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# FIGHTING CLIMATE CHANGE: INTERNATIONAL ATTITUDES TOWARD CLIMATE POLICIES

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## ABSTRACT

Using new surveys on more than 40,000 respondents in twenty countries that account for 72% of global CO2 emissions, we study the understanding of and attitudes toward climate change and climate policies. We show that, across countries, support for climate policies hinges on three key perceptions centered around the effectiveness of the policies in reducing emissions (effectiveness concerns), their distributional impacts on lower-income households (inequality concerns), and their impact on the respondents' household (self-interest). We show experimentally that information specifically ad-dressing these key concerns can substantially increase the support for climate policies in many countries. Explaining how policies work and who can benefit from them is critical to foster policy support, whereas simply informing people about the impacts of climate change is not effective. Furthermore, we identify several socioeconomic and lifestyle factors – most notably education, political leanings, and availability of public transportation – that are significantly correlated with both policy views and overall reasoning and beliefs about climate policies. However, it is difficult to predict beliefs or policy views based on these characteristics only.

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A data appendix is available at http://www.nber.org/data-appendix/w30265

# 1 Introduction

Limiting the average temperature increase to less than 2°C above pre-industrial levels requires drastically reducing global emissions by 2050 (IPCC 2021). Judging by publicly announced long-term commitments and goals, policymakers appear to be taking this imperative seriously: Over 100 countries have so far declared targets of carbon neutrality by mid-century (NPUC 2021). Yet, while climate mitigation ambitions are strong, bold policy measures to achieve them are lagging. Given current policies, average temperatures are still expected to rise by about 2.7°C by 2100, increasing the likelihood of catastrophic impacts for societies and economies (Climate Action Tracker 2021; IPCC 2022).

Climate policies have often been difficult to pass and implement even when the objective of limiting global warming is broadly accepted. Our new large-scale international survey across 20 countries shows that at least three-quarter of respondents in each country agree that "climate change is an important problem" and that their country "should take measures to fight" it (see Figure 2). However, this often does not translate into agreement on which climate policies to support.

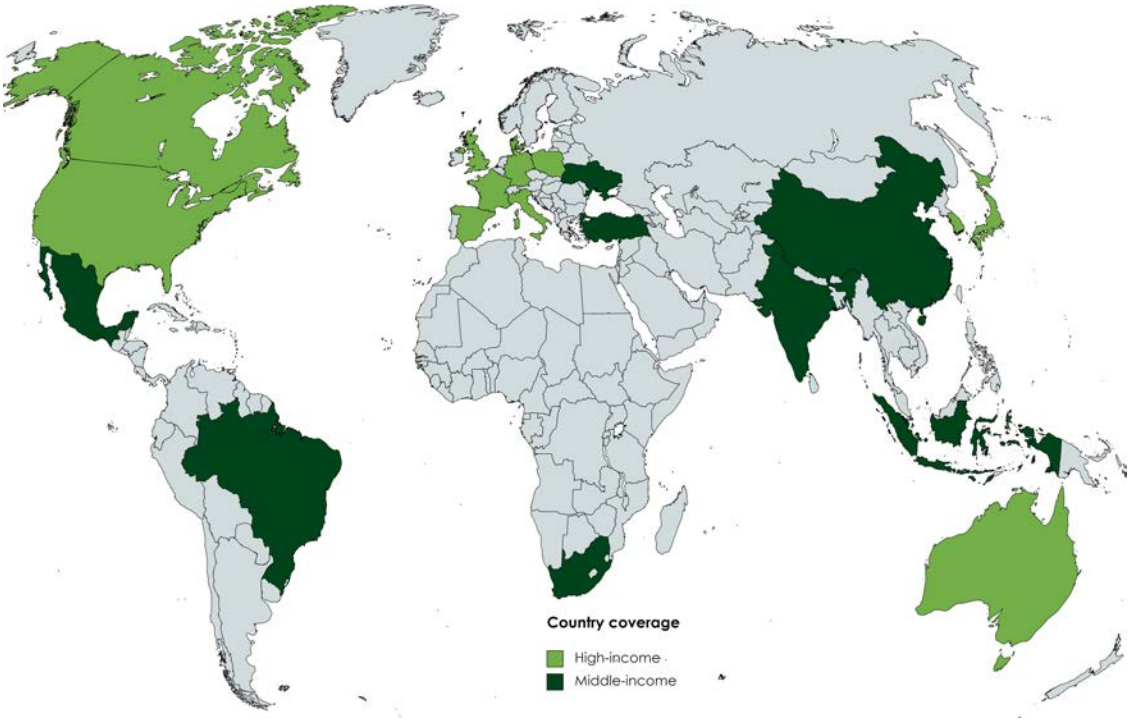
In this paper, we seek to understand what drives support for or opposition to important climate policies across the world. Do climate policy views simply stem from a lack of knowledge about the impacts of climate change? Are citizens worried about the effects of policies on their own budget and lifestyle? Do they hold broader concerns about the effects of climate policies on others and on the economy? Or do they have trouble assessing how any given policy will influence climate change? Our goal is to offer new cross-country evidence on people's perceptions of, understanding of, and attitudes toward climate change and climate policies. Climate change is a global problem with disparate impacts across countries and people, and it is thus necessary to study these issues internationally.

We conduct large-scale international surveys on over 40,000 respondents in the twenty countries depicted in Figure 1. These countries span different income levels and social and economic contexts. Taken together, they account for 72% of global 2017 $CO_2$ emissions (JRC 2018) and include 18 out of the 21 largest emitters of greenhouse gases (GHG).[1] We elicit respondents' knowledge and understanding of climate change and their views on a broad range of climate mitigation policies. Importantly, we ask specific questions about their understanding and perceptions of how these policies work, in terms of their effectiveness, economic impacts, distributional consequences, and effects on their own household. In addition, a random sub-sample of respondents is shown pedagogical videos on the impacts of climate change in their country and/or on how three key climate policies – a ban on combustion-engine cars, a carbon tax with cash transfers, and a green infrastructure program – work.

Our main findings are as follows. First, we shed light on the factors that foster people's support for more climate action. There are three key beliefs that are major predictors of whether people support a given climate policy: i) its perceived effectiveness in reducing emissions (effectiveness), ii) its perceived distributional impacts on lower-income households

[1] The three missing countries among large emitters are Russia, Iran, and Saudi Arabia.

Figure 1: The 20 countries covered in the survey



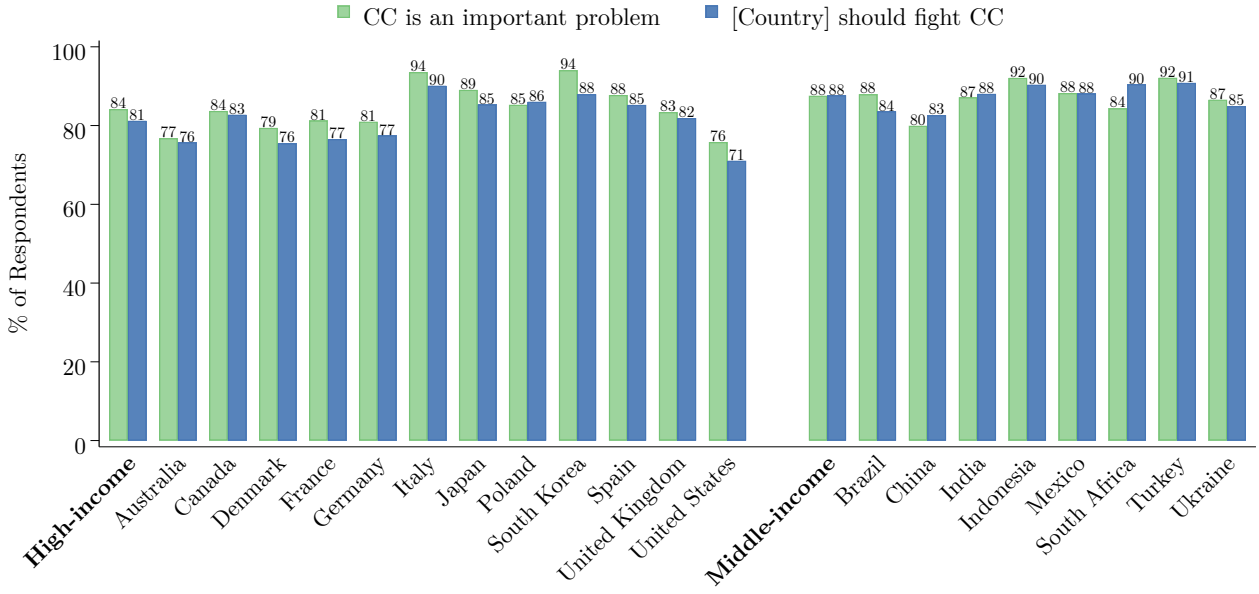

(inequality concerns), and iii) its perceived impact on people's own household (self-interest). Many people already have deep concerns about climate change but these concerns are not major predictors of their policy views. Similarly, even though respondents exhibit varying degrees of knowledge about climate change, this type of knowledge does not significantly correlate with their policy views.

Consequently, support for climate policies strongly depends on their specific modalities. There is more support for policy designs that are perceived to be more effective and progressive. These include targeted investment programs (e.g., in green infrastructure or low-carbon technologies) that are financed by progressive taxes or public debt, carbon taxes with a strongly progressive use of revenues (such as cash transfers to the poorest or vulnerable households),[2] and regulations rather than corrective taxes in some settings (such as bans on polluting vehicles from city centers or dense areas and the mandatory insulation of buildings).

We confirm the importance of the three core beliefs experimentally. Respondents who see the video on the impacts of climate change do not significantly change their views on climate policies. On the contrary, respondents who see a video that explains how the three main policies work and what their distributional implications are exhibit stronger support for these and related climate policies. Thus, information and explanations work, but only if they actually address the main concerns people have.

[2]Vulnerable households are defined as low-income or as being constrained, e.g., living in areas with little public transportation.

Figure 2: Share of respondents who agree (somewhat to strongly) that "Climate change is an important problem" or that their country "should take measures to fight climate change"




We also explore the extent to which personal socioeconomic characteristics, lifestyle, and energy usage are correlated with policy views. More educated and left-leaning respondents are generally more supportive of climate policies. Higher household income is correlated with stronger climate action support only in some countries.[3] There are mixed patterns across countries for age; it is thus not the case that young respondents are systematically more favorable to climate policies. Opposition to climate policies is strongly correlated with lower availability of public transportation, more reliance on cars, and, to a lesser extent, higher gas expenses. Furthermore, these respondent characteristics are also significantly correlated with beliefs about the effectiveness and distributional impacts of climate policies, not just with the perceived beliefs on one's own household (self-interest). Yet, it is difficult to predict beliefs or policy views based on socioeconomic and lifestyle characteristics only. Put differently, it is not the case that we are easily able to infer people's policy views or beliefs based on their age, country, gender, education, income, political leanings, or how much they rely on polluting sources of energy.

### Related Literature

Our paper builds on the theoretical literature on the political economy of environmental and climate change policies, which focuses on the role of interest groups and other political obstacles to environmental regulation (see Hahn and Stavins (1992) and Anthoff and Hahn (2010), as well as Oates and Portney (2003) and Aldy et al. (2010) for reviews). This lit-

[3]Brazil, India, Indonesia, Italy, Poland, and Ukraine.

erature has shown that some of the economically most efficient climate policies, such as a comprehensive pricing of carbon emissions, often face political obstacles that can lead to the adoption of less efficient, and sometimes regressive, policies. These include regulation, e.g., of the fuel efficiency of vehicles (Davis and Knittel 2019; Levinson 2019) or residential energy use(Fowlie, Greenstone and Wolfram 2018). Furthermore, absent international treaties or coordination, countries are tempted to pollute too much and invest too little in green technologies (Harstad (2016)). The political economy of climate policies is complicated by the fact that regulated sectors often face significant economic costs like reduced employment (Walker 2011). Battaglini and Harstad (2020) propose a theory of international environmental agreements, in which political incumbents worry about reelections. They show that incumbents will tend to craft treaties that are at the same time overambitious and weak. Their theory also predicts that countries will rely on technology instead of sanctions – a finding that is coherent with our results that respondents tend to prefer green investment policies to taxation. In recent work, Besley and Persson (2022) provide a new dynamic model to study under what circumstances a green transition could happen, analyzing the roles of political and market forces. Across countries, Shapiro (2021) shows that import tariffs and non-tariff barriers are substantially lower on emissions-intensive industries than on clean industries, which the author attributes to stronger lobbying power of upstream sectors – an important political economy barrier to efficient policies.

Our paper contributes to the empirical literature exploring the drivers of support for climate policies. Whitmarsh and Capstick (2018) provide an overview of work on public attitudes toward climate change and Drews and van den Bergh (2016) summarize the research on what determines support for climate policies. Klenert et al. (2018), Maestre-Andrés, Drews and van den Bergh (2019) and Carattini, Carvalho and Fankhauser (2018) offer a comprehensive review of work on attitudes towards carbon taxes and offer suggestions to improve its acceptability. Fairbrother (2022) calls for more comprehensive studies that cover policies other than carbon taxes and in non-Western economies, which we do in this paper.

Existing studies largely focus on Western economics and mainly on carbon taxes and pricing. They show that people often reject carbon pricing because they perceive it as ineffective (Sælen and Kallbekken (2011) for Norway), misunderstand its costs and benefits (e.g., Thalmann (2004) for Switzerland; Jagers and Hammar (2009) for Sweden), perceive it to be regressive and costly for them (Brannlund and Persson (2012) for Sweden), or care about its distributional impacts as much as about its effectiveness (Dietz and Atkinson (2010) for the U.K.; Sommer, Mattauch and Pahle (2022) for Germany). Douenne and Fabre (2022) show that opposition to carbon pricing in France during the Yellow Vest movement was driven by misperceptions about how the policy would impact people and its effectiveness. Bergquist, Mildenberger and Stokes (2020) find that, in the U.S., the concern for distributional impacts can be mitigated and the support for carbon pricing increased by linking climate policy to other economic and social reforms. D'Acunto et al. (2022) study support for alternative forms of financing of climate change policies in Germany. After being informed that the rich contribute more to climate change than the poor, respondents' support for carbon taxes increases. Umit and Schaffer (2020) leverage the European Social Survey to highlight a

widespread aversion to carbon taxes, correlated with a respondent's reliance on fossil fuel energy and low political trust. Bechtel, Scheve and van Lieshout (2020) analyze public support for different carbon pricing trajectories in France, Germany, the U.K., and the U.S., showing that increasing carbon price paths are less popular than stable carbon prices, which they link to respondents' time preferences and desire to smooth consumption.

Closely related is the work by Carattini et al. (2017) for Switzerland (see also Baranzini and Carattini (2017)). The authors study voting behavior in a large ballot on energy taxes and find, as we do, that concerns around distributional consequences and effectiveness are key determinants of voting. They also use a survey experiment to test the acceptability of alternative designs of the carbon tax. Respondents in general prefer earmarking of carbon taxes for environmental purposes – a pattern that we show to be consistent across many countries – but informing them about the effectiveness of the carbon tax reduces their demand for earmarking. In line with our experimental results, the authors also show that explaining that a carbon tax with lump-sum recycling is progressive increases support for it. Tarduno (2020) similarly leverages an information experiment around a real-world vote. He studies Nevada's renewable portfolio standard and finds that voting is relatively responsive to perceived policy effectiveness.

Furthermore, there have been several recent initiatives for data collection across multiple countries, by the United Nations (UNDP 2021), Electricite de France (EDF) and Ipsos (Ipsos 2020), the Pew Research center Stokes, Wike and Carle (2015), and by researchers surveying Facebook users in 30 countries (Leiserowitz et al. 2021).

Building on existing empirical work, our paper makes several contributions. We investigate preferences across a comprehensive set of distinct and varied climate policies, with different characteristics. We cover 20 countries with different levels of income across several continents. Our aim is to provide standardized and detailed survey questions to elicit not only policy views, but also the underlying reasoning of respondents. Thanks to our questionnaire, we can identify which individual characteristics and beliefs are associated with policy preferences. We also design pedagogical video treatments to test the causal impact of providing explanations–not only factual information–about climate change impacts and policies.

