Creating Climate Coalitions: Mass Preferences for Compensating Vulnerability in the World's Two Largest Democracies*

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This draft: October 1, 2020

Abstract

Combating climate change requires large economic adjustments with significant distributional implications. To build coalitions of support, scholars and policymakers propose compensating individuals who will bear decarbonization's costs. What are the determinants of public opinion regarding types and modes of compensation? We present theory to explicate how different sources of vulnerability influence preferences for compensatory climate policy. Fielding original surveys in the United States and India, we show that people who reside in coal-producing regions prefer compensation for lost jobs. By contrast, the general public privileges diffuse redistribution mechanisms, discounting compensation to targeted groups. Those who are both ecologically and economically vulnerable have cross-cutting preferences, but more closely resemble the general public. We connect coal country's distinctive compensatory preferences to a logic of shared identity. Our findings have implications for the 'just energy' transition and for the study of embedded liberalism and redistributive policymaking in the global economy.

Key Words: climate change, compensation, vulnerability, United States, India, fossil fuels, decarbonization

*We thank Nicholas Obradovich, Ricky Clark, Rohit Chandra, Alicia Cooperman, Jennifer Hadden, Lisa McKay, Matto Mildenberger, Kenneth Scheve, Michael Bechtel, Resul Umit, Johannes Urpelainen, Noah Zucker, Robert Keohane, Jonah Vorspan-Stein and participants at the Center for Advanced Study in the Behavioral Sciences' Comparative Politics of Climate Change Workshop, Stanford University's Comparative Politics of Environmental Policymaking Workshop, the Political Economy of Energy Transitions Workshop, the London School of Economics' International Relations Workshop, the 2019 American Political Science Association, and the 2019 International Political Economy Society conference for helpful feedback. Research for this paper, and discussion at several research meetings, was made possible by generous funding from the Balzan Foundation under the terms of a prize awarded in 2017 to Professor Robert O. Keohane and administered by Princeton University and the Center for Advanced Study in the Behavioral Sciences under his supervision. Darrin Gilkerson, Diana Ding, Kylan Rutherford, and Aura Gonzalez provided excellent research assistance.

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Decarbonization is one of the most pressing and complex challenges facing governments around the world. It requires international coordination across countries seeking to ratify effective emissions reductions agreements (Bernauer, 2013; Keohane and Victor, 2016). At the same time, it necessitates convincing domestic audiences to support national policies that will facilitate meaningful reductions in emissions (Bechtel and Scheve, 2013; Meckling et al., 2015). Because these policies have significant distributional implications, they are poised to generate vigorous opposition from adversely affected communities (Stokes, 2016; Breetz, Mildenberger and Stokes, 2018; Jenkins, 2019). To alleviate these "carbon transition" costs for the vulnerable and create momentum for climate policy cooperation, governments increasingly propose compensation policies.

While existing work explicates the determinants of support and opposition for climate action (e.g. Aldy, Kotchen and Leiserowitz, 2012; Carlsson, Martinsson and Akay, 2011; Tingley and Tomz, 2014; Cooper, Kim and Urpelainen, 2018; Bechtel and Scheve, 2013), there is currently a dearth of theory and evidence to clarify how individuals develop preferences regarding compensation in climate politics. Here compensation can take a number of forms. It can include transfers to individuals and communities likely to lose their jobs when carbon-intensive industries shut down. It can translate into investments in infrastructure to protect people from the effects of climate change. It can also mean investment in green energy technologies or equal redistribution of a carbon tax to all citizens. Given the key role that compensation plays in legislative action on environmental regulation (Hatch, 1995; Kono, 2020) as well as in normative debates regarding climate cooperation and the 'just energy' transition (Carley, Evans and Konisky, 2018), elucidating how compensatory mechanisms can shift public opposition into support for climate action is a matter of pressing scholarly and public policy concern.[1]

This paper provides a theoretical framework and rigorous empirical tests to explain the deter-

[1]Notably, such compensatory programs are currently in play or being considered across a range of countries including Australia, Germany, Spain, South Africa, and Ukraine.

minants of individual preferences for compensation related to climate change policy. What forms of compensation are preferred by different politically relevant voter groups? How do individuals in regions with varying degrees of costs related to climate change develop preferences pertaining to climate policy compensation? To the extent that policy buy-in from 'climate losers' can be achieved through compensatory mechanisms, answers to these questions shed light on the different types of vulnerability as well as the forms and targets of compensation policy that increase support for climate action among coalitions of voters.

