.09)	(0.18)	(0.17)	(0.13)
HHincome €1500-3000	−0.01	0.07	−0.06	−0.29*	0.34**	−0.05	−0.10	0.07	0.03
	(0.04)	(0.04)	(0.03)	(0.12)	(0.12)	(0.06)	(0.09)	(0.09)	(0.04)
HHincome €3000-5000	0.02	0.04	−0.07	−0.16	0.20	−0.04	−0.12	0.07	0.05
	(0.05)	(0.04)	(0.03)	(0.13)	(0.13)	(0.07)	(0.09)	(0.09)	(0.04)
HHincome €5000+	0.11*	0.01	−0.12***	−0.03	0.09	−0.06	−0.03	0.04	−0.01
	(0.05)	(0.05)	(0.04)	(0.14)	(0.13)	(0.07)	(0.10)	(0.10)	(0.04)
Homeowner	0.00	0.00	−0.00	0.05	−0.05	−0.00	−0.03	0.03	0.00
	(0.03)	(0.02)	(0.02)	(0.08)	(0.08)	(0.01)	(0.05)	(0.05)	(0.02)
HHsize 2	−0.04	0.03	0.01	−0.05	0.05	0.00	−0.00	−0.02	0.03
	(0.03)	(0.03)	(0.02)	(0.08)	(0.08)	(0.02)	(0.05)	(0.05)	(0.02)
HHsize 3+	−0.01	−0.02	0.03	−0.15	0.15	−0.01	0.04	−0.05	0.01
	(0.04)	(0.03)	(0.02)	(0.11)	(0.11)	(0.02)	(0.07)	(0.07)	(0.03)
East Germany	−0.03	0.01	0.01	−0.01	−0.00	0.02	0.01	−0.03	0.02
	(0.03)	(0.03)	(0.02)	(0.09)	(0.09)	(0.01)	(0.05)	(0.05)	(0.02)
City size: 20-100k	0.02	−0.01	−0.01	−0.12	0.13	−0.01	−0.07	0.08	−0.02
	(0.03)	(0.03)	(0.02)	(0.09)	(0.08)	(0.02)	(0.05)	(0.05)	(0.03)
City size: 100k+	−0.02	0.03	−0.02	−0.25**	0.26**	−0.01	−0.11*	0.13*	−0.02
	(0.03)	(0.03)	(0.02)	(0.08)	(0.08)	(0.02)	(0.05)	(0.05)	(0.02)
Environmental attitudes	0.10***	−0.05***	−0.06***						
	(0.01)	(0.01)	(0.01)						
Aging attitudes	−0.11***	0.11***	0.00						
	(0.01)	(0.01)	(0.01)						
Party preference (Greens = base category):									
SPD/The Left				−0.12	0.13	−0.01			
				(0.08)	(0.08)	(0.01)			
CDU/CSU				−0.33***	0.32***	0.02			
				(0.09)	(0.09)	(0.02)			
Other				−0.39***	0.36***	0.03			
				(0.09)	(0.09)	(0.02)			
WTP (€10)							0.05**	−0.05**	−0.00
							(0.02)	(0.02)	(0.01)
Pseudo R^2	.07	.07	.07	.13	.13	.13	.05	.05	.05
Observations	2434	2434	2434	263	263	263	618	618	618
Unconditional average	.49	.37	.14	.52	.38	.1	.51	.39	.1

Source: BOP-HH wave 9, 10, and 15.

Notes: This table replicates results from Table 5 using multinomial logit regressions. The dependent variable is a categorical variable indicating the choice of article (climate article, aging article, no information). Each cell reports the marginal effect of a one unit change of the regressor indicated in the respective row on the probability to select the info in the column header at sample mean of regressors used in the model. Columns (1) to (3) report marginal effects from a regression on attitudes towards climate change and population aging. Columns (4) to (6) report marginal effects from a regression on party affiliation (Greens voters as base category) using the matched BOP-HH wave 9 and 15 data set. Columns (7) to (9) report marginal effects from a multinomial logit regression on prior WTP (elicited in Wave 10) using the matched BOP-HH wave 10 and 15 data set. Robust standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table D.11: Balance table: Covariates across climate spinning groups

	Full sample	Positive spin	Negative spin
WTP CO2	16.76	16.24	17.28
Interested in article	0.58	0.42	0.74
Environmental attitudes	0.20	0.14	0.25
Aging attitudes	-0.19	-0.17	-0.20
Age	55.29	55.22	55.37
Female	0.36	0.36	0.36
Retiree	0.37	0.37	0.37
Unemployed	0.01	0.01	0.01
Vocational education	0.33	0.32	0.34
General education	0.11	0.13	0.10
College and more	0.56	0.55	0.56
Homeowner	0.66	0.66	0.67
HHinc <€1500	0.07	0.08	0.06
HHinc €1500-3000	0.28	0.28	0.29
HHinc €3000-5000	0.39	0.40	0.39
HHinc €5000+	0.25	0.24	0.26
HHsize 1	0.23	0.22	0.25
HHsize 2	0.48	0.49	0.46
HHsize 3+	0.29	0.29	0.29
East Germany	0.17	0.18	0.16
City size < 20k	0.37	0.37	0.37
City size 20k-100k	0.31	0.29	0.32
City size 100k+	0.32	0.34	0.31
Observations	1230	613	617
F-statistic	.	0.91	0.91
P-value	.	0.57	0.57

Source: BOP-HH wave 15.

Notes: This table reports sample averages for the full sample (column 1) , the positive spin climate info group (column 2), the negative spin climate info group (column 3). The last two rows report F-statistic for the joint statistical significance of b from estimating the following linear-probability regression for each group k indicated in the column header separately: $Group_i^{(k)} = \boldsymbol{X_i} b^{(k)} + \epsilon$, where i indexes respondents, $Group_i^{(k)}$ is a dummy variable equal to one if household i is member of group k indicated in the column header and zero otherwise, $\boldsymbol{X}$ is a vector of household/individual characteristics. Individual characteristics are gender, age, age squared, retired indicator, unemployment indicator, education (indicator variable for each group). Household characteristics are homeowner, household income (indicator variable for each category), household size (indicator variable for each size), indicator for living in East Germany and city size (indicator variable for each category).

Table D.12: Compensation of flights in the past

	%	øWTP	WTP=0 (in %)
Did not compensate	82.3	11.3	32.0
Compensated	17.7	20.1	3.2
Total	100.0	12.8	27.1

Source: BOP-HH wave 16.

Notes: This table reports the percentage of respondents who did not compensate and did compensate the CO2 emissions of at least one of their flights in 2019 (column 1), respectively. Column 2 reports the average WTP for compensating CO2 emissions of a hypothetical return flight from Germany to Mallorca for each groups of respondents. Column 3 reports the percent of respondents with a WTP equal to zero for each groups of respondents. The sample is restricted to respondents who report that they flew at least once in 2019 (42.3 % of the full sample).