While not the core focus of our paper, we do also study willingness to adopt climate-friendly behaviors (at the individual level), which is conceptually distinct from supporting public climate policies. Related work by Bernard, Tzamourani and Weber (2022) shows that receiving information about ways to reduce CO2 emissions increases individuals' willingness to pay for voluntary CO2 offsetting. Andre et al. (2021) study the behavioral determinants of the willingness to fight climate change – as measured through an incentivized donation decision – in a large representative sample of US adults. Predictors of climate change behavior are beliefs about social norms, patience and altruism, and universal moral values. An experiment shows that correcting the underestimation that many respondents have about the extent to which fellow citizens exhibit climate-friendly behaviors and norms improves willingness to adopt climate-friendly behaviors. The importance of higher-order beliefs (be-

liefs about others' beliefs) and social norms is also emphasized in Mildenberger and Tingley (2019) and Bolsen, Leeper and Shapiro (2014).[4] Allcott (2011) uses a randomized field experiment in the United States, in which treated households were told how their electricity usage compared to that of their neighbors, and finds important effects. We do not study norms directly, but we also find that citizens are more willing to adopt climate-friendly behaviors if others – particularly the rich – adopt them (and if they receive sufficient financial help).

Methodologically, our paper builds on Stantcheva (2021) and Stantcheva (2022) which analyze how people understand tax and trade policy in the U.S. Bursztyn and Yang (2021) provide a meta-analysis of the literature aimed at correcting misperceptions, and Haaland, Roth and Wohlfart (2020) offer an overview of the methodology. Beyond information experiments and provision of facts, our aim is to provide *explanations* using pedagogical materials (e.g., videos).

The rest of the paper is organized as follows. Section 2 describes the data collection, the sample, and the questionnaires. The subsequent sections present our main results: Section 3 focuses on knowledge about and attitudes toward climate change; Section 4 describes the support for policies across respondents and countries; Section 5 analyzes the beliefs and reasoning about the main climate policies covered; and Section 6 studies the factors that shape support for climate change action. The Online Appendix provides additional information on the survey and results. In addition, all the analyses are replicated for each country in each of the country-specific Online Appendices available on a dedicated website (https://www.oecd.org/climate-change/international-attitudes-toward-climate-policies/).

# 2 The survey

## 2.1 Survey data collection and sample

### Data collection

We collected our survey data between March 2021 and March 2022 using the survey companies *Dynata* and *Respondi*. The survey companies maintain panels of respondents, send survey links to panelists with targeted socioeconomic characteristics. The companies also reward the respondents who fully complete the survey and compensation takes various forms, ranging from cash, donations to charities, frequent flyer points, or hotel points at partner companies. Excluding inattentive respondents that failed our attention check questions or who completed the survey too fast (as explained below), we are left with our main analysis sample of 40,680 respondents, with the number of respondents per country ranging from 1,465 to 2,488.

[4] Johansson, Berggren and Nilsson (2022) find an association between intolerance and climate skepticism.

We first channel respondents through screening questions that ensure that the final sample is nationally representative along the dimensions of gender, age, income, region, and area of residence (urban versus rural). Appendix A-2.1 provides more details on our sampling procedure.

### Sample

Tables 1-5 show that our sample is relatively representative in high-income countries. One dimension where representativeness is less good in some countries is education: In Italy, Japan, South Korea, and Spain – the share of college-educated respondents is 15 to 25 p.p. higher than the actual population share. This is a common occurrence in online survey samples (see, for example, Alsan et al. (2021) or Stantcheva (2021)).

In middle-income countries (Brazil, China, India, Indonesia, Mexico, South Africa, Turkey, and Ukraine), we faced constraints due to the online nature of the survey and the pandemic-related restrictions on door-to-door surveys. College-educated people are overrepresented, and respondents aged 50 and older or living in rural areas tend to be underrepresented. Indeed, these types of respondents are always hard to reach in countries with similar characteristics. For these countries, the results should therefore be interpreted with caution, as they do not accurately reflect the attitudes of the population at large but rather those of the "online population," which tends to be skewed toward the middle and upper classes, residing mainly in urban areas.

Throughout the paper, we re-weighted the samples within each country along the dimensions of gender, age, income, region, urbanity, education, and employment.[5]

### Data quality

We took several steps to ensure the best possible data quality. Native speakers translated and reviewed the survey into the main national languages of each country and ensured that it was in line with local context and understanding.

On the introductory consent page, we appeal to people's social responsibility by asking them to answer carefully and honestly. We also warn them that we would withhold monetary compensation if their answers did not pass our quality checks. We record the time spent on different blocks and the survey overall: the median time is 28 minutes (see Appendix A-2 for the entire distribution of survey times).

We also added a question to screen out inattentive respondents. The representative samples (as shown in Tables 1-5) are obtained after excluding inattentive respondents who failed the attention check question (15% of respondents) and those who rushed to complete the survey in less than 11 minutes (16% of respondents).[6] In total, because there is overlap between those who rushed and those who failed the attention question, we end up excluding 25% of all respondents who started the survey. We show in Appendix A-6.2 that our results

[5]We trim weights so that no respondent receives a weight below 0.25 or above 4. Overall, trimming affects 3% of the respondents in high-income countries and 19% in middle-income countries.

[6]The duration is picked based on the distribution of times to complete the survey.

are robust to the inclusion of these 25% of respondents and robust to a longer duration cutoff (20 min).

We test for differential attrition in Table A20. In total, 23% of respondents drop out at some point during the survey. However, most of those who drop out do so before or during the socioeconomic questions (12%), i.e., very early on in the survey. This means that they drop out before knowing the topic of the survey and that this attrition is not differential based on interest in and views on climate change. Female, younger, lower-income, and less educated respondents are more likely to drop out, but the differences in attrition rates are not large.

*Ex post*, we checked that there were only few careless response patterns (such as choosing the same answer for all items in a matrix of questions; see Appendix A-2.2).

At the end of the survey, we ask whether our survey was politically biased and allow respondents to provide some feedback. 74% of the respondents found the survey unbiased. 15% found it left-wing biased, and 11% found it right-wing biased.

## 2.2 The questionnaire

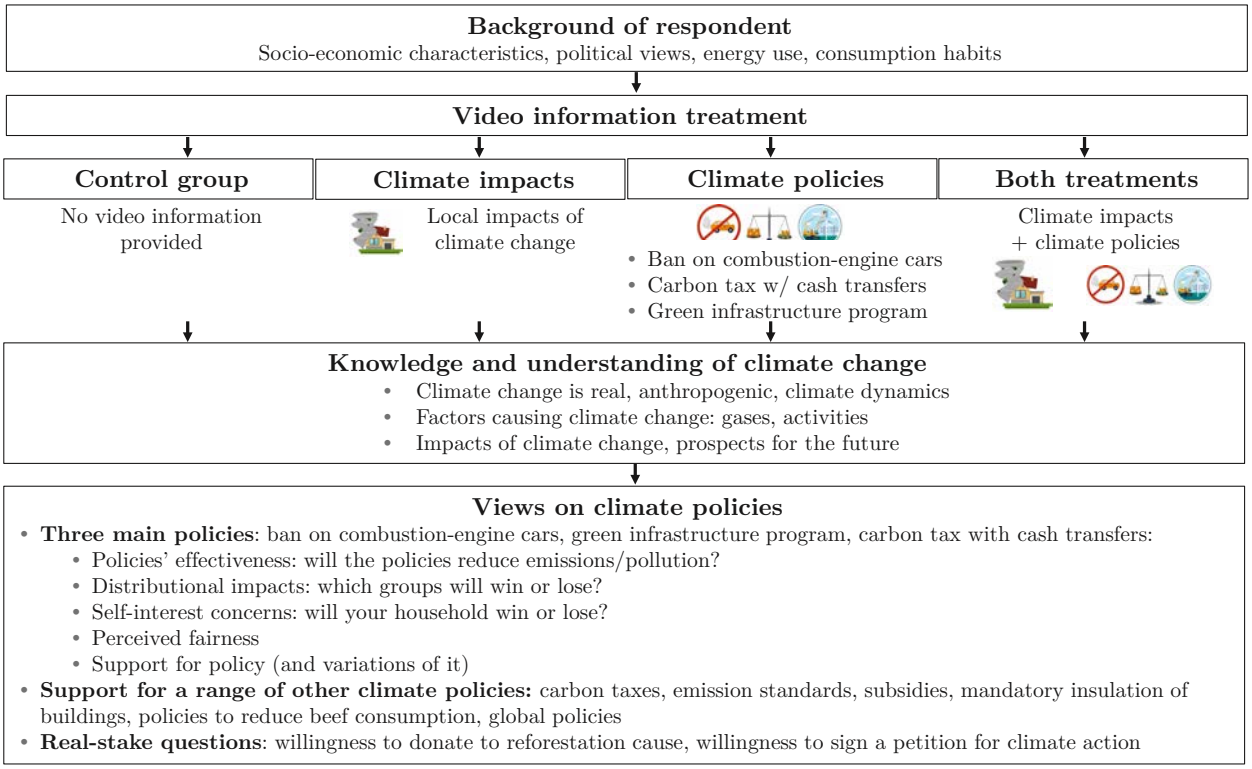
As shown in Figure 3, the questionnaire is structured in four parts, described below: questions on household characteristics, pedagogical video treatments, questions on climate change, and elicitation of views on climate policies. We kept the questionnaires as similar as possible across countries while allowing for some appropriate variations. For example, in some countries, we added questions about specific policies (e.g., a ban on deforestation in Brazil and Indonesia). We omit some questions that are inappropriate (e.g., heating expenses in tropical countries or cattle-related policies in India). Finally, necessary adjustments were made to country-specific figures and examples (e.g., the gasoline price increase implied by a carbon tax).

Appendix A-5 provides the full questionnaire as well as links to each country's questionnaire in the original language.

**Household characteristics.** We ask the respondents about their basic socioeconomic and demographic information, including their age, income, gender, zip code, type of area of residence (i.e., size of their city), household composition, highest level of education achieved, occupation, wealth, and whether they are homeowners. We measure political leanings through several questions: voting behavior in the latest national election, general interest in politics, leaning on economic policy issues, and interest and participation in environmental causes.

An important set of questions centers around energy usage and lifestyle as related to climate change. The answers to these questions allow us to assess how respondents may personally be affected by climate policies. We ask households about their housing characteristics (heating source and expenses and the quality of insulation), transportation means (fuel expenditures, modes of transport used, availability of public transportation, frequency of flying), and their beef consumption.

Figure 3: Survey outline




**Informational and Pedagogical Video Experiments** In the experimental part of the paper, we show respondents in randomly selected subsamples one or both of two videos. The "control group" sees no video. The *Climate impacts* video, which is 2-3 minutes long, centers on the impacts of climate change, with information that is tailored to the country of the respondent. The *Climate policies* video (5 minutes long) focuses on three major climate policies and is also adapted to each country's specifics.[7] The objective of these treatments is to understand how perceptions change after receiving salient information on the effects of climate change or climate policies and how these perceptions and beliefs causally translate into policy support. Appendix A-5 contains the scripts and links to the videos; Appendix A-7 contains the data sources used. Table A21 shows that our treatment assignment is balanced across socioeconomic and energy usage characteristics.

The video on *Climate impacts* starts by explaining that climate change is anthropogenic and is likely to have adverse impacts on the country of the respondent if nothing is done to reduce it. Some of the impacts presented include more severe heatwaves, frequent forest fires, and growing number of areas at risk of being permanently flooded due to sea-level rise (see Panel A in Figure 4).[8] The video concludes that it is necessary to reduce greenhouse

[7]Because we compute all descriptive statistics using the control group, we chose to make it 25% larger than the other groups. It contains 29.4% of the sample, while the three treatment branches each contain 23.5% of the sample.

[8]In Canada and Denmark, we also mention potential positive effects on crop production.

gas (GHG) emissions to tackle climate change.

The video on *Climate policies* focuses on three major climate policies that have been implemented in many countries over the past years. It describes both some of their advantages and drawbacks. First, it presents a ban on the production and sale of new combustion-engine cars that emit more than a given (time-varying) threshold of $CO_2$ per kilometer.[9] The threshold is progressively lowered so that only electric (or hydrogen) vehicles can be sold by 2030. The video also alerts respondents to the fact that electric vehicles may have a lower range and be more expensive.

Second, the video describes a carbon tax with cash transfers that taxes all products that emit greenhouse gases. We directly tell the respondents about the increase in the implied price of gasoline in local currency (e.g., \$0.40 per gallon in the U.S. and €0.10 per liter in the EU).[10] The video explains that the tax makes fossil fuels more expensive. Hence, companies and individuals are likely to reduce their fossil fuel consumption and, thus, $CO_2$ emissions. It also informs the respondents about the cash transfer per adult that can be financed (see Appendix A-7.1.1 for how we compute this). Furthermore, the video explains that equally redistributing the revenues across all people means that low-income earners will, on average, receive more in cash transfers than they pay in taxes. The reverse holds true for high-income earners (see Panel B in Figure 4).

Third, the video discusses the effects of an extensive public investment program in green infrastructures in transportation, energy, insulation, and agriculture financed by additional public debt. It provides estimates of the number of jobs created in non-polluting sectors and of jobs lost in polluting sectors.[11] Finally, the video reminds the respondents that although we have focused on three essential policies, many others will be useful and needed to combat climate change and provide a few examples.

**Knowledge of and attitudes toward climate change.** We measure the respondent's knowledge and understanding of climate change by asking a series of general and more technical questions. These include whether climate change is human-caused, what its possible impacts are, and which greenhouse gases (GHGs) contribute to it. We also ask respondents to rank different activities, modes of transportation, foods, and world regions in terms of GHG emissions.

Furthermore, we elicit respondents' attitudes on private climate action by asking how climate change affects their lifestyle, the extent to which they are willing to adopt different climate-friendly behaviors, and what factors would facilitate this adoption.

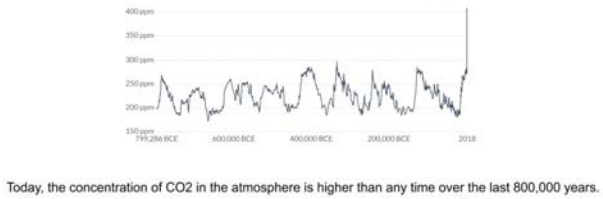
[9] This policy is similar to fuel economy standards that have been implemented in many countries, including the U.S., the European Union, China, and India (Anderson and Sallee 2016)

[10] Implicitly, we use a price of carbon \$45 per ton of $CO_2$, close to estimates of the social cost of carbon in Marron and Maag (2018)

[11] Economists have advocated for green infrastructure investment programs for many years to accelerate the transition towards a low-carbon economy (Hepburn et al. 2020; High Level Commission on Carbon Prices 2017). Over the past years, many governments have started to launch such programs, including the E.U.'s Green Deal (EC 2019) and programs adopted in the aftermath of the COVID-19 pandemic, such as the Next Generation E.U. fund (EC 2020) and the U.S. Infrastructure Investment and Jobs Act (US Congress 2021).

Figure 4: Treatment videos

(A) Climate impacts video




Today, the concentration of CO2 in the atmosphere is higher than any time over the last 800,000 years.


Air pollution caused by the burning of fossil fuels is already responsible for 6 million annual deaths worldwide.

In the North-East, the risk of heavy rain has already increased by 55%.

(B) Climate policies video


For example, the price of gasoline would increase by 40 cents per gallon.


To compensate people for the higher prices, the revenues of the carbon tax would be redistributed to all households, regardless of their income.

Does this policy work? Yes! The Canadian province of British Columbia has a carbon tax with cash transfers since 2008.

**Views on climate policies.** One of our core contributions is to elicit detailed reasoning about climate change policies. In the final block of the survey, we explore how respondents think about the three main climate policies explained in the videos (a ban on combustion-engine cars, an investment program in green infrastructures, and a carbon tax with cash transfers) and range of other climate policies.