Our theoretical argument begins with the assumption that countries around the world are home to coalitions of voters that vary in their exposure to climate losses. Individuals may be more or less sensitive to the costs of addressing climate change, which we term their *policy vulnerability*. We focus on one cost that is central to the mass politics of climate compensation: employment-related costs associated with the implementation of decarbonization policies. Employment-related costs generate vulnerability among societal groups poised to lose materially from climate policy action (Bechtel, Genovese and Scheve, 2019). These concerns will be borne disproportionately by workers in carbon-heavy economic sectors, notably fossil fuel producers (i.e, coal, oil, and gas), generating in turn large sectoral differences in climate policy preferences (Newell and Paterson, 2010; Meckling, 2011; Genovese and Tvinnereim, 2019; Genovese, 2019; Kennard, 2020). We identify communities that have high employment rates in these industries as critical political constituencies with clear preferences for compensating displaced workers.

However, employment-related costs do not exist in a vacuum; communities with high proportions of fossil fuel workers may support other forms of compensation if alternate factors put their livelihoods at risk. We consider *ecological vulnerability* to be the main source of vulnerability that crosscuts policy vulnerability, examining how individuals susceptible to employment-related costs develop compensatory policy preferences when they also face ecological threats from climate change

(Brody et al., 2007; Egan and Mullin, 2012). Residents in coastal communities or drought-prone provinces—examples of regions susceptible to climate-related disturbances—face physical stresses due to climate change. These communities likely value compensation targeting adaptation. We expect cross-pressured groups to therefore support more mixed types of compensation compared to policy-vulnerable groups in regions relatively unaffected by climate change.

We test these theoretical predictions with new survey data from the United States and India, the world's two largest democracies and emblematic cases to shed light on the preferences of communities poised to gain and lose from climate action. In both countries, we implemented nationally-representative surveys to benchmark preferences. We also conducted the same surveys in communities residing in fossil fuel-producing regions that are either ecologically vulnerable or less ecologically vulnerable. We had respondents allocate revenue raised from carbon taxes to different forms of compensation. By examining how voters prefer to spend proceeds from costs imposed on carbon emissions, we place a lens squarely on the distributional politics of climate policy (Aklin and Mildenberger, 2018; Colgan, Green and Hale, 2020; Bergquist, Mildenberger and Stokes, 2020).[2]

Our general population surveys reveal that the average citizen in both the US and India prefers policy instruments with fewer distributional implications, in particular, investments in green technologies.[3] By contrast, we find stark but different patterns of compensation preferences for individuals in the employment-vulnerable category. People who reside in regions that are exposed to fossil fuel jobs but are not particularly ecologically vulnerable (e.g., coal country) prefer policies that direct resources to those who are economically vulnerable to climate policy. These groups of voters have little appetite for investments in green technologies or egalitarian payouts to all citizens.

[2]In this study, we bracket considerations of how governments can choose to impose direct or indirect carbon taxes that incentivize decarbonization among citizens and firms in the domestic economy and focus instead on examining the possible channels by which governments can use the proceeds from such revenue schemes to compensate vulnerable communities.

[3]In India, the general population is consistently in favor of green technology investments. In the US, this is true when the household carbon tax level is low; for higher tax levels, the favorite option is an equal distributions of funds raised from carbon taxes.

But whether people in fossil fuel-producing regions are willing to sacrifice transfers to policy-vulnerable individuals for more diffuse compensation is a function of their ecological vulnerability. We find that in both the US and India, 'cross-pressured' individuals (i.e., people attached to the fossil fuel industry who also live in ecologically sensitive areas) have allocation preferences that are similar to those of the general public. Yet we also find evidence that cross-pressured groups prefer mixed distributions of monetary allocations to compensatory mechanisms (e.g., funding for adaptation), indicating that ecological vulnerability appears to crosscut policy vulnerability in shaping individual preferences regarding compensation.

Why do policy vulnerable people in fossil fuel intensive regions have such distinct preferences? Political economy scholarship suggests that people's compensation preferences are best explained by whether or not they are employed in economically vulnerable industries. Individuals' concerns regarding unemployment bolster support for compensation. We theorize additionally that due to the shared identity forged in regions containing occupationally concentrated industries, employment concerns spill over to the larger communities within which embattled workers reside. Drawing on theories of social identity, we argue that beliefs about the shared identity and linked fate of coal communities play a key part in shaping climate policy preferences (Bliuc et al., 2015) and both individual and community-level decisions to mobilize politically determine observed positions (Shayo, 2009). Empirically, we examine if these preferences vary as a function of the relative importance that groups of voters attach to individual versus collective goals.

Our identity-related analyses buttress the finding that individuals in regions sensitive to the employment repercussions of climate policy have distinctive opinions about how compensation policy should target communities at large. Specifically, both American and Indian voters living in the most policy-vulnerable regions (regardless of their industry of employment) prefer transfers that are targeted at the community level over transfers to individuals. We attribute these preferences

to notions of shared identity associated with coal employment held by broad coalitions of citizens in these regions. By contrast, the general public pays relatively less attention to community issues. In both countries, the average voter is less favorable of community-level compensatory mechanisms and less concerned about decarbonization threatening the identities of coal communities.

Taken together, our findings underline how both the content of compensatory policies and the mechanisms by which they target households and communities are key determinants of popular support for climate action in emissions-rich democracies. Our approach is the first to focus attention on the compensatory preferences of critical groups that lie at the center of climate policy decisions yet remain understudied in public opinion work. Analysis of these group preferences elucidates how governments can build coalitions of support for decarbonization in large heterogeneous societies.

Theory of Vulnerability and Compensation Preferences

Compensation is a mechanism for allocating resources to the losing parties of a redistributive economic policy. As a burden-sharing tool, its distinctiveness stems from its goal to redress past or future costs. Compensation can have important feedback effects on support for public policy for it can foster belief in the government's credibility in protecting vulnerable individuals and communities (Autor et al., 2014). At the same time, compensation may fail to achieve policy goals if it is not judiciously calibrated or implemented (Carattini, Kallbekken and Orlov, N.d.; Jenkins, 2019). How the public views compensation is critical for successful policy enactment and compliance.

For our theoretical framework, the issue area of climate change is instructive because the politics of emissions mitigation and climate adaptation are deeply rooted in distributive conflicts. Recent research has argued that 'climate losers' constitute a compelling group that may demand economic redress as a condition for supporting credible policy (Bechtel and Scheve, 2013). At the same time, the core theoretical tradeoffs we identify in the climate arena potentially apply to other redistributive

international economic policy domains where different coalitions of voters demand compensation as a form of economic redress.[4]

Forms of Compensation in Climate Policy

Given the distributional dimensions of compensatory policies, we outline a range of policy instruments that provide compensation to either focused groups or to broad sections of society. In order to establish what focused compensation in climate politics may look like, we begin by identifying the groups that are likely to claim entitlement to compensation and then develop predictions related to their preferred compensatory mechanisms. We distinguish two groups in particular that experience climate-related vulnerability.

First, climate change action implies costly mitigation, bearing particularly on regions where socio-economic activities contribute disproportionately to greenhouse gases, such as those with fossil-fuel producing industries. Given the direct impact of decarbonization on job losses and household incomes in fossil-fuel generating industries, governments may choose to address mitigation-related costs by providing *direct fiscal transfers* to affected workers and their families (Rentier, Lelieveldt and Kramer, 2018).[5] Second, climate change disrupts the livelihoods of those who are exposed to events such as floods, droughts, hurricanes, and wildfires. Adaptation-related costs could be addressed by *protective infrastructural investments*. These can materialize, for example, as seawalls in low-lying coastal communities made by governments to protect exposed communities

[4]Compensation in political economy research is still largely understood in the context of individual attitudes towards taxation, economic inequality, and trade adjustment(e.g. Margalit, 2011; Autor et al., 2014); there is scant research on the determinants of preferences regarding compensation related to decarbonization.