Importantly, rather than only asking respondents about their support for the main policies, we also elicit their perceptions about the policy's effectiveness in reducing emissions and changing behaviors, effects on the economy and employment, distributional impacts (which groups will lose or win?), impacts on their own household (will they lose or win?), and fairness. We further ask them about variations related to the sources of funding (in the case of the green infrastructure program), how the revenue is spent (in the case of the carbon tax), and policy bundles (e.g., a ban on combustion-engine cars with alternative modes of transportation).

The set of policies that we test is informed by the literature and the policy discussions. We intentionally do not limit the policies to only cover first-best instruments because of potential trade-offs between efficiency and social acceptability or political economy. In addition to the three main policies described above, we test several other policies.

First, we assess support for several variants of carbon taxes, which differ in the way the revenues are earmarked. Second, we include several variants of bans on polluting cars, motivated by existing bans or restrictions for combustion-engine cars, for example in Mexico City (Davis 2008), or in cities across Germany (Wolff 2014). A third group of policies includes support for investments in low-carbon technologies and green infrastructures. Fourth, we elicit support for policies to reduce emissions from residential energy use.[12] Fifth, we test support for policies to reduce emissions from the agricultural sector, in particular cattle farming.[13] Furthermore, we also assess support for a tax on flights (increasing ticket prices by 20%).

In addition to self-reported policy support, we also ask two "real-stakes" questions requiring the respondent to incur a cost to express their support for climate action: a donation and a petition question. In the donation question, we inform respondents that they are automatically entered into a lottery to win $100 (or the equivalent in their local currency). Before they know whether they have won the lottery, they have to decide which share of their potential win, if any, to donate to the non-profit *Gold Standard*, which fights deforestation. The respondent can also choose to sign the petition for climate action (expressing the view that *"immediate action for climate change is critical"*) and is told that information about the share of respondents who signed this petition will be shared with the government of their country.

[12] In the U.S. (Goldstein, Gounaridis and Newell 2020) and in the E.U. (Eurostat 2020), households account for about 20% of total greenhouse gas emissions.

[13] Globally, livestock accounts for nearly 15% of greenhouse gas emissions with beef and cattle milk production accounting for the majority of livestock emissions, contributing 41% and 20% respectively (Gerber et al. 2013).

## 2.3 Outline of the analysis

All variables constructed based on the questionnaire and used in the analysis are defined in Appendix A-1. The descriptive statistics shown in Sections 3, 4, 5, and appendices are based on the control group sample only, i.e., respondents who see no pedagogical video. In the analysis, we usually correlate individual views and reasoning with two sets of individual covariates: i) individual socioeconomic characteristics (e.g., age, gender, or income) and ii) lifestyle and energy usage characteristics (e.g., car usage or heating source), "energy usage" for short. Whenever the effects of these covariates are relatively homogeneous across countries, we show only the coefficient on the pooled country sample (always including country fixed effects) and discuss possible heterogeneities. If patterns are heterogeneous, we directly show the coefficients in different countries. Our main results are shown separately for each country in Appendix A-4. Furthermore, we repeat the entire analysis for each country in the country-specific Online Appendices.

# 3 Knowledge and attitudes on climate change

This section describes respondents' knowledge and understanding of climate change.

## 3.1 Knowledge across countries

Less than one-tenth of people outright deny the existence of climate change, except in Australia, France, and the U.S. (where the share is 12 or 13%). Most people believe that climate change is anthropogenic: one-third know that "most" (if not all) of it is due to human activity, and, depending on the country, 60% to 90% of respondents believe that human activity causes "a lot" or "most" of climate change.

**Consequences of climate change.** Most respondents (75-94%) correctly foresee some of the consequences of unabated climate change, such as severe sea-level rise or droughts and heatwaves (see Figure 5). At the same time, most also believe that climate change will entail more frequent volcanic eruptions, which is not in line with climate science. People seem to bundle several types of disasters together.

**Sources of greenhouse gas emissions.** Respondents are generally too optimistic about the decarbonization needed. One-half of the high-income countries' respondents correctly believe that cutting GHG emissions by half would *not* suffice to stop global warming, and this share is less than one-third in middle-income countries.

Respondents are relatively well aware of the factors that cause climate change, especially in high-income countries. 80% correctly recognize that $CO_2$ is a greenhouse gas, 56% that methane is one, and 67% that particulate matter is not. Most of the classifications for different types of food and power generation in terms of GHG footprint are also correct. However, a non-trivial share of respondents, especially in middle-income countries, believe that nuclear power has a higher footprint than gas or coal.

The answers are less accurate on transportation modes, especially in countries where the difference in emissions between trains and cars is smaller because of the lack of low-carbon trains. We ask respondents to imagine a family journey between two large cities in their country and rank the possible modes of transportation according to their greenhouse gas emissions. The options are *Plane*, *Car*, and *Train* (or *Bus*, depending on whether bus or train is the most commonly used option for such journeys).[14] Respondents rank options more accurately in countries like Denmark or Germany where trains are very low-carbon. They are less accurate in countries such as Indonesia or India, where trains are not unambiguously less carbon-intensive than the other options.

**Ranking regions of the world by emissions.** We also ask respondents to rank China, the U.S., the E.U., and India by total and per capita emissions.[15] Respondents rank regions and countries quite accurately in terms of total emissions. However, many overestimate the footprint of the average Chinese resident and underestimate that of the average European.[16]

## 3.2 Who has better knowledge?

To summarize a respondent's knowledge about climate change, we construct a *Knowledge index* that summarizes the variables mentioned above and increases the more accurate a respondent's answers are (see Appendix A-1). We construct all indices in the paper in the following three steps. First, we transform each underlying variable into a z-score (subtracting the control group mean and dividing by the control group standard deviation). Second, we take the average of the z-scores. Third, we standardize that average again by dividing by its standard deviation. In Figure 6, we regress the *Knowledge index* on respondents' socioeconomic characteristics and variables that proxy for their energy usage.

Across most countries, having a college degree is significantly associated with more accurate knowledge. Also consistent across many countries is that respondents with left-leaning economic views have more accurate perceptions than those with right-leaning views. On the other hand, women are generally less accurate, except in Australia, South Korea, Turkey, the U.K., Ukraine, and the U.S. (where there are no apparent differences by gender), in particular because they tend to perceive more negative potential impacts of climate change (which are not always accurate, such as, more frequent volcanic eruptions). The association between income and knowledge, conditional on education, is either significantly positive or insignificant, except in China (see Table A1).

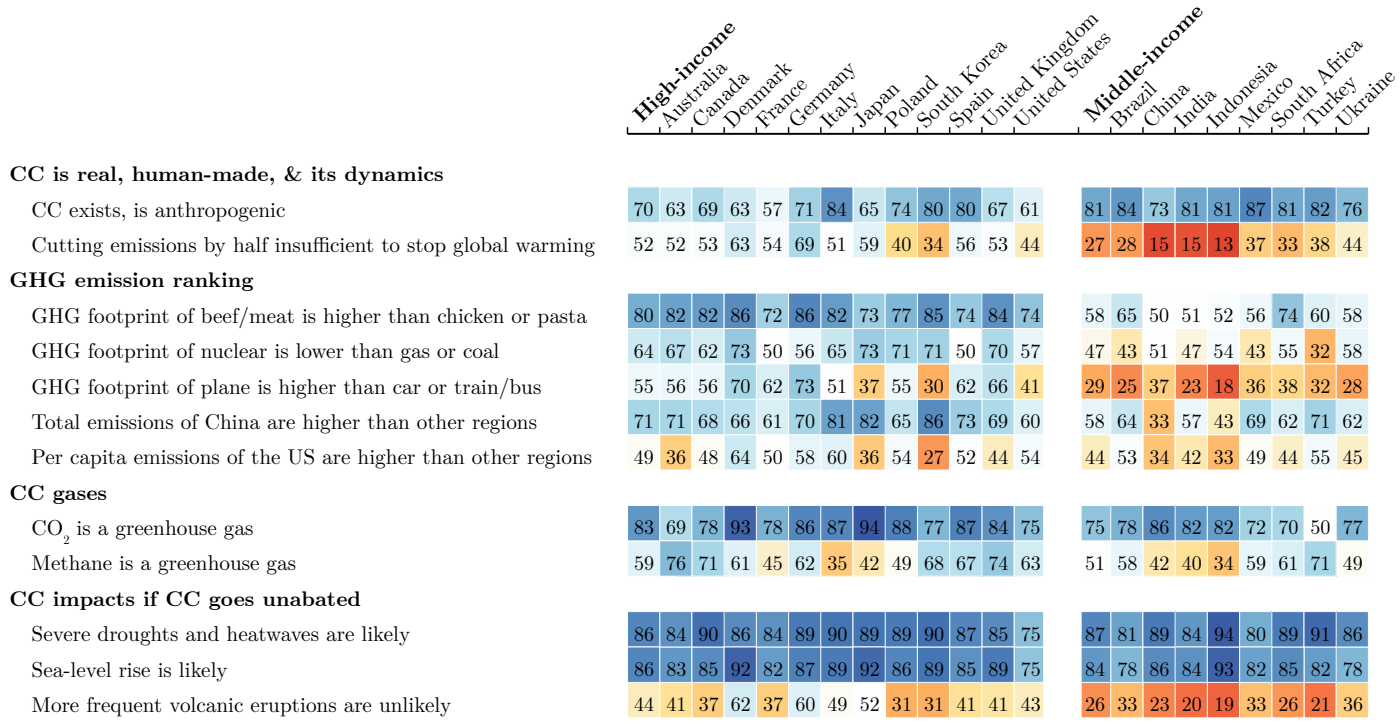
The effect of age varies across countries (see Figure 6): while age is positively correlated

[14] In countries such as Indonesia, where trains rely on coal, the advantage of trains is less clear. Respondents are thus asked about a family of two traveling 800 km from Surabaya to Jakarta instead of a family of four since a fully occupied car would be more efficient than the train. Featuring two passengers instead of four also blurs the comparison between the GHG footprint per passenger of a plane versus a car, as the two are comparable when there is only one passenger in the car.

[15] The respondent's country was also added for the GHG footprint, except for E.U. countries.

[16] The actual ranking for total emissions is China, the U.S., the E.U., and India. The true ranking for the per capita GHG footprint is as follows: U.S., E.U., China, and India. To avoid any systematic priming, we randomized the order in which countries/regions were displayed.

Figure 5: Knowledge about climate change across countries:
Share of correct answers




*Note*: Share of respondents who agree with the statements listed on the left. The statements represent the correct answer, according to the current scientific literature (see the sources in Appendix A-7). This figure only includes respondents in the control group only (who did not see any pedagogical videos). For the exact phrasing of each question, see Appendix A-5.

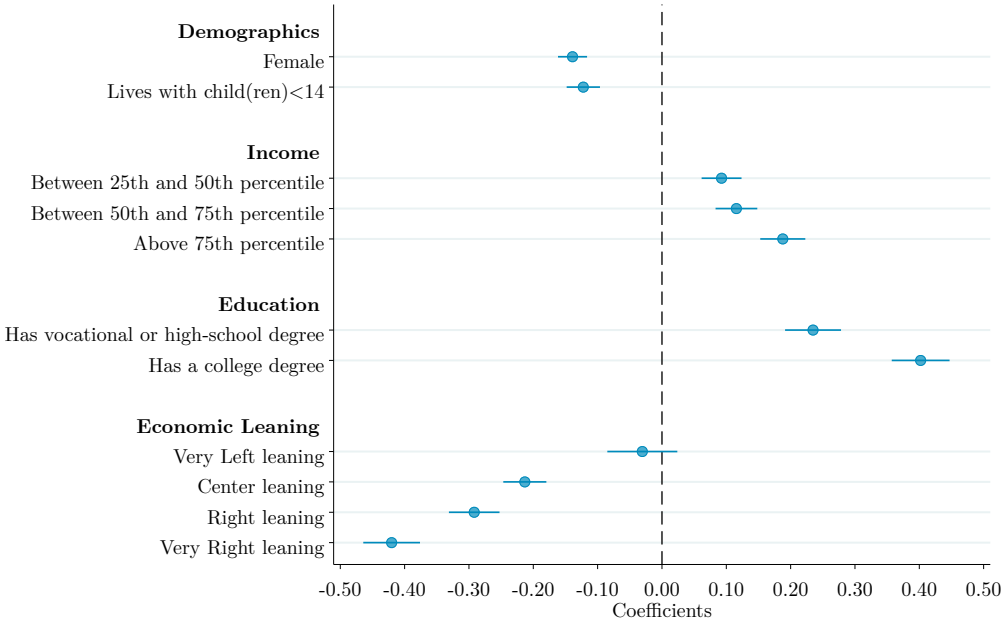
with knowledge in Australia, Canada, Denmark, Germany, Spain, Poland, India, Turkey, Ukraine, the U.K., and the U.S., the correlation is negative in South Korea. Finally, respondents living with young children are somewhat less accurate too.

## 3.3 Expectations about climate change

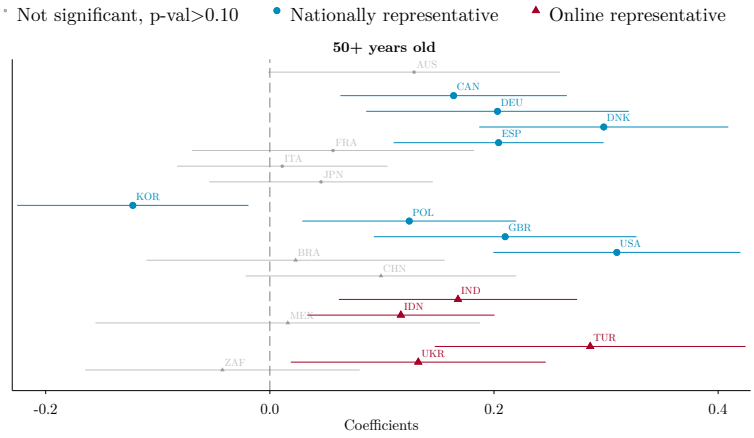
Overall, expectations about the future are relatively bleak in high-income countries (see Panel A of Figure A3). Typically, less than 40% of respondents think that it is technically feasible to stop GHG emissions by the end of the century while maintaining satisfactory living standards or that it is likely that humans will halt climate change by the end of the century. Less than one-fifth of respondents in high-income countries think that the world will be more prosperous than today in a hundred years. A substantial share of respondents think that climate change, if nothing is done to limit it, could cause the extinction of humankind. Respondents in middle-income countries are more worried about the effects of unfettered climate change overall and on themselves; however they are also more optimistic on humans' ability to halt climate change and in the technical abilities to do so while sustaining

Figure 6: Who has better knowledge about climate change?

(A) Correlation between knowledge (*Knowledge index*) and socioeconomic characteristics




(B) Heterogeneous effects of age across countries




*Note*: Panel A shows the coefficients from an OLS regression of the *Knowledge index* on indicators for individual socioeconomic characteristics. Country fixed effects, treatment indicators, and age are included. The coefficients on age are displayed separately in Panel B for each country to highlight the heterogeneity. The omitted categories in Panel A are "male" for *gender* (*gender:* "other" is not displayed), lowest income quartile for *income*, "no schooling, or highest level achieved is primary or lower secondary education" for *education*; "left leaning" for *economic leaning*. In Panel B, the omitted category is "18-34 years old" for *age*. The $R^2$ is 0.16. See Appendix A-1 for variable definitions.

reasonable living standards.

The share of people who think that climate change will affect their own life and humankind in general is systematically higher in countries that are actually more vulnerable to climate change, e.g., 72% in India compared to 16% in Denmark. Both these perceptions are positively correlated with the University of Notre Dame vulnerability index (Chen et al. 2015) and exposure to PM2.5 from the OECD (see Figure A2). Thus, subjective beliefs about the impacts of climate change are related to the country's actual vulnerability.

Within countries, certain groups of people tend to be more worried about unabated climate change: female, younger, more educated, and left-leaning (see Panel B of Figure A3). Higher-income, college-educated, older, or left-leaning respondents are significantly more optimistic about humans' technical ability to halt climate change.