[5]Providing compensation to workers has broad support among American voters. In 2017, we fielded a nationally representative survey via the AmericasBarometer project where we asked respondents the following question: "Congress could consider many important bills in the next two years. If you were in Congress would you vote FOR or AGAINST the following? Climate Adjustment Assistance: Provides education assistance and retraining to workers who have lost their jobs as a result of [policies designed to reduce — reductions in] greenhouse gas emissions." The text in brackets was randomly assigned but did not significantly affect answers. Respondents were asked to answer whether they were either for or against the policy. There was bipartisan support for the proposal in both of the treatment conditions above (62% Republican, 70% Independent, 85% Democrat). We observed similar bipartisan support in a nationally representative survey fielded in 2016 as part of the Cooperative Congressional Election Study (65% Republican support, 78% Independent support, 94% Democratic support).

from the adverse effects of climate change (Barbier, 2014).

While the policy levers discussed above concentrate compensation in the hands of a few, governments may wish to design compensatory instruments that spread benefits to citizens across broad sections of society. *Investments in clean energy and green technologies* are redistributive to the extent that they contribute both to carbon mitigation and economic revitalization in the form of new jobs and the accompanying local economic growth that follows (Jenkins, 2019). Finally, *rebates* for all citizens who directly or indirectly contribute to carbon taxes may also be considered an equitable and credible instrument of redress that immediately compensates large sections of society for the costs that they must pay to support decarbonization efforts (Jagers, Martinsson and Matti, 2019).

Types of Vulnerability and Compensation Preferences

We contend that support for these compensatory policies depends both on the type and degree of vulnerability experienced by targeted groups and on how vulnerability is perceived by affected communities and society at large. Here we investigate two dimensions of vulnerability and, therefore, two different sources of individuals' preferences related to the compensatory mechanisms introduced above.

First, we examine *policy vulnerability*, which affects individuals whose economic well-being (notably their wages and employment) depends on carbon-intensive industries. Our focus on these concerns stems from prior work that highlights policy vulnerability as a catalyst of public opposition to climate cooperation (Bechtel, Genovese and Scheve, 2019; Carley, Evans and Konisky, 2018; Kono, 2020; Bergquist, Mildenberger and Stokes, 2020). Second, we consider *ecological vulnerability*. The scholarship on public behavior has underlined this type of concern as an important source of political activism (Egan and Mullin, 2012; Healy and Malhotra, 2009). We apply these insights to the study of mass preferences surrounding compensatory climate policy.

What preferences for compensatory climate policy does each form of vulnerability generate? We

begin by considering how individuals in policy vulnerable regions affiliated with the fossil fuel industry who are negatively affected by decarbonization policies develop preferences for employment-specific transfers. Subsequently, we investigate the preferences of individuals living in communities exposed to climate policy risks who are also affected by ecological risks associated with climate change. We then benchmark the policy preferences of individuals in both groups to those who are neither ecologically threatened nor policy vulnerable, i.e., the general public. We conduct our analysis at the regional level; because the density of vulnerable people in sub-national regions has political relevance, we evaluate vulnerability within and across regional groupings of voters.

Policy Threatened but Ecologically Not Threatened First, we consider those who are exposed to the costs of carbon policy but who do not face clear and immediate ecological threats from climate change. This group includes people pressured by the anxiety of losing jobs, wages or welfare were the government to pass stringent climate action legislation. Individuals affiliated with the fossil fuel industry can be of two types: They can be directly employed in jobs that contribute to fossil fuel production, or, alternately, they can be dependent on the industry's associated sectors, such as service sector employment in fossil fuel producing regions. In line with research that identifies a powerful effect of employment-based concerns in climate politics (Meckling et al., 2015; Bechtel, Genovese and Scheve, 2019; Bergquist, Mildenberger and Stokes, 2020), we predict that these individuals (both those directly and indirectly employed in fossil fuel jobs) are most eager to integrate employment-based compensation in climate policy. Consequently, individuals in employment-vulnerable environments should be most supportive of compensatory payments that offset potential wage or job losses. We expect these individuals to support policies that emphasize transfers to affected households and communities rather than other investments (such as, for example, investments in adaptation infrastructure, green technologies, or tax rebates).

Policy Threatened and Ecologically Threatened We next consider individuals in contexts that are exposed to the costs of carbon policy and who face clear and immediate ecological threats from climate change. We classify this group as 'cross-pressured' (Sprinz and Vaahtoranta, 1994). Cross-pressured individuals may be inclined to support both transfers to affected individuals as well as more adaptation-oriented measures (e.g., infrastructural investments), since each compensatory instrument alleviates a distinct category of vulnerability. We expect those exposed to high costs on both dimensions to express support for policies that entail a mix of instruments, such as a combination of similar payments to offset workers' costs of climate mitigation policy as well as infrastructural investment designed to offset environmental costs of climate change. Were they to choose the amounts in which to allocate compensation, we would expect them to choose a more even distribution than, say, individuals pressured only by employment concerns.

Neither Policy Threatened Nor Ecologically Threatened As a benchmark, we consider individuals who are neither policy vulnerable nor ecologically vulnerable—in other words, the general public. We expect both the economic and ecological dimensions of climate change to be less salient for these individuals than for the other two groups. Consequently, we expect these individuals to be less supportive of climate-related compensation in the form of transfers to vulnerable workers or investments in adaptation infrastructure. Instead, these individuals are predicted to favor more spatially diffused allocations of compensation, i.e. spending on projects that would benefit their collective interests. Specifically, we expect that individuals in the general public will on average support policies that emphasize investments in green technologies or the equal redistribution of public funds to tax-paying citizens more than compensatory schemes targeted at specific groups.

It is worth considering whether these predictions should differ across richer and poorer countries. We note, for example, that among individuals who are not currently exposed to climate change, some may be concerned about future ecological vulnerability given the speed at which these are

becoming common (Carley et al., 2018); this is especially the case in less resilient and wealthy countries like those in the developing world. Additionally, vulnerable groups exist in all countries experiencing climate change, but their concentrations vary. For example, poorer countries typically have vulnerable citizens who are geographically diffused, while vulnerability in richer countries is more likely to be concentrated in particular localities. Differences in the distribution of vulnerability could therefore affect the salience of opinions around compensation across countries.

Research Design and Sampling Strategy

To test the predictions outlined above, we collected new survey data from voting-age citizens in the United States and India in 2019 and 2020. We chose these two countries for both substantive and methodological reasons. The importance of the United States to global decarbonization efforts is widely acknowledged in the climate politics literature, and we chose this country to situate our analysis with other studies of climate policy and public opinion (e.g. Aldy, Kotchen and Leiserowitz, 2012; Bechtel and Scheve, 2013). India is the world's most populous democracy, an influential country in global climate negotiations, and a large emitter of greenhouse gases.[6] It is also highly vulnerable to climate change. As the country undergoes rapid industrialization, addressing the ecological and economic downsides of climate inaction has become a pressing task, yet one that is politically fraught (Dubash, 2012; Gaikwad, Nellis and Wilkinson, 2020).

Methodologically, our research design allows us to interrogate the theoretical determinants of voter preferences on climate policy in comparative perspective. Home to similar coalitions of climate winners and losers, the US and India face congruent electoral pressures and distributional conflicts in the climate policy domain. Yet the countries have very different social, economic, cultural, and political milieus. Thus, potential similarities that we observe in the relationship between

[6] As of 2015, India trailed only China, the United States, and the European Union in carbon dioxide emissions (EDGAR, 2017).

climate vulnerability and climate policy costs and preferences regarding compensatory structures are unlikely to result from alternate factors that may be plausibly relevant but vary across cases. Below we describe how we identified each of the three politically relevant groups theorized above in both countries. We then illustrate the questions asked to measure respondents' compensation choices and the extent to which their preferences varied in relation to the samples, which capture respondents' objective degree of policy vulnerability and ecological vulnerability.[7]

United States Sampling Strategy

In the US, we focused on the following samples: First, to capture the preferences of the average public and to set the benchmark of the analysis, we fielded the survey on a nationally representative ("General Population") sample. Our second sample included individuals from coal country ("Coal Country") communities, which are US regions populated by a relative high density of individuals with little ecological vulnerability to climate change but high risks of job and wage losses due to climate policy (measured as per capita fossil fuel employment). Third, we concentrated on a sample of coastal fossil fuel communities with objective ecological vulnerability to climate change due to their proximity to the coast as well as risk of job losses related to climate policy due to their reliance on the fossil fuel industry ("Cross-Pressured").