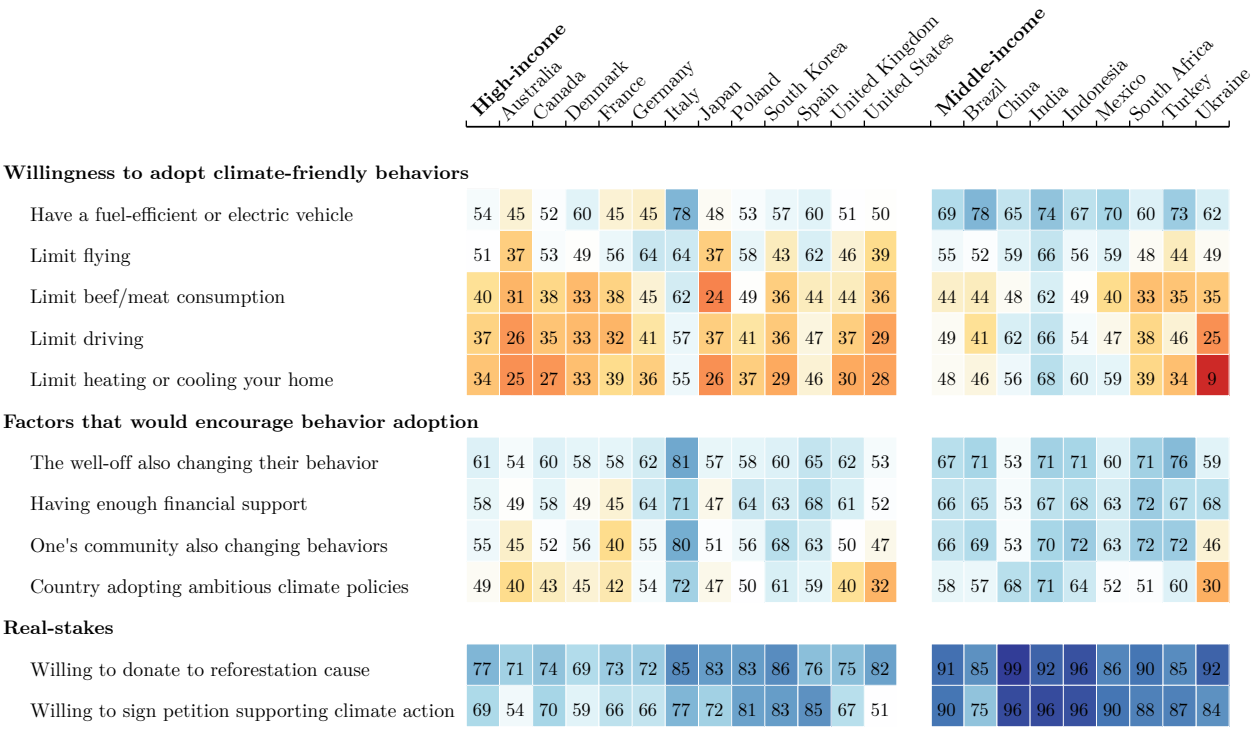
## 3.4 Willingness to adopt climate-friendly behaviors

Our paper focuses on people's understanding of and support for climate policies. However, climate action can also take the form of individual behavior changes, which are conceptually different. The correlation between indices of "*Willingness to change behaviors*" and "*Support for climate policies*" (which we describe in more detail later) is positive, but below 1 (0.6). It is thus interesting to compare and contrast respondents' willingness to adopt climate-friendly behaviors with their support of public policies.

Just around half of the respondents say they are willing to have a fuel-efficient car or electric vehicle or to limit flying, given current incentives (see Figure 7). Furthermore, except in Italy and India, respondents are generally unwilling to limit their beef or meat consumption significantly. Few are willing to limit driving or heating or cooling their homes by a lot.

We also asked people about their willingness to adopt these behaviors under different circumstances. It is important to people that they receive enough financial support to make these changes and that others, especially the most well-off, also change their behaviors.

Figure 7: Share of people willing to adopt climate-friendly behaviors




*Note*: *Willingness to adopt climate-friendly behaviors* are answers to the question "*To what extent would you be willing to adopt the following behaviors?*" and *Factors that would encourage behavior adoption* correspond to answers to the question "*How important are the factors below in order for you to adopt a sustainable lifestyle (i.e. limit driving, flying, and consumption, cycle more, etc.)?*". Both questions use a 5-point scale: "*Not at all*", "*A little*", "*Moderately*", "*A lot*", and "*A great deal*". Depicted are the shares of respondents who answer "A lot" or "A great deal." Real-stakes questions include the signature of a petition to "stand up for real climate action" and an indicator equal to one if the respondent chose to donate a share of their survey lottery prize of $100 in case they win the lottery. The shares represented are based on respondents in the control group only (who did not see any pedagogical videos).

# 4 Support for climate action across and within countries

This section describes support for climate policies across countries and respondents. One complicating factor is that a given policy (e.g., a carbon tax) may generate different levels of support than bundles of policies (e.g., revenues from a carbon tax used to fund low carbon technologies). While it would be convenient to think of the tax side as separate from the revenue side, respondents' views on tax-based policies depend on the use of the revenue. Vice-versa, for each policy requiring funding, the funding source matters. Policy bundles are complicated to study because there are many different combinations. Our approach is, therefore, as follows. First, we provide evidence on several key policies. Second, we shed light on the possible uses of revenue in the case of carbon taxes, the sources of funding for the green infrastructure program, and policy bundles in the case of combustion-engine car bans. Third, in Section 5, we analyze the fundamental factors shaping support for policies. This analysis can provide guidance for the evaluation and prediction of support for other combinations and types of policies.

## 4.1 Support for different types of policies

**Support for infrastructure policies.** Figure 8 shows clear patterns in how respondents rank the different types of policies. Subsidies for low-carbon technologies and public investments in green technologies and infrastructures (financed by public debt) receive more than 55% support in high-income countries and more than 65% support in middle-income countries. There is equally high support for the mandatory and subsidized insulation of residential buildings across countries.

The source of funding clearly matters. Figure A6 shows the answers to the question about which sources of funding respondents would consider appropriate for public investments in green infrastructures. Respondents tend to agree that appropriate funding sources are higher taxes on the wealthiest and a carbon tax. They are much less likely to agree with additional public debt, reductions in social spending, reductions in military spending, or increases in the sales taxes as appropriate sources of funding. These views are consistent with our results below that people care about policies' progressivity and effectiveness.

**Bans on polluting vehicles.** Many respondents also support banning polluting vehicles in city centers or dense areas (60% in high-income countries and 71% in middle-income ones). In high-income countries, support is 20% lower (12 percentage points) for a ban on the production of combustion-engine cars even when alternatives are available and 28% lower for a simple ban on combustion-engine cars (without alternatives specified). We highlight the importance of having alternative transportation modes available for support for climate policies overall in Section 6. Furthermore, in Germany, Italy, Poland, and Spain, we also asked about an alternative policy, namely support for a monetary penalty (of either €10,000 or €100,000) for the purchase of combustion-engine cars. Bans generate consistently higher support than

penalties (see Figure A5). Support for regulation over price mechanisms highlights some of the limits of "paying to pollute" principles, which people may deem to be unfair, as the richest are able to pay their way out of it. Bans, on the contrary, affect everyone.

**Carbon taxes.** At first glance, carbon taxes and especially taxes on fossil fuels appear to be among the least popular policies. Taxes on fossil fuels and carbon taxes funding equal transfers to everyone only generate 36-38% support in high-income countries and 48-61% support in middle-income ones. However, the use of revenue matters substantially. In fact, carbon taxes with revenue used to fund environmental infrastructures, subsidize low-carbon technologies, or reduce income taxes benefit from around 70% higher support in high-income countries (for a level of support around 55%) and 25% higher support in middle-income countries (70%). The same goes for carbon taxes with transfers to the poorest or the most constrained households. On the contrary, carbon taxes used to reduce corporate taxes generate similarly low support as carbon taxes with equal transfers or taxes on fossil fuels (for which the use of revenues is not specified).

**Agriculture-targeted policies.** Finally, policies that aim to reduce cattle farming are ranked among the least popular in all countries. Bans on intensive cattle farming enjoy somewhat higher support than either the removal of subsidies for cattle farming or a high tax on cattle products overall.

**Support and opposition versus indifference.** An important point when trying to map these survey findings to real-world support for a policy is that around one-third of respondents say that they neither support nor oppose a given policy. Figure A4 shows the share of respondents who support a policy out of all respondents who express either support or opposition (but not indifference). Although the ranking of policies and the relative cross-country patterns are unchanged, among non-indifferent respondents, a majority is in favor rather than against most policies. Figure A10 shows that respondents who are female, lower-income, with a lower degree of education completed, politically center-leaning are more likely to be indifferent.

These patterns suggest that indifference to climate policies may be a critical aspect to consider. It is important to also focus on the citizens who express a lack of opinion on these issues. This expression may reflect a lack of interest in the topic, lack of knowledge, or actual ambiguity and hesitation about climate action. In that sense, indifferent respondents may be akin to "swing voters" and those whose views are most malleable. Their views could change if a policy is actually proposed, discussed, and they are asked to vote on it. Section 6 highlights the factors shaping people's support for various policies and can be informative about what pieces of information are needed to sway people's views on average.

## 4.2 Cross-country comparisons

We continue with a cross-country comparison in support for climate action, bearing in mind that we have to be cautious when comparing absolute levels of support between high-

income and middle-income countries, given the differences in sampling highlighted.[17]

Overall, support for the three central policies considered is lowest in Germany, France, and Australia, followed by Denmark, Japan, and the U.S., and, to some extent, the U.K, and Poland. Italy, South Korea, Spain, and Canada stand out as having overall higher support and are on par with Brazil, South Africa, Turkey, and Ukraine (with the lowest degree of support among middle-income countries). Mexico and Indonesia have higher levels of support, and support is almost consistently highest in India and China.

Support for the carbon tax (and its variations) is particularly low in Australia, Poland, Denmark, Germany, and the U.K., and the U.S. Bans on combustion-engine cars see their lowest support in Denmark, France, Germany, and the U.S. and their highest support in India and China.

Cattle-related policies are unpopular in Japan, Turkey, Ukraine, South Africa, Australia, and Denmark. Support for green infrastructure programs, and carbon taxes used to fund environmental infrastructures or low-carbon technologies are highest in Italy and middle income countries, especially in Brazil, China, Indonesia, Mexico, and South Africa. In Brazil and Indonesia, 75 to 79% of respondents support a complete ban of deforestation enforced by strong sanctions.

Furthermore, although we focus on climate policies at the national level, when asked the level at which climate policies need to ideally be put in place, 73% to 93% of people choose the global level. Less than half of all respondents think that policies should be enacted mainly at the federal (or European), the national (or state), or the local levels.

## 4.3 Individual characteristics correlated with support for climate policies

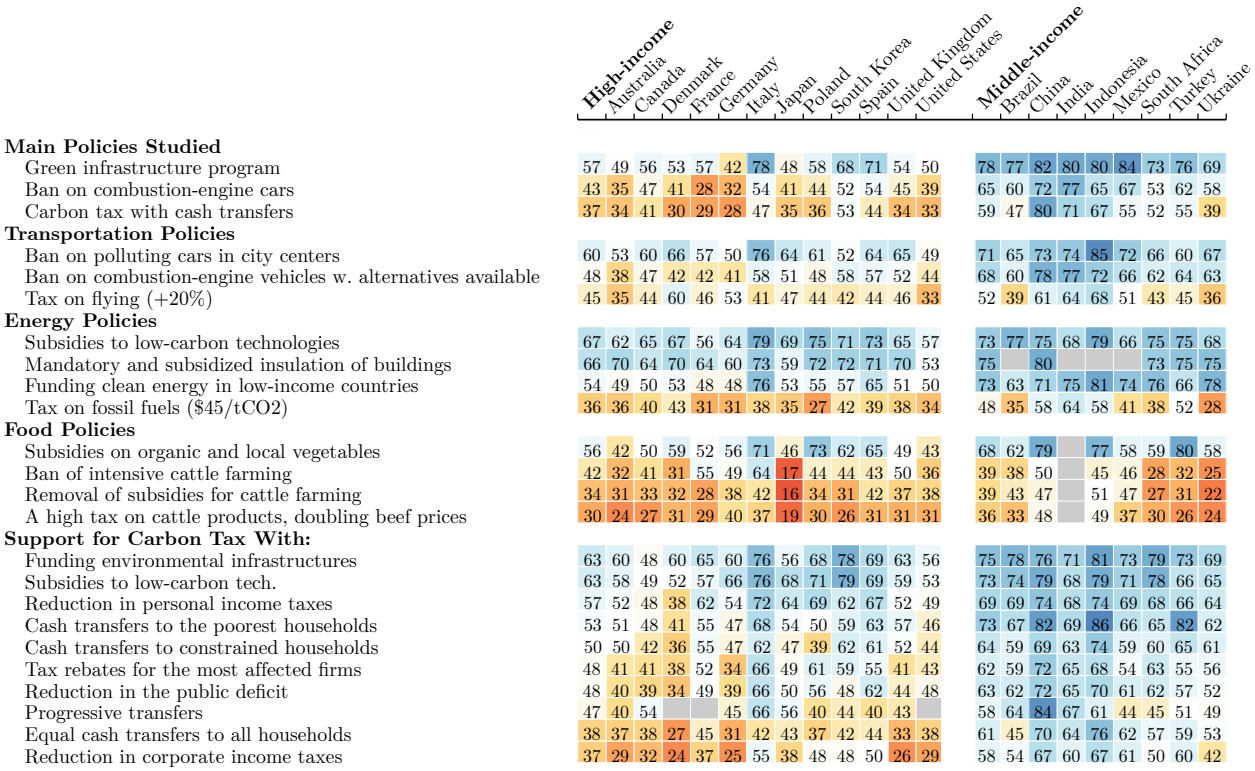
To summarize support for climate policies, we construct a *Support for Main Climate Policies index* based on the three main policies studied (see Appendix A-1 for details). In Figure 9, we regress the *Support for Main Climate Policies index* on the complete set of individual socioeconomic and energy usage characteristics and country fixed effects (to see these results for each of the three main policies separately, see Figure A14). Whenever the average effects are relatively homogeneous across countries, we do not discuss country heterogeneity specifically (although all results are in Tables A5-A6). For unconditional shares of support for the three main policies by respondent characteristics, see Figures A8 and A9.

**Individual characteristics.** Figure 9 shows that political leaning is one of the strongest predictors of views on climate action: in most countries, left-leaning respondents support more climate action. The exceptions are China, Indonesia, Mexico, and Ukraine.

In most countries, college-educated respondents are more likely to support climate action (Australia, Brazil, China, Denmark, Indonesia, India, Italy, Mexico, Spain, Turkey, the U.K.,

[17] Although we control for country fixed effects, differences in context and other policies already in place may influence views heterogeneously among different groups of people. For instance, the *statu quo* level of taxes may heterogeneously influence how much appetite there is for more taxation across different groups.

Figure 8: Share of respondents who support climate change policies (somewhat to strongly)




*Note*: Policy views are elicited on a 5-point scale "Strongly oppose," "Somewhat oppose," "Neither support nor oppose," "Somewhat support," and "Strongly support." The figure shows the share of respondents to answer "Somewhat support" or "Strongly support." For support shares excluding "Neither support nor oppose" answers, see Figure A4. The shares represented are based on respondents in the control group only (who did not see any pedagogical videos). For the exact phrasing of each question, see Appendix A-5.

and the U.S.). Income has mixed effects, as illustrated in Panel B. Higher-income respondents support more climate action in Brazil, India, Indonesia, Italy, Poland, and Ukraine. There are no clear patterns by income for the other countries. Age also has mixed effects. Older respondents in China, India, Indonesia, Japan, Mexico, Poland, South Korea, and Turkey are more supportive of climate action. Bear in mind, however, that in the online-representative samples, older respondents (especially those above 65 years old) represent only a small and possibly selected share of the population. In some high-income countries such as Australia, France, and the U.S., younger respondents are more likely to favor climate policies. There is no significant heterogeneity by age in the U.K. or other E.U. countries. In addition, respondents who live with children below the age of 14 are more supportive of climate policies.