Our General Population sample was fielded in two waves by the survey firm Lucid (Coppock and McClellan, 2019). Setting aside participants with particularly high response speeds, this sample includes 3,702 American adults. The Cross-Pressured survey and the Coal Country survey were fielded by Qualtrics, and include 1,428 and 516 individuals each, respectively. The identification of the counties to be included in the Cross-Pressured and Coal Country samples was done using zip-code level measures of fossil fuel employment from the U.S. Bureau of Economic Analysis. For

[7]In additional analyses, we evaluated how exposure to different combinations of risks lead individuals to display varying degrees of sensitivity to the attributes of different policies. For a detailed discussion of whether the question of vulnerability is fundamentally subjective, as well as results using self-reported subjective measures of vulnerability, see Appendix D.

the Cross-Pressured sample, our sampling strategy identified communities mostly in the coastal south (mainly Louisiana and Texas) and Alaska. For the Coal Country sample, the communities represented in our sample come for the most part from West Virginia, Virginia, Kentucky, Wyoming, and Pennsylvania.

Polling the two targeted samples required intensive resources, and our sample sizes reflect the maximum number of respondents surveyors could reach in each region. Our sampling scheme is visualized in Figure 1, with dark grey indicating counties containing respondents from the General Population poll, red marking counties with Coal Country respondents, and blue highlighting counties with respondents in the Cross-Pressured sample.

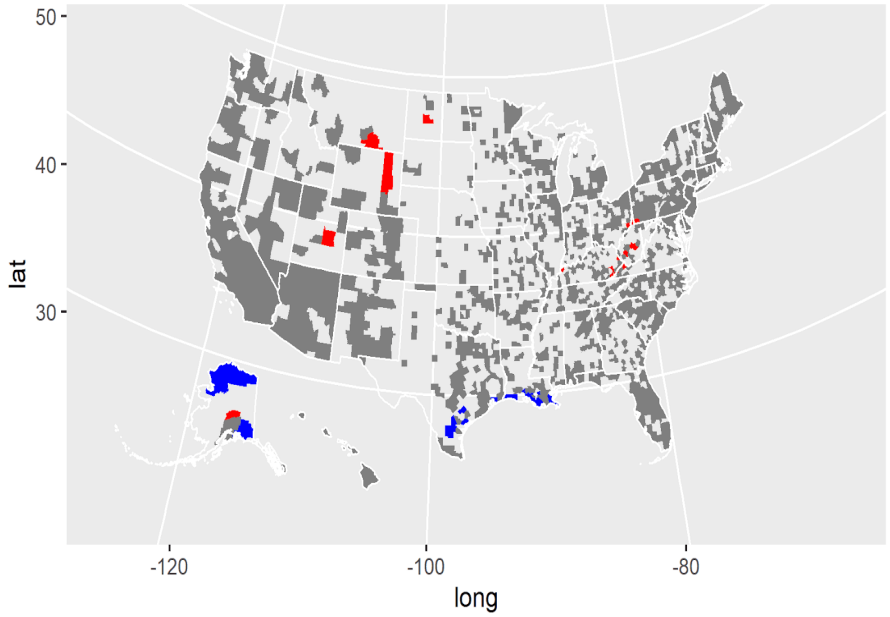

Figure 1: This map shows the counties from which our respondents were sampled. Red denotes counties in the Coal Country sample; blue denotes counties in the Cross-Pressured sample; dark grey represents counties from our General Population sample.

The samples reflect the expected patterns in terms of vulnerability to policy costs and concerns about ecological risks. In the General Population sample, 7% identify themselves or someone in their families as employed in the fossil fuel industry. This is realistic given that the U.S. Department

of Energy calculated that traditional energy sectors employed approximately 6.4 million Americans in 2017. By contrast, in the Cross-Pressured and Coal Country samples, 30% and 65%, respectively, report being employed or having a close family member employed in the fossil fuel industry. In line with other research on American attitudes towards climate change (Howe et al., 2015), more than two thirds of the respondents in each sample report concern about climate change.