**Lifestyle and energy usage factors.** Access to public transportation has one of the strongest correlations with support for climate policy; the correlation is insignificant only in

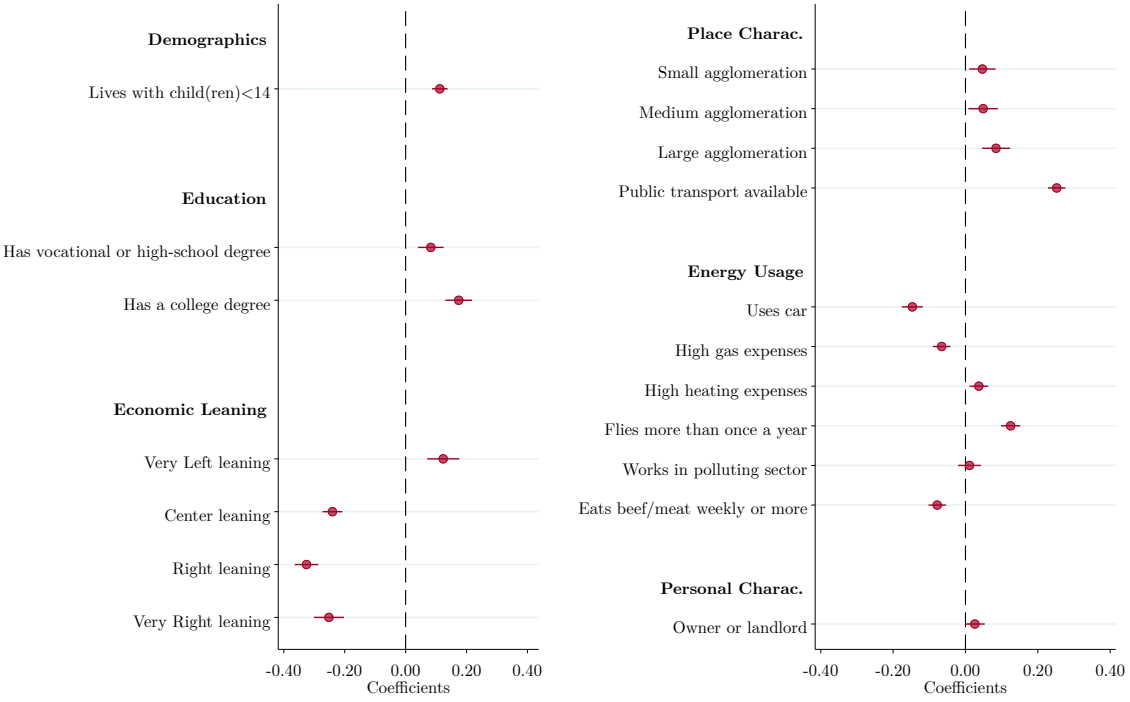
China, Japan, Mexico, and Ukraine. Conditional on access to public transportation, living in a large urban area only has a significantly positive correlation with policy support in Denmark, the U.K., and the U.S., but not in most countries. Thus, the availability of public transport seems to be the first-order concern related to the area of residence. For all high-income countries except the U.S., using a car regularly is associated with lower support for climate action. However, in China, India, and Indonesia, car usage is positively associated with policy support (see Figure A7 for detailed cross-country heterogeneity in the effect of car usage). Conditional on car usage, high gas expenses matter only marginally in Canada, Denmark, Germany, Italy, and Mexico. Frequent flyers tend to support more climate action overall, except for a tax on flying (see Figure A11). Respondents who consume beef weekly or more are less likely to support climate policies in Australia, Canada, Denmark, France, Germany, and Spain.

Figure A11 shows the correlations between support for a range of other climate policies and individual characteristics. They are overall similar to the ones described for the main policies. Car-dependent respondents are less supportive of bans on polluting cars (whether those are overall bans, with alternatives, and in dense areas). They also exhibit lower support for taxes on fossil fuels and carbon taxes with cash transfers (only in Australia, France, Japan, Poland, and the U.K., see Figure A7). They do not have different views on taxes on flying, green infrastructure programs, subsidies for low-carbon technologies, or mandatory and subsidized insulation of buildings. Homeowners and landlords are less supportive of mandatory insulation but not less supportive of other climate change actions.

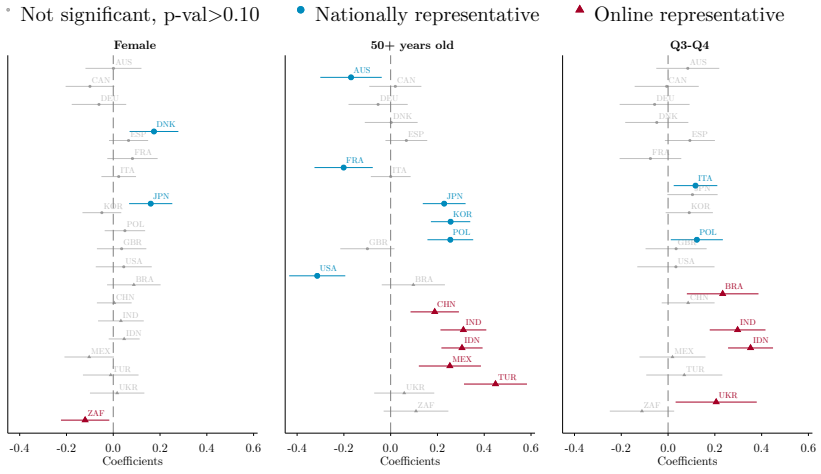
**Can policy views be explained by socioeconomic and lifestyle characteristics?** An important question is how much of the variation in policy views we can predict using these observable socioeconomic and energy usage characteristics. The $R^2$ from the regression in Figure 9 is 0.18, and would be 0.09 omitting country fixed effects. It increases to 0.24 if we add a large set of interactions between the covariates (0.12 without country fixed effects). Thus, while there are meaningful and significant differences within countries, it is not easy to predict policy views from observable socioeconomic and energy usage characteristics only. Put differently, it is difficult to delineate specific groups based on observables that are for or against climate policies. We next turn to the beliefs that shapes views on climate action.

Figure 9: Which respondents support climate action?

(A) Correlation between *"Support for main climate policies index"* and socioeconomic and energy usage characteristics




(B) Heterogeneous effects of gender, age, and income across countries




*Note*: Panel A shows the coefficients from a regression of the *Support for main climate policies* index on socioeconomic indicators (left panel) and energy usage indicators (right panel). In the right panel, we control for but do not display the coefficients on socioeconomic indicators. Country fixed effects, indicators for age, gender, income, and each treatment are included but not displayed. The $R^2$ is 0.18. The omitted category for *Place characteristics* is "Rural or very small agglomeration." For a list of all omitted categories, see the notes to Figure 6. Panel B reports the coefficients on being 50 years and older (relative to being aged between 18 and 34 years), being female (relative to being male), and being in top two quartiles of the income distribution (relative to being in the first quartile). See Appendix A-1 for more precise definitions of the variables.

# 5 Reasoning about climate policies

In this section, we study respondents' understanding of climate policies, particularly, how they perceive the policies' effectiveness, economic effects, distributional consequences, and impacts on themselves.

## 5.1 Perceived distributional and efficiency impacts across countries

Figure 10 summarizes how respondents think about the effects of the three main policies. We distinguish between high-income countries and middle-income countries, and also consider China, India, and Indonesia separately (for a country-by-country plot, see Figures A12 - A14).[18]

**Perceived environmental benefits.** The environmental benefits of climate policies are largely acknowledged: in both high-income and middle-income countries, a majority of respondents agree that the three policies would reduce air pollution and GHG emissions. France ranks as the most pessimistic country regarding perceived effectiveness, followed closely by Germany and the U.S., and Denmark to a lesser extent. Most optimistic about effectiveness are respondents in India, Indonesia, Japan, and South Africa.

Respondents in high-income countries are somewhat divided about the behavioral effects of the policies, such as driving less or using more public transportation. In contrast, respondents in middle-income countries tend to believe in the behavioral effects. For instance, in Poland, South Korea, and Spain more than 55% of respondents believe that a carbon tax would encourage people to drive less, but this share is only around 40% in France or Germany.

**Perceived economic effects.** Few respondents think that climate policies will have positive impacts on the economy and employment, although this share is somewhat higher in middle-income countries. When asked about whether each of the policies is a cost-effective versus costly way to fight climate change, respondents rank a carbon tax as the most costly, followed by the green infrastructure program and then the ban on combustion-engine cars. Perceived costs and negative economic impacts of the carbon tax are particularly high in the U.S., France, Denmark, the U.K., and Germany (in this order).

**Perceived distributional impacts.** In most countries, the three main policies are often considered regressive. In high-income countries, at most one-quarter of respondents believe that low-income earners, the middle class, and those living in rural areas would gain from a green infrastructure program and a carbon tax with transfers. The largest perceived losses relate to the ban on combustion-engine cars: in high-income countries, only about 15% of the respondents think that each of these groups will win. In contrast, around 40% of the

[18] The reason to consider these three countries separately in this figure is that they exhibit significantly different patterns than other middle-income countries.

respondents believe that high-income earners will be net positive from these three policies. In middle-income countries (excluding China, India, and Indonesia), respondents perceive the distributional impacts of the green infrastructure program more positively, but they are still wary of the possible effects of a carbon tax and combustion-engine bans on low-income, rural, and middle-class households. In India, Indonesia, and China, these patterns are quite different, and respondents are substantially less likely to consider the three main policies as regressive. The share of respondents who think that policies will benefit high-income households is generally smaller than the share who think they will benefit lower-income households, especially for the carbon tax with transfers.

**Perceived impacts on one's own household.** Overall, respondents are similarly pessimistic about the financial effects of the three policies on their own household as they are about their effects on middle-class or rural households. Less than one-fifth of respondents in high-income countries think their household would financially gain from these policies. Respondents in middle-income countries are somewhat more optimistic about the effects on their household, and respondents in China, India, and Indonesia are significantly more optimistic.

To sum up, many respondents see these three key policies as environmentally effective but regressive and against their own financial interest.

## 5.2 How do different groups of respondents reason about climate policies?

Figure 11 regresses the perceived effectiveness, distributional impacts, and own impacts of the main policies on individual socioeconomic and lifestyle indicators and country fixed effects.[19]

Higher-income respondents tend to be more optimistic about the policies' effectiveness in reducing emissions. Respondents with young children are less likely to think that they will personally lose from these policies or that the policies are regressive.

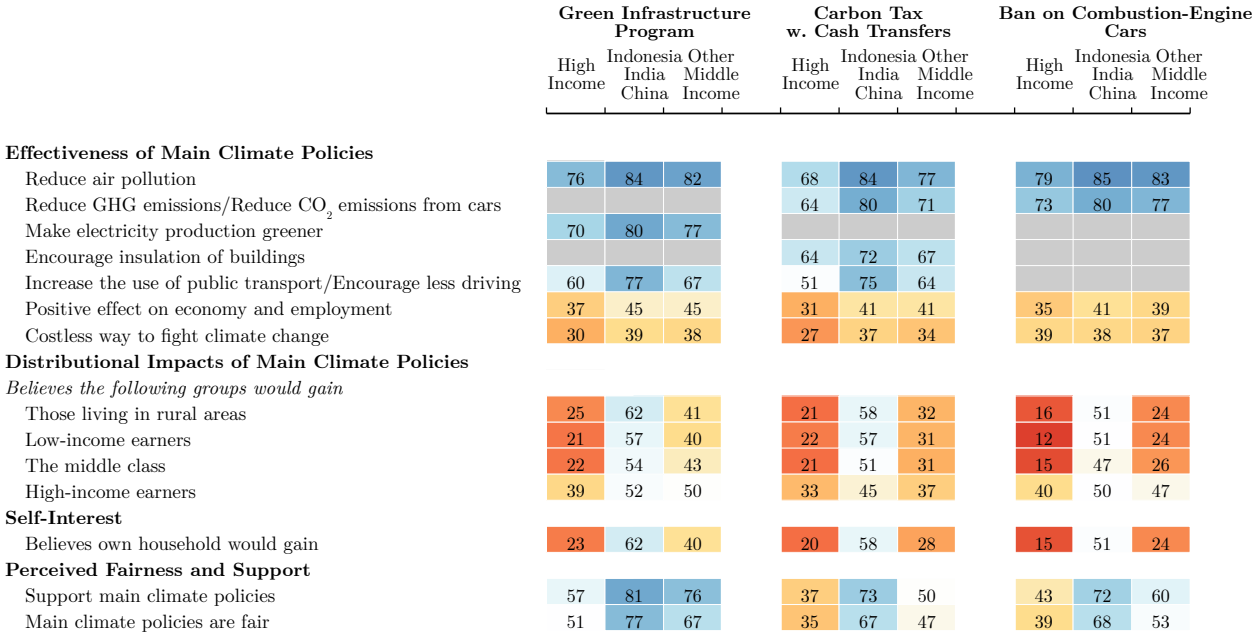
Age has mixed effects. In middle-income countries, older respondents tend to be more likely to believe that policies reduce emissions and less likely to think that they or low-income earners will lose. In some high-income countries (Australia, Canada, Denmark, France, Germany, the U.K., and the U.S.), older respondents are more likely to think that they or low-income earners will lose. Gender typically has small and insignificant effects.

Although not consistently significant, having a college degree is associated with more optimism about the effectiveness of policies in reducing emissions and less pessimism about the impact on oneself and lower-income households.

In high-income countries, there is a clear political gradient for most perceptions: Left-leaning respondents are more likely to believe that policies will have positive economic impacts, reduce emissions, and less likely to believe that high-income or low-income earners

[19]For unconditional average perceptions by socioeconomic group, see Figures A15-A16.

Figure 10: Perceived characteristics of the main policies




*Note*: The questions on the effectiveness and fairness have answer options *Strongly disagree/Somewhat disagree/Neither agree nor disagree/Somewhat agree/Strongly agree*. We report the share of respondents who answer "Somewhat agree" or "Strongly agree." Questions on the distributional impacts and self-interest have answer options *Lose a lot/Mostly lose/Neither win nor lose/Mostly win/Win a lot*. Depicted is the share of respondents who say "Mostly win" or "Win a lot." "Support main climate policies" has answer options *Strongly oppose/Somewhat oppose/Neither support nor oppose/Somewhat support/Strongly support*. We show the share of respondents who "Somewhat support" or "Strongly support." The shares represented are based on respondents in the control group only (who did not see any pedagogical videos). For the exact phrasing of each question, see the Questionnaire in Appendix A-5.

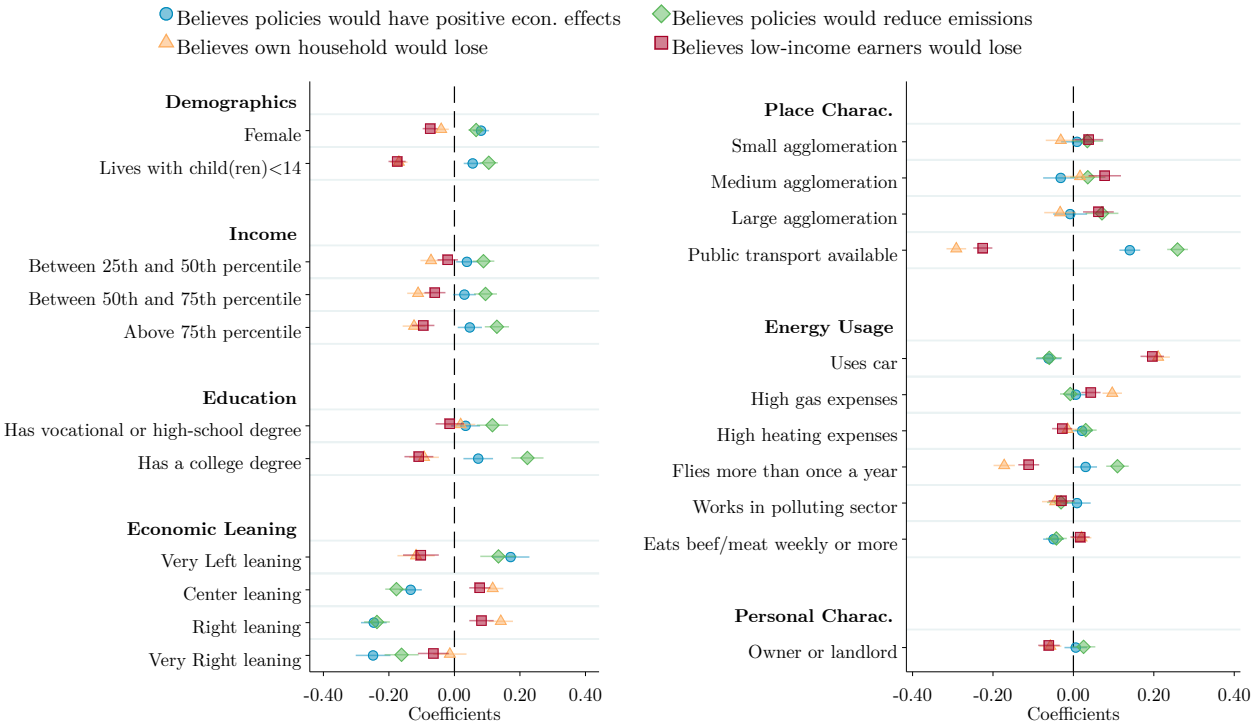
would lose. Differences by political leaning are usually not significant in middle-income countries.

Some lifestyle and energy usage characteristics are strongly correlated with a more positive outlook on the policies' effectiveness, progressivity, and own financial impacts, namely having public transportation available, being a frequent flyer, not being car-dependent and not having high gas expenses (conditional on car usage).[20]

As was the case for policy views, the set of socioeconomic and energy usage characteristics and country fixed effects (including a large set of interactions of these variables) can only explain around 16% of the variation in perceptions about policies' effectiveness, 26% of perceived impact on low-income households, and 25% of the own perceived impact, with country fixed effects accounting for about half of all the variation explained. Therefore,

[20]We define having high gas expenses as expenses above the median of the respondent's income group. However, the results are not sensitive to this definition.

Figure 11: How different groups perceive the effectiveness and distributional effects of the three main climate policies




*Note*: The figure shows the coefficients from two regressions. In the left panel, the indices listed in the legend are regressed on indicator variables for socioeconomic characteristics, as well as country fixed effects and treatment indicators (not shown). In the right panel, the same indices are regressed on energy usage indicators, as well as country fixed effects, treatment indicators, and socioeconomic characteristics (not shown). Each index is constructed by averaging the z-scores of the answers to a given question (e.g., "believes policies would have economic effects") across all three main policies and standardizing again. See Appendix A-1 for more detailed variable definitions. See the notes to Figure 9 for a list of the omitted categories.

these individual characteristics are important in shaping reasoning, but are not the full story.

It is particularly interesting that respondents' perceptions of their own gains and losses are significantly correlated with and predicted by socioeconomic and energy usage characteristics, but the prediction is imperfect. Thus, respondents' perceived threat from climate policies depends on more than just these factors.

# 6 What reasoning underlies support for climate policies?

## 6.1 Factors correlated with policy support

To determine which beliefs are correlated with support for climate policy, we regress support for each of the three main climate policies on the respondents' socioeconomic characteristics and on a set of standardized variables and indices measuring beliefs about climate change and climate policies. The results are shown in Panel A of Figure 12.[21] Panel B reports the share of the variance in support for the three policies (as summarized by the *Support for Climate Policies index*) that is explained by each variable.[22] Overall, 70% of policy views are explained by these beliefs and socioeconomic and lifestyle characteristics, compared to only 24% explained by individual characteristics only.

The perceived distributional impacts of climate policies are strongly correlated with policy support. First comes the perceived effectiveness of a policy, especially the belief that it will reduce emissions and pollution. Beliefs in the effectiveness of policies to reduce emissions and pollution account for 24% of differences in policy support.

Second, self-interest is also important: those who think they will themselves lose from a given policy are much less likely to support it. This belief alone explains 15% of the variation in policy views. Related to self-interest, the belief that one will suffer from climate change accounts for 4% of differences in policy support.

Third, the perceived progressivity of a policy also matters substantially: respondents who believe that low-income earners will lose are less supportive of the policy. In a few countries (France, India, Indonesia, Spain, Turkey, and Ukraine) the belief that the high-income earners will lose is actually positively associated with support for it (see Tables A8-A9). Across countries, the belief that poor people will lose from climate policies accounts for 8% of the variation in policy views. Furthermore, we can see that there is a close connection between respondents believing that a policy is "fair" and supporting it (the correlation is 0.89).

Broader perceived economic effects or concerns about the impacts of climate change overall are not as strongly correlated with policy support. Knowledge about climate change is a weak predictor of favoring climate policies, although there is a small significant effect of the belief that climate change is human-made. Our results for 20 countries confirm some of the patterns for specific countries, where the importance of perceived fairness, effectiveness, and self-interest has been highlighted (Carattini, Carvalho and Fankhauser 2018; Douenne and Fabre 2022; Klenert et al. 2018).

Support for climate policies and individual willingness to change behavior are not driven by the same beliefs. Compared to the support for public policy action, respondents' willing-

[21] For country-by-country results, see Tables A8 and A9.

[22] We follow Grömping (2007) and Lindeman, Merenda and Gold (1980). To overcome the dependency of a simple ANOVA on the order of the covariates in the regression, this method averages ANOVAs over all permutations of the covariates.

ness to privately adopt climate-friendly behaviors is much more driven by concerns about the consequences of climate change and that they will suffer from the main climate policies (see Figure A17). It is less correlated with perceptions of the efficiency or distributional impacts of those policies.

## 6.2 Information and pedagogical treatments

**Treatment effects on support for the main policies.** The correlations just outlined are confirmed experimentally by the effects of the informational and pedagogical video treatments. These are depicted in Figure 13 on the pooled (all countries) sample. For treatment effects by country, see Tables A11-A12. For the shares of support for all policies by treatment group see Figure A18.

In the cross-country pooled data, the *Climate impacts* treatment has the smallest effects on support for each of the policies. It is significant in very few individual countries. The effects of the *Climate policies* treatment are much stronger, especially on support for the carbon tax with cash transfers and, to a lesser extent, for the ban on combustion-engine cars. The strongest impacts come from the combination of the *Climate impacts* and *Climate policies* treatments, which are roughly equal to the sum of the two treatments' impacts. The treatment effects are largest for the carbon tax with cash transfers, followed by the ban on combustion-engine cars, and the green infrastructure program. All three treatments have significant and large effects on the perceived fairness of the three policies.

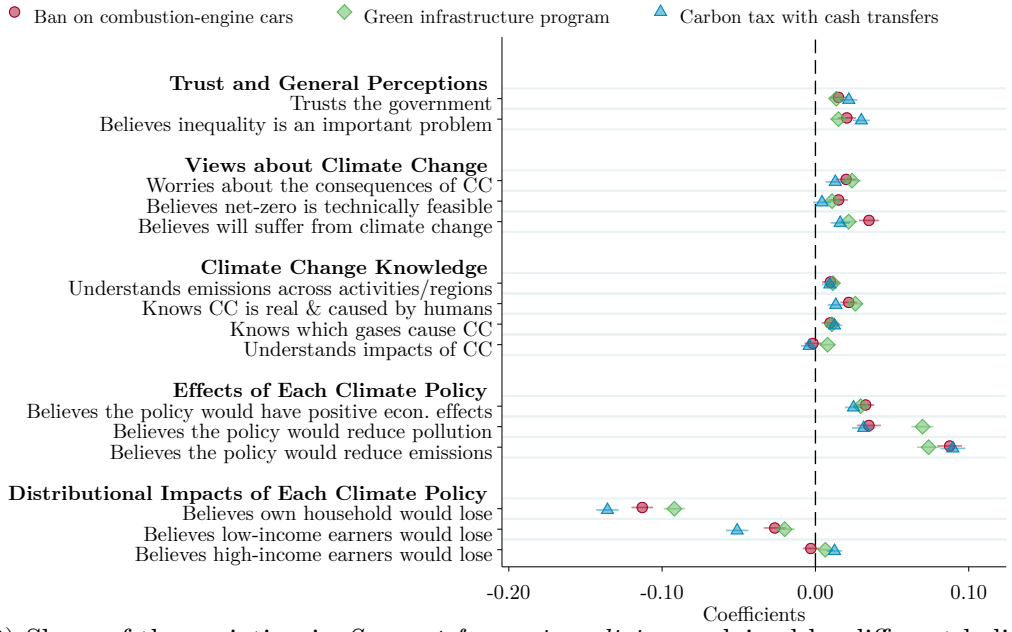
Support for the green infrastructure program has the highest baseline level and sees the smallest treatment effects among the three policies. The combination of the *Climate impacts* and *Climate policies* treatments increases support for it in Australia, Canada, Denmark, India, Spain, and the U.K., and the treatment effect represents on average 14% of the control group's support in these countries. The apparently small treatment effect is equivalent to 54% of the share of those who oppose the program in the control group.

Turning to the ban on combustion-engine cars, the *Climate policies* treatment alone is significant only in few countries (France, Italy, and South Africa). The combination treatment has significant effects in the pooled sample of all countries and in Australia, Brazil, China, Denmark, France, Italy, Japan, South Africa, Spain, and the U.K. In those countries, the effect of the combination treatment is equivalent to 24% of the control group mean on average, ranging from 14% in China (which starts with a high level of baseline support) to 43% in Australia. The treatment effect size is also equivalent to 60% of the share who oppose the policy in the control group and to 102% of the gap in support between left- and right-wing respondents in the above listed countries.

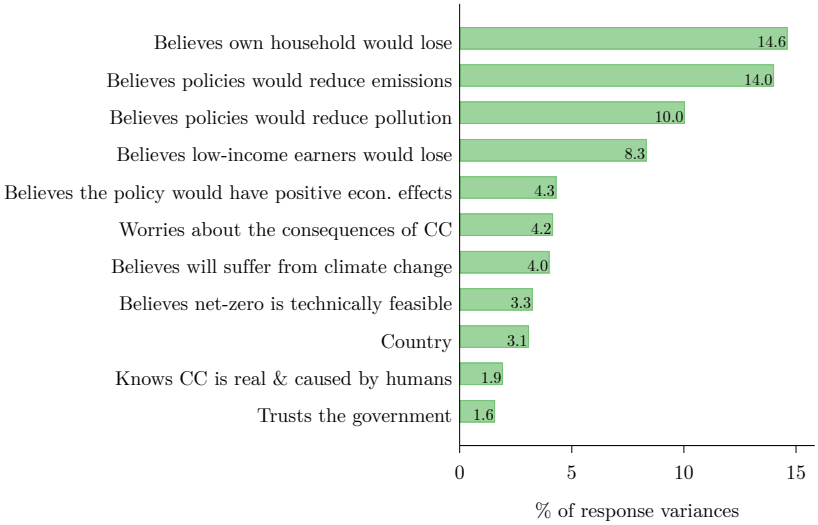
Finally, on the carbon tax with transfers, the *Climate policies* treatment increases support significantly in all countries except India, Mexico, South Africa, and South Korea. The magnitudes correspond to 29% of the control group mean (ranging from 11% in China to 50% in Germany), 66% of the share who oppose this program, and on average to 40% of the gap between left- and right-wing respondents in countries where it is significant. The combination of the *Climate impacts* and *Climate policies* treatments has even stronger effects

Figure 12: Beliefs underlying support for the main climate policies

(A) Correlation between support for the three main policies and beliefs




(B) Share of the variation in *Support for main policies* explained by different beliefs




*Note*: Panel A shows the coefficients from a regression of support for each policy (indicator variable equal to 1 if the respondent supports the policy somewhat or strongly) on standardized variables measuring respondents' beliefs and perceptions. Country fixed effects, treatment indicators, and individual socioeconomic characteristics are included but not displayed. The $R^2$ is 0.7. Panel B depicts the share of the variance in the *Support for main policies* index that is explained by each belief and perception, conditional on country fixed effects. We use the LMG method (see Grömping 2007) for the variance decomposition. See Appendix A-1 for detailed variable definitions.

in all countries (except India and Turkey). The effects are equivalent to 35% of the control group mean (ranging from 9% in China to 65% in Denmark) and to 74% of the opposition in countries where the effect is significant.

Thus, the treatments have a larger effect on policies that start with a lower support and that have more room for improvement. They sway sizable shares of respondents as benchmarked against the share who oppose each policy in the control group. The effects of the combined treatment are the strongest.

We systematically explored potential heterogeneous treatment effects by socioeconomic and lifestyle characteristics and did not find significant or systematic heterogeneity in treatment effects along these dimensions.

**Treatment effects on support for other policies.** There are significant treatment effects on support for policies other than our main ones as well, especially those that are the most closely related. The *Climate policies* and the combination treatment both significantly increase support for carbon taxes under all scenarios for how the revenues from it will be used (see Figure A19). These two treatments also significantly increase support for the tax on fossil fuels (with an effect size equal to around 30% of the control group mean) and a tax on flying, presumably because it is also associated with reducing fuel usage (see Figure 13).

There are significant treatment effects on a ban on combustion-engine cars with alternatives made available and a ban of polluting cars in city centers, which are more popular than the simple ban on combustion engine cars. However, policies that are not closely related to the ones presented in the video, such as mandatory building insulation, do not have significantly higher levels of support in the treatment group compared to the control group.

**Interpretation of the treatment effects.** To interpret these treatment effects, consider Figure 14, which shows the treatment effects on a range of beliefs. The *Climate impacts* treatment increases concerns about climate change and improves understanding of it (e.g., that it is real and caused by humans and which GHGs and activities contribute to it). However, these beliefs were shown to not be strong predictors of support for more climate policies (as described above). This treatment does not shift the key mechanisms that matter for policy support, namely their perceived effectiveness, distributional impacts, and impacts on one's household. The *Climate policies* and the combination treatment shift exactly the beliefs that are most predictive of policy support, namely, the perceived impacts on others and oneself and effectiveness of the policies.

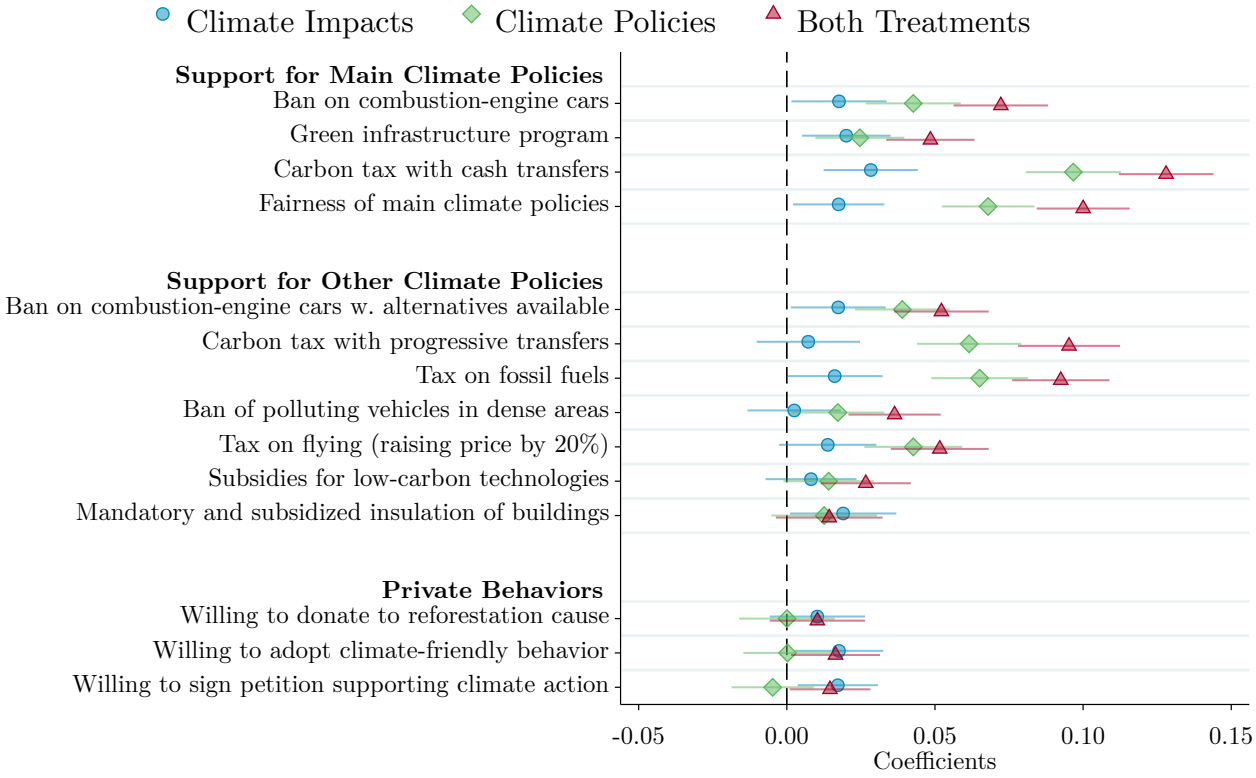
Thus, explaining how policies work and who can benefit from them (or how losers can be compensated) is critical to foster policy support. Simply making people more concerned about climate change is not an effective strategy.