India Sampling Strategy

Our samples in India parallel those chosen in the US, with some additions. Our nationally representative ("General Population") survey was fielded using telephone-based interviewing techniques (n = 2,102). The survey relied on the population-wide database of all landline and mobile phones; automated predictive dialers selected numbers randomly from all Indian telecom circles and digital exchanges.[8] Next, analogous to our US strategy, we sampled respondents vulnerable to economic policies poised to threaten coal production. The India "Coal Country" sample (n = 1,556) combines (a) a representative sample of 706 individuals residing in 39 districts (from nine states) that have the highest reported rates of coal mining employment with (b) a sample of 850 coal miners from three of those states. In India's Coal Country sample, 62% of respondents are employed or have a close family member employed in the coal industry, a proportion that approximates the US case.

To construct a cross-pressured sample, we collected data from two groups. The first, a "Coal Mines Cross-Pressured" sample, identified 4 districts (n = 735) containing at least one coal mine and which ranked high on a country-wide index of climate vulnerability.[9] The second, a "Coal Plants Cross-Pressured" sample, represents 25 districts containing at least one operating coal plant and

[8]Mobile phone usage and tele-density coverage is very high in India, providing access to all major demographic groups. The survey was offered in Hindi, Punjabi, Gujarati, Marathi, Kannada, Malayalam, Tamil, Telugu, Odiya, Bangla, and Asamiya. The survey was conducted by the CVoter News Pvt. Ltd. For additional details, see Gaikwad and Suryanarayan (2020).

[9]We identified districts containing coal mines based on the Government of India's 2015 publication, "Statistics of Mines in India," which provides a comprehensive listing of all coal mines in the country. Climate vulnerability was ascertained using the Central Research Institute for Dryland Agriculture's "Atlas on Vulnerability of Indian Agriculture to Climate Change," which ranks each district in India based on climate vulnerability.

ranking high in exposure to climate vulnerability (n = 838).[10] Our policy and ecologically vulnerable ("Cross-Pressured") sample combines these two groups (n = 1,573).[11] In the Cross-Pressured sample, 10% of respondents report being employed in the fossil fuel industry, a lower proportion than in the US. For all mentioned samples except for the targeted coal miners, respondents were polled proportionately to the population size of districts. Appendix B provides extensive details regarding our sampling strategy in India.

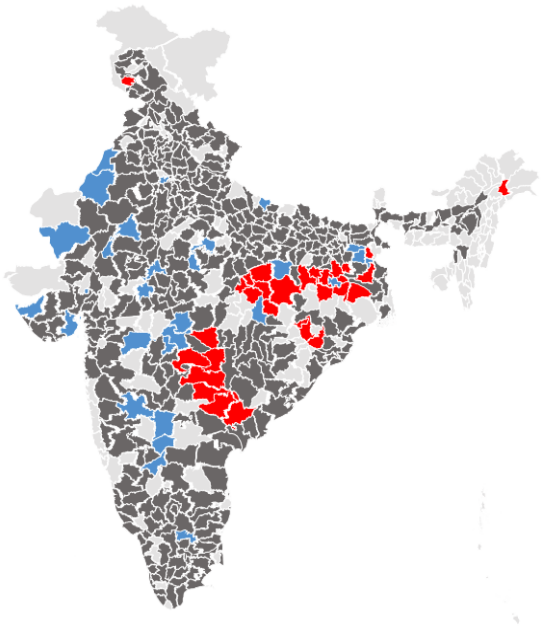

Figure 2: This map shows the Indian districts from which our respondents were sampled. Red denotes districts in the Coal Country sample; blue denotes districts in the Cross Pressured sample; dark grey represents districts from our General Population sample.

Our sampling scheme is graphed in Figure 2, with dark grey indicating districts containing respondents from the General Population poll, red marking districts with Coal Country respondents, and blue highlighting districts with respondents in the Cross-Pressured sample.

[10]To identify coal plants, we relied on the Global Coal Plant Tracker database, which contains information on the universe of coal plants that are located in India. The locations of coal plants in the Global Coal Plant Tracker database were webscraped and assigned latitude and longitude information. For this step in the research, we are grateful to Johannes Urpelainen, Ricky Clark, and Noah Zucker.