Furthermore, as can be seen from the weaker effects on support for policies other than the ones covered in the videos, it is important to provide information about and explain the workings of a given specific or closely related policy. Respondents do not immediately extrapolate one policy's effect to another.

**Private action versus public policy.** The treatment effects of the *Climate policies* or the combination treatment on willingness to change one's own behavior are marginally significant

in the pooled sample, as well as in some individual countries (Australia, Japan, Mexico, Poland, South Africa, Spain, and the U.K., see Tables A11-A12). There is a small significant effect on the willingness to sign the petition supporting climate action, but no effect on donations. This suggests that simply informing people about *Climate impacts* is not very effective in stimulating demand for private action, the same way it was not effective in generating more support for public policies. At the same time, discussing *Climate policies* generates demand for policies, not private action.[23] Recall from Section 4 that two of the most important factors for respondents to be willing to adapt their own behavior were if others adapted too and if they received financial support. Hence, without changing these two key factors, there is no reason to expect that private behaviors should change.

Figure 13: Effects of the treatments on support for climate action

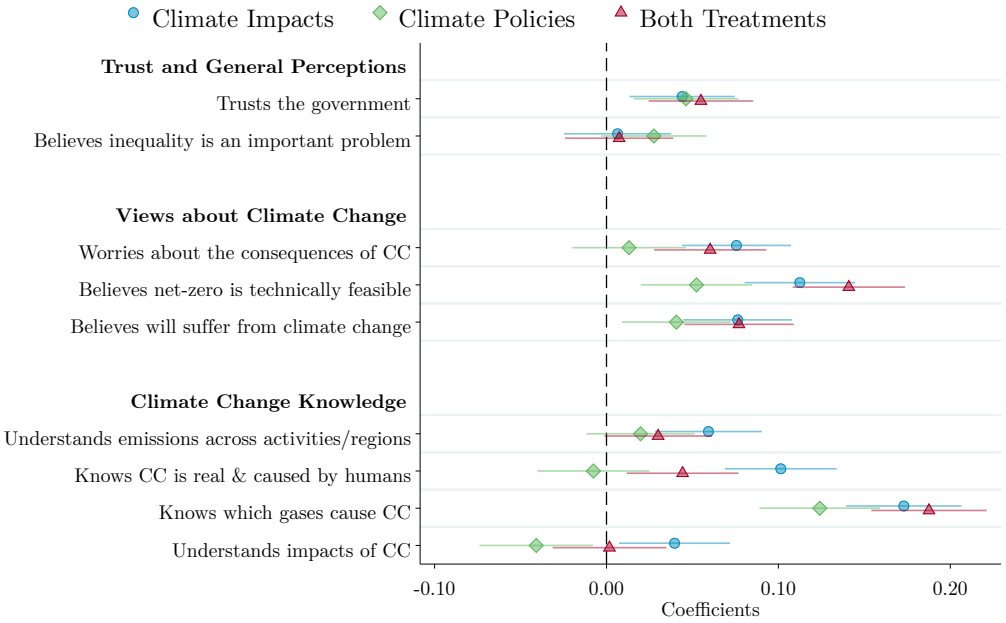



*Note*: The figure shows the coefficients from a regression of the indicator variables listed on the left, capturing support for various policies and willingness to change behaviors, on indicators for each treatment, controlling for country fixed effects and socioeconomic characteristics (not shown). See Appendix A-1 for variable definitions.

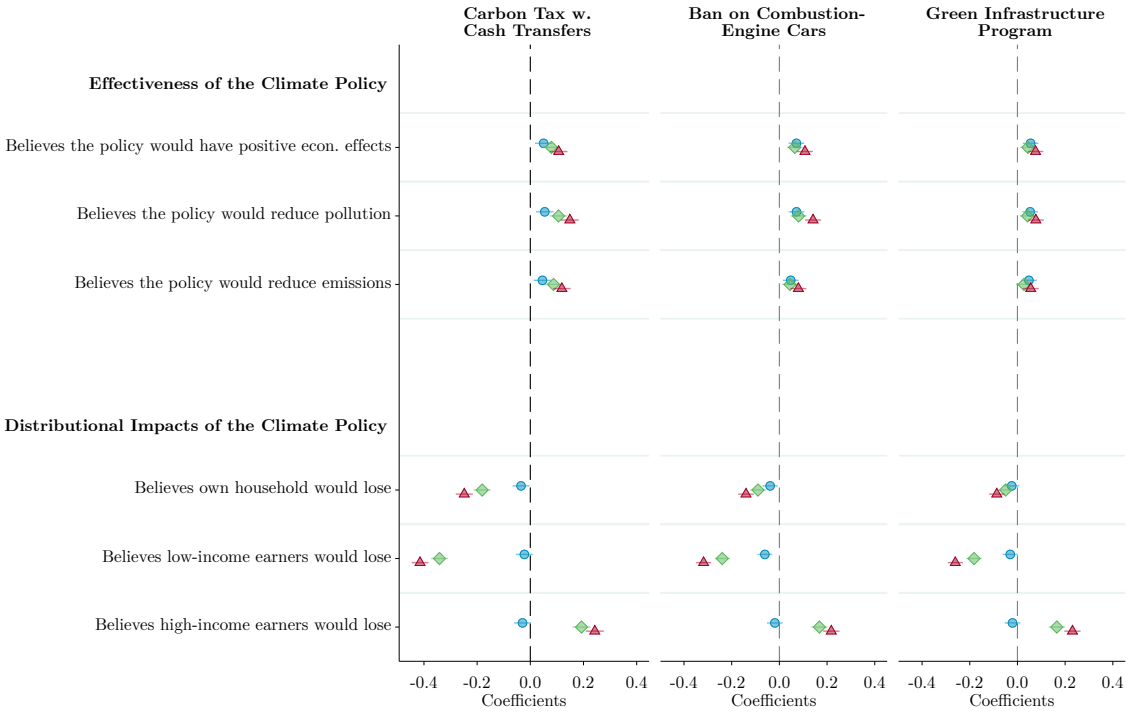
[23]The patterns of the effects of the videos suggest that the effects of the treatment are due to their specific informational content rather than to experimenter demand or priming about climate change.

Figure 14: Effects of the treatments on beliefs

(A) Effects of the treatments on reasoning




(B) Effects of the treatments on beliefs about properties of the main climate policies




*Note*: The figure shows the coefficients from a regression of indices listed on the left, capturing respondents' beliefs and perceptions, on indicators for each treatment, controlling for country fixed effects and socioeconomic characteristics (not shown). Panel A displays the coefficients from the regressions for reasoning, while panel B displays the coefficients from regressions of beliefs about properties of each of the three policies. See Appendix A-1 for variable detailed definitions.

# 7 Conclusion

An overwhelming majority of people understand that climate change is real and that it is human-caused. However, respondents disagree about which measures should be taken to fight it. Although people have disparate levels of "technical" knowledge, such as about the major sources of greenhouse gas emissions or the consequences of climate change, such knowledge is not relevant for their views on what should be done about it.

Our major results center around the factors that make people support more climate action. We show that support for a given climate policy depends on three key beliefs, namely that the policy i) is effective in reducing emissions (effectiveness); ii) does not have adverse distributional impacts by hurting lower-income households (inequality concerns); and iii) does not financially hurt the respondents' household (self-interest). Stronger concerns or better knowledge about climate change are not strong predictors of support for climate action.

Accordingly, in many countries, there is strong majority support for policies perceived to be effective, progressive, or both, namely green infrastructure programs, subsidies for low-carbon technologies, carbon taxes with a strongly progressive use of revenues (such as cash transfers to the poorest or most impacted households), and policies centered around regulations such as bans on polluting vehicles from city centers or dense areas, and the mandatory insulation of buildings.

These findings are confirmed experimentally. Providing people with information about the implications of climate change in their country does not significantly shift their support for climate policies. On the contrary, explaining to them the effectiveness and distributional implications of a policy (e.g., that it will not hurt poorer households) does significantly improve support. The treatment effects for the three main policies covered in the informational treatments – a green infrastructure program, a ban on combustion-engine cars, and a carbon tax with cash transfers – differ in magnitude. But for all three policies, a significant share of the baseline opposition can be swayed by explanations of how the policies work and who they impact.

Left-wing and college-educated respondents, as well as those with public transport availability, low car usage and gas expenses, are more supportive of climate action. The differences between groups that support more climate change action and those that support less can also be traced back to the three core beliefs outlined. For instance, college-educated respondents are generally more supportive of climate action because they believe that it will be effective in reducing emissions and that they or lower income households will not lose out as much. Nevertheless, socioeconomic and lifestyle characteristics alone do not explain a large share of the variation in policy views across respondents.

The policy lessons emerging from these international surveys and experiments are, first, that the specific policies proposed need to be (distributionally) progressive and that citizens need to be made aware of their distributional (progressive) impacts. A corollary is that how revenues from environmental taxes are spent critically influences citizens' support for them. Second, explanations and information are needed to effectively improve support for climate policies. They can be very effective in improving climate policies' support if they

address the three key concerns outlined. Information on the dangers of climate change alone without a corresponding explanation of the policies has only limited impacts on policy support. Third, some of the key concerns people have relate to their own possible losses from the implementation of climate action. Their own experience shapes their broader perceptions and beliefs about climate change and policies. This highlights the importance of making environmentally friendly alternatives, e.g., public transportation, more widely available before increasing environmental taxes.

Future research could shed light on the best way to convey information on how climate policies work. In addition, while our sample includes a substantial number of countries, many more are missing and would be valuable to survey in an expanded analysis. Our survey has focused on mitigation, rather than adaptation policies (Barreca et al. 2016), which would be valuable to explore in future work.

Table 1: Sample representativeness – High-income countries 1

| | Australia | | Canada | | Denmark | | France | |
|---|---|---|---|---|---|---|---|---|
| | Population | Sample | Population | Sample | Population | Sample | Population | Sample |
| Sample size | NA | 1,978 | NA | 2,022 | NA | 2,013 | NA | 2,006 |
| Male | 0.49 | 0.56 | 0.49 | 0.45 | 0.50 | 0.50 | 0.48 | 0.44 |
| 18-24 years old | 0.11 | 0.10 | 0.10 | 0.09 | 0.11 | 0.09 | 0.12 | 0.10 |
| 25-34 years old | 0.19 | 0.19 | 0.17 | 0.14 | 0.16 | 0.12 | 0.15 | 0.15 |
| 35-49 years old | 0.26 | 0.27 | 0.24 | 0.25 | 0.23 | 0.25 | 0.24 | 0.25 |
| More than 50 years old | 0.44 | 0.44 | 0.48 | 0.52 | 0.50 | 0.54 | 0.49 | 0.50 |
| Income Q1 | 0.25 | 0.45 | 0.25 | 0.25 | 0.26 | 0.29 | 0.25 | 0.31 |
| Income Q2 | 0.25 | 0.31 | 0.25 | 0.28 | 0.23 | 0.25 | 0.25 | 0.31 |
| Income Q3 | 0.25 | 0.17 | 0.25 | 0.28 | 0.28 | 0.26 | 0.25 | 0.23 |
| Income Q4 | 0.25 | 0.07 | 0.25 | 0.20 | 0.22 | 0.19 | 0.25 | 0.14 |
| Region 1 | 0.33 | 0.30 | 0.07 | 0.06 | 0.32 | 0.30 | 0.19 | 0.19 |
| Region 2 | 0.20 | 0.23 | 0.06 | 0.07 | 0.23 | 0.23 | 0.22 | 0.24 |
| Region 3 | 0.07 | 0.10 | 0.26 | 0.23 | 0.10 | 0.10 | 0.20 | 0.22 |
| Region 4 | 0.28 | 0.28 | 0.39 | 0.39 | 0.14 | 0.16 | 0.25 | 0.20 |
| Region 5 | 0.11 | 0.09 | 0.23 | 0.24 | 0.21 | 0.21 | NA | NA |
| Urban | 0.72 | 0.76 | 0.83 | 0.89 | 0.53 | 0.53 | 0.60 | 0.59 |
| College education (25-64) | 0.49 | 0.46 | 0.60 | 0.56 | 0.36 | 0.44 | 0.40 | 0.42 |
| Share of voters | 0.72 | 0.86 | 0.56 | 0.83 | 0.76 | 0.89 | 0.70 | 0.78 |
| Voters: Left | 0.44 | 0.44 | 0.60 | 0.65 | 0.44 | 0.48 | 0.28 | 0.24 |
| Voters: Center | NA | NA | NA | NA | 0.09 | 0.06 | 0.24 | 0.12 |
| Voters: Right | 0.41 | 0.41 | 0.39 | 0.30 | 0.43 | 0.37 | 0.47 | 0.53 |
| Voters: Other | 0.15 | 0.08 | 0.01 | 0.00 | 0.04 | 0.03 | 0.01 | 0.02 |
| Voters: Not reported | NA | 0.06 | NA | 0.05 | NA | 0.06 | NA | 0.08 |
| Inactivity rate (15-64) | 0.22 | 0.22 | 0.23 | 0.29 | 0.21 | 0.28 | 0.29 | 0.25 |
| Unemployment rate (15-64) | 0.07 | 0.12 | 0.10 | 0.12 | 0.06 | 0.12 | 0.08 | 0.10 |
| Employment rate (15-64) | 0.73 | 0.69 | 0.70 | 0.63 | 0.74 | 0.63 | 0.65 | 0.67 |

*Note*: This table displays summary statistics of the samples alongside nationally representative statistics. For *College education (25-64)*, the sample statistics are provided for respondents aged between 25 and 64 years old. For the *Share of voters*, the sample statistics include the share of people who indicated having voted. For the *Voters* variables, the sample statistics include the share of respondents who indicated voted for a party/candidate classified in each category, among respondents who indicated having voted. The *Voters: Not reported* category includes people who indicated having voted but did not report the candidate/party they voted for. For *Inactivity rate (15-64)*, the sample statistics include the share of respondents aged between 15 and 64 years old who indicated being either "*Inactive (not searching for a job)*," a "*Student*," or "*Retired*." For *Unemployment rate (15-64)*, the sample statistics include the share of respondents aged between 15 and 64 years old who indicated being "*Unemployed (searching for a job)*", ('*Unemployed (searching for a job)*," "*Full-time employed*," "*Part-time employed*," or "*Self-employed*"). For *Employment rate (15-64)*, the sample statistics include the share of respondents aged between 15 and 64 years old who indicated being either "*Full-time employed*," "*Part-time employed*," or "*Self-employed*." Detailed sources for each variable and country, as well as the definitions of regions, college education, urban, and voting categories are available in Appendix A-7.

Table 2: Sample representativeness – High-income countries 2

| | Germany | | Italy | | Japan | | Poland | |
|---|---|---|---|---|---|---|---|---|
| | Population | Sample | Population | Sample | Population | Sample | Population | Sample |
| Sample size | NA | 2,006 | NA | 2,088 | NA | 1,990 | NA | 2,053 |
| Male | 0.49 | 0.48 | 0.48 | 0.49 | 0.48 | 0.54 | 0.48 | 0.44 |
| 18-24 years old | 0.09 | 0.06 | 0.08 | 0.09 | 0.08 | 0.08 | 0.09 | 0.09 |
| 25-34 years old | 0.15 | 0.16 | 0.12 | 0.13 | 0.12 | 0.13 | 0.17 | 0.18 |
| 35-49 years old | 0.22 | 0.22 | 0.24 | 0.26 | 0.24 | 0.27 | 0.28 | 0.30 |
| More than 50 years old | 0.54 | 0.56 | 0.56 | 0.52 | 0.56 | 0.53 | 0.46 | 0.42 |
| Income Q1 | 0.25 | 0.25 | 0.25 | 0.28 | 0.25 | 0.27 | 0.25 | 0.22 |
| Income Q2 | 0.25 | 0.25 | 0.25 | 0.28 | 0.25 | 0.27 | 0.25 | 0.27 |
| Income Q3 | 0.25 | 0.23 | 0.25 | 0.23 | 0.25 | 0.27 | 0.25 | 0.27 |
| Income Q4 | 0.25 | 0.27 | 0.25 | 0.21 | 0.25 | 0.19 | 0.25 | 0.25 |
| Region 1 | 0.10 | 0.10 | 0.20 | 0.20 | 0.17 | 0.18 | 0.12 | 0.10 |
| Region 2 | 0.15 | 0.16 | 0.11 | 0.12 | 0.18 | 0.19 | 0.14 | 0.13 |
| Region 3 | 0.18 | 0.16 | 0.19 | 0.17 | 0.35 | 0.38 | 0.23 | 0.21 |
| Region 4 | 0.29 | 0.27 | 0.27 | 0.30 | 0.11 | 0.10 | 0.29 | 0.33 |
| Region 5 | 0.28 | 0.31 | 0.23 | 0.21 | 0.20 | 0.16 | 0.22 | 0.23 |
| Urban | 0.80 | 0.76 | 0.83 | 0.89 | 0.70 | 0.76 | 0.57 | 0.66 |
| College education (25-64) | 0.31 | 0.32 | 0.20 | 0.38 | 0.53 | 0.72 | 0.33 | 0.46 |
| Share of voters | 0.67 | 0.86 | 0.59 | 0.87 | 0.54 | 0.79 | 0.63 | 0.87 |
| Voters: Left | 0.41 | 0.42 | 0.24 | 0.31 | 0.29 | 0.22 | 0.02 | 0.06 |
| Voters: Center | 0.07 | 0.07 | 0.36 | 0.20 | 0.31 | 0.15 | 0.16 | 0.13 |
| Voters: Right | 0.49 | 0.40 | 0.39 | 0.32 | 0.35 | 0.44 | 0.81 | 0.76 |
| Voters: Other | 0.03 | 0.04 | 0.02 | 0.07 | 0.05 | 0.05 | 0.00 | NA |
| Voters: Not reported | NA | 0.06 | NA | 0.10 | NA | 0.14 | NA | 0.05 |
| Inactivity rate (15-64) | 0.21 | 0.23 | 0.36 | 0.19 | 0.20 | 0.22 | 0.29 | 0.18 |
| Unemployment rate (15-64) | 0.04 | 0.07 | 0.09 | 0.17 | 0.03 | 0.05 | 0.03 | 0.09 |
| Employment rate (15-64) | 0.76 | 0.72 | 0.58 | 0.67 | 0.77 | 0.74 | 0.69 | 0.75 |

*Note*: This table displays summary statistics of the samples alongside nationally representative statistics. See notes to Table 1. Detailed sources for each variable and country, as well as the definitions of regions, college education, urban, and voting categories are available in Appendix A-7.

Table 3: Sample representativeness – High-income countries 3

| | South Korea | | Spain | | U.K. | | U.S. | |
|---|---|---|---|---|---|---|---|---|
| | Population | Sample | Population | Sample | Population | Sample | Population | Sample |
| Sample size | NA | 1,932 | NA | 2,268 | NA | 2,025 | NA | 2,218 |
| Male | 0.50 | 0.56 | 0.49 | 0.49 | 0.50 | 0.52 | 0.50 | 0.47 |
| 18-24 years old | 0.10 | 0.09 | 0.08 | 0.10 | 0.10 | 0.09 | 0.12 | 0.12 |
| 25-34 years old | 0.16 | 0.19 | 0.12 | 0.14 | 0.17 | 0.19 | 0.18 | 0.18 |
| 35-49 years old | 0.27 | 0.31 | 0.28 | 0.29 | 0.24 | 0.24 | 0.24 | 0.25 |
| More than 50 years old | 0.47 | 0.40 | 0.51 | 0.48 | 0.49 | 0.48 | 0.46 | 0.45 |
| Income Q1 | 0.25 | 0.27 | 0.25 | 0.25 | 0.25 | 0.27 | 0.20 | 0.26 |
| Income Q2 | 0.25 | 0.28 | 0.25 | 0.27 | 0.25 | 0.25 | 0.24 | 0.28 |
| Income Q3 | 0.25 | 0.32 | 0.25 | 0.23 | 0.25 | 0.21 | 0.24 | 0.26 |
| Income Q4 | 0.25 | 0.13 | 0.25 | 0.25 | 0.25 | 0.27 | 0.31 | 0.20 |
| Region 1 | 0.25 | 0.24 | 0.19 | 0.21 | 0.21 | 0.21 | 0.21 | 0.20 |
| Region 2 | 0.34 | 0.37 | 0.30 | 0.28 | 0.13 | 0.13 | 0.17 | 0.18 |
| Region 3 | 0.19 | 0.23 | 0.11 | 0.10 | 0.24 | 0.23 | 0.38 | 0.39 |
| Region 4 | 0.22 | 0.17 | 0.13 | 0.15 | 0.11 | 0.10 | 0.24 | 0.23 |
| Region 5 | NA | NA | 0.28 | 0.26 | 0.31 | 0.33 | NA | NA |
| Urban | 0.92 | 0.95 | 0.70 | 0.75 | 0.82 | 0.84 | 0.73 | 0.72 |
| College education (25-64) | 0.51 | 0.74 | 0.40 | 0.57 | 0.49 | 0.62 | 0.61 | 0.60 |
| Share of voters | 0.75 | 0.87 | 0.63 | 0.85 | 0.60 | 0.82 | 0.62 | 0.82 |
| Voters: Left | 0.47 | 0.63 | 0.41 | 0.45 | 0.39 | 0.37 | 0.51 | 0.57 |
| Voters: Center | 0.21 | 0.11 | 0.07 | 0.09 | 0.12 | 0.11 | NA | NA |
| Voters: Right | 0.31 | 0.17 | 0.36 | 0.25 | 0.46 | 0.47 | 0.47 | 0.36 |
| Voters: Other | 0.01 | NA | 0.16 | 0.14 | 0.04 | 0.02 | 0.02 | 0.02 |
| Voters: Not reported | NA | 0.09 | NA | 0.07 | NA | 0.03 | NA | 0.05 |
| Inactivity rate (15-64) | 0.31 | 0.17 | 0.28 | 0.18 | 0.21 | 0.24 | 0.27 | 0.26 |
| Unemployment rate (15-64) | 0.04 | 0.08 | 0.16 | 0.14 | 0.05 | 0.09 | 0.08 | 0.13 |
| Employment rate (15-64) | 0.66 | 0.76 | 0.62 | 0.71 | 0.75 | 0.69 | 0.67 | 0.64 |

*Note*: This table displays summary statistics of the samples alongside nationally representative statistics. See notes to Table 1. For *College education (25-64)* in the U.S., the sample statistics is provided for all respondents and not only respondents aged between 25 and 64 years old. Detailed sources for each variable and country, as well as the definitions of regions, college education, urban, and voting categories are available in Appendix A-7.

Table 4: Sample representativeness – Middle-income countries 1

| | Brazil | | China | | India | | Indonesia | |
|---|---|---|---|---|---|---|---|---|
| | Population | Sample | Population | Sample | Population | Sample | Population | Sample |
| Sample size | NA | 1,860 | NA | 1,717 | NA | 2,472 | NA | 2,488 |
| Male | 0.49 | 0.45 | 0.51 | 0.54 | 0.51 | 0.58 | 0.50 | 0.52 |
| 18-24 years old | 0.15 | 0.16 | 0.10 | 0.12 | 0.18 | 0.23 | 0.17 | 0.19 |
| 25-34 years old | 0.22 | 0.23 | 0.20 | 0.26 | 0.24 | 0.27 | 0.23 | 0.26 |
| 35-49 years old | 0.30 | 0.32 | 0.28 | 0.35 | 0.29 | 0.24 | 0.31 | 0.31 |
| More than 50 years old | 0.34 | 0.29 | 0.42 | 0.27 | 0.28 | 0.26 | 0.29 | 0.24 |
| Income Q1 | 0.25 | 0.24 | 0.25 | 0.13 | 0.25 | 0.27 | 0.25 | 0.28 |
| Income Q2 | 0.25 | 0.30 | 0.25 | 0.25 | 0.25 | 0.24 | 0.25 | 0.24 |
| Income Q3 | 0.25 | 0.24 | 0.25 | 0.29 | 0.25 | 0.25 | 0.25 | 0.23 |
| Income Q4 | 0.25 | 0.22 | 0.25 | 0.32 | 0.25 | 0.24 | 0.25 | 0.25 |
| Region 1 | 0.08 | 0.07 | 0.29 | 0.31 | 0.27 | 0.20 | 0.08 | 0.07 |
| Region 2 | 0.09 | 0.04 | 0.12 | 0.17 | 0.26 | 0.25 | 0.30 | 0.31 |
| Region 3 | 0.27 | 0.28 | 0.08 | 0.05 | 0.13 | 0.15 | 0.13 | 0.11 |
| Region 4 | 0.14 | 0.15 | 0.29 | 0.23 | 0.20 | 0.24 | 0.21 | 0.20 |
| Region 5 | 0.42 | 0.45 | 0.22 | 0.24 | 0.14 | 0.17 | 0.27 | 0.31 |
| Urban | 0.69 | 0.77 | 0.63 | 0.53 | 0.36 | 0.46 | 0.57 | 0.62 |
| College education (25-64) | 0.20 | 0.64 | 0.10 | 0.59 | 0.09 | 0.72 | 0.13 | 0.45 |
| Share of voters | 0.67 | 0.92 | NA | NA | 0.65 | 0.79 | 0.74 | 0.90 |
| Voters: Left | 0.30 | 0.24 | NA | NA | 0.39 | 0.27 | 0.19 | 0.42 |
| Voters: Center | 0.19 | 0.10 | NA | NA | NA | NA | 0.17 | 0.06 |
| Voters: Right | 0.50 | 0.52 | NA | NA | 0.46 | 0.61 | 0.54 | 0.39 |
| Voters: Other | 0.01 | 0.06 | NA | NA | 0.16 | 0.03 | 0.10 | NA |
| Voters: Not reported | NA | 0.08 | NA | NA | NA | 0.08 | NA | 0.13 |
| Inactivity rate (15-64) | 0.34 | 0.12 | 0.23 | 0.10 | 0.46 | 0.20 | 0.30 | 0.20 |
| Unemployment rate (15-64) | 0.14 | 0.11 | 0.03 | 0.01 | 0.09 | 0.04 | 0.06 | 0.05 |
| Employment rate (15-64) | 0.57 | 0.79 | 0.75 | 0.89 | 0.49 | 0.76 | 0.66 | 0.76 |

*Note*: This table displays summary statistics of the samples alongside nationally representative statistics. See notes to Table 1. Detailed sources for each variable and country, as well as the definitions of regions, college education, urban, and voting categories are available in Appendix A-7.

Table 5: Sample representativeness – Middle-income countries 2

| | Mexico | | Turkey | | South Africa | | Ukraine | |
|---|---|---|---|---|---|---|---|---|
| | Population | Sample | Population | Sample | Population | Sample | Population | Sample |
| Sample size | NA | 2,045 | NA | 1,932 | NA | 2,003 | NA | 1,564 |
| Male | 0.48 | 0.49 | 0.49 | 0.43 | 0.49 | 0.46 | 0.45 | 0.61 |
| 18-24 years old | 0.18 | 0.18 | 0.16 | 0.18 | 0.21 | 0.21 | 0.08 | 0.12 |
| 25-34 years old | 0.23 | 0.24 | 0.21 | 0.24 | 0.28 | 0.29 | 0.18 | 0.25 |
| 35-49 years old | 0.30 | 0.31 | 0.30 | 0.34 | 0.28 | 0.28 | 0.28 | 0.40 |
| More than 50 years old | 0.29 | 0.27 | 0.33 | 0.24 | 0.22 | 0.22 | 0.46 | 0.24 |
| Income Q1 | 0.25 | 0.26 | 0.25 | 0.14 | 0.25 | 0.16 | 0.25 | 0.17 |
| Income Q2 | 0.25 | 0.27 | 0.25 | 0.28 | 0.25 | 0.24 | 0.25 | 0.24 |
| Income Q3 | 0.25 | 0.24 | 0.25 | 0.28 | 0.25 | 0.32 | 0.25 | 0.24 |
| Income Q4 | 0.25 | 0.22 | 0.25 | 0.30 | 0.25 | 0.27 | 0.25 | 0.36 |
| Region 1 | 0.33 | 0.38 | 0.25 | 0.28 | 0.12 | 0.09 | 0.31 | 0.37 |
| Region 2 | 0.22 | 0.18 | 0.18 | 0.12 | 0.24 | 0.29 | 0.21 | 0.17 |
| Region 3 | 0.10 | 0.10 | 0.30 | 0.34 | 0.18 | 0.17 | 0.22 | 0.26 |
| Region 4 | 0.13 | 0.12 | 0.26 | 0.26 | 0.33 | 0.26 | 0.25 | 0.20 |
| Region 5 | 0.23 | 0.22 | NA | NA | 0.13 | 0.18 | NA | NA |
| Urban | 0.64 | 0.81 | 0.87 | 0.96 | 0.49 | 0.63 | 0.70 | 0.88 |
| College education (25-64) | 0.19 | 0.66 | 0.16 | 0.65 | 0.16 | 0.49 | NA | 0.67 |
| Share of voters | 0.53 | 0.86 | 0.83 | 0.88 | 0.44 | 0.67 | 0.53 | 0.76 |
| Voters: Left | 0.56 | 0.54 | 0.35 | 0.30 | 0.68 | 0.45 | 0.16 | 0.19 |
| Voters: Center | 0.18 | 0.10 | 0.10 | 0.07 | 0.21 | 0.32 | 0.67 | 0.69 |
| Voters: Right | 0.19 | 0.20 | 0.55 | 0.50 | 0.06 | 0.04 | 0.13 | 0.03 |
| Voters: Other | 0.07 | 0.02 | 0.00 | NA | 0.05 | 0.04 | 0.03 | NA |
| Voters: Not reported | NA | 0.14 | NA | 0.14 | NA | 0.15 | NA | 0.10 |
| Inactivity rate (15-64) | 0.35 | 0.12 | 0.45 | 0.21 | 0.45 | 0.16 | 0.38 | 0.15 |
| Unemployment rate (15-64) | 0.04 | 0.07 | 0.13 | 0.12 | 0.29 | 0.16 | 0.10 | 0.10 |
| Employment rate (15-64) | 0.59 | 0.81 | 0.48 | 0.69 | 0.38 | 0.71 | 0.56 | 0.76 |

*Note*: This table displays summary statistics of the samples alongside nationally representative statistics. See notes to Table 1. Detailed sources for each variable and country, as well as the definitions of regions, college education, urban, and voting categories are available in Appendix A-7.

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