[11]In what follows, we present results for the combined Cross-Pressured sample, but similar findings obtain when we analyze the Coal Mines Cross-Pressured and the Coal Plants Cross-Pressured separately.

Preferences for Allocation of Compensation

We first focus on individual preferences for the allocation of public funds raised from higher fossil fuel prices to different compensatory mechanisms. Our goal is to study if there is variation in support depending on individuals' exposure to climate policy and to climate change risks. After collecting pre-treatment demographic indicators, climate science beliefs and subjective measures of climate change concern, we introduced respondents to a series of climate policies aimed at curbing the use of fossil fuels. These policies would raise the cost of fossil fuels, leading to higher energy costs (e.g., the equivalent of a carbon tax) for all citizens.

Importantly, the proposed policies would also include government allocation of the raised funds toward compensatory ends. Respondents were asked to allocate raised funds to four distinct goals: (1) direct transfers to individuals in fossil fuel industries, (2) infrastructural investments to help communities prevent or adapt to climate risks, (3) spending on the development of green energy sources, and finally (4) an even distribution of funds to all taxpayers. These categories reflect the theoretically informed range of instruments available to policymakers and cover options that surfaced as priority policies in a pilot study.[12] The wording of the survey instrument was as follows:

> To combat climate change, the use of fossil fuels like coal and oil will need to be reduced.
>
> To reduce coal and oil production, [the United States/Indian] government is considering a policy to raise the costs of fossil fuels. This policy will affect average [Americans/Indians] because they currently use energy that comes from fossil fuels. Continuing to use these sources of energy will lead to higher household energy costs for average [Americans/Indians].
>
> This policy can take different forms. It can increase the costs of fossil fuels a little or a lot. With higher costs, the demand for fossil fuels will fall. The government also needs to decide how to use the money collected from the policy that raises the cost of fossil fuels. The options

[12] An earlier pilot (where these choices were set up as a conjoint analysis) also included putting the money back towards "other government programs." This choice was uniformly less popular than any of the other options. However, it is possible that in the US context, if funds were provided to local governments, this option might prove to be more popular. In sensitivity tests, we explore the potential role of trust in national/state/local governments in explaining positions on the allocation of money in these programs.

of how the money can be used are:

- Compensate workers in the coal and oil industries who will lose jobs due to the policy.
- Help individuals whose homes and properties will be harmed by climate change, such as those who live in coastal areas.
- Invest in forms of renewable energy like solar or wind energy.
- Distribute the money equally to all citizens in order to offset the higher costs that they will have to pay for energy.

Next we gave respondents three different scenarios that altered the cost per household associated with the policy: $16, $64, or $256 per month for the US and ₹140, ₹560, ₹2,240 for India. The costs represented 0.5, 1.5, and 2.5 percent of the per capita GDP of each country, representing the range of values that scholars have argued countries would need to contribute to meaningful climate mitigation efforts (Bechtel and Scheve, 2013). We randomized the order that respondents received each cost. After each scenario, we asked respondents what percentage of the money raised should be spent on each compensation option. In particular, we asked:

Please consider the scenario in which the government passes a climate policy that increases the average monthly household energy costs by [$16, $64, $256] [₹140, ₹560, ₹2,240].

How would you want the money spent? (Please enter values for each option below so that all options together sum up to 100%. Each value must be greater than or equal to 0. If you do not want any money spent on an option, please enter 0.)

_____ Transfers to compensate workers in the coal and oil industries who will lose jobs due to the policy
_____ Infrastructural investments to protect individuals whose homes and properties will be harmed by climate change
_____ Investments in renewable energy (e.g., solar or wind energy)
_____ Equal transfers back to all citizens

Allocation of Funds and Choice of Climate Compensation

The allocations exercise returns a rich set of findings. We discuss each country separately and in comparative focus. Figure 3 shows the results in the US for the middle ($64) energy cost level scenario. The results are largely similar to the allocations chosen at the other two cost levels; we

note differences below. Preferences are reported for each of our three samples of theoretical interest. Horizontal lines represent the average percentage contribution (mean with 95% confidence interval) across contribution categories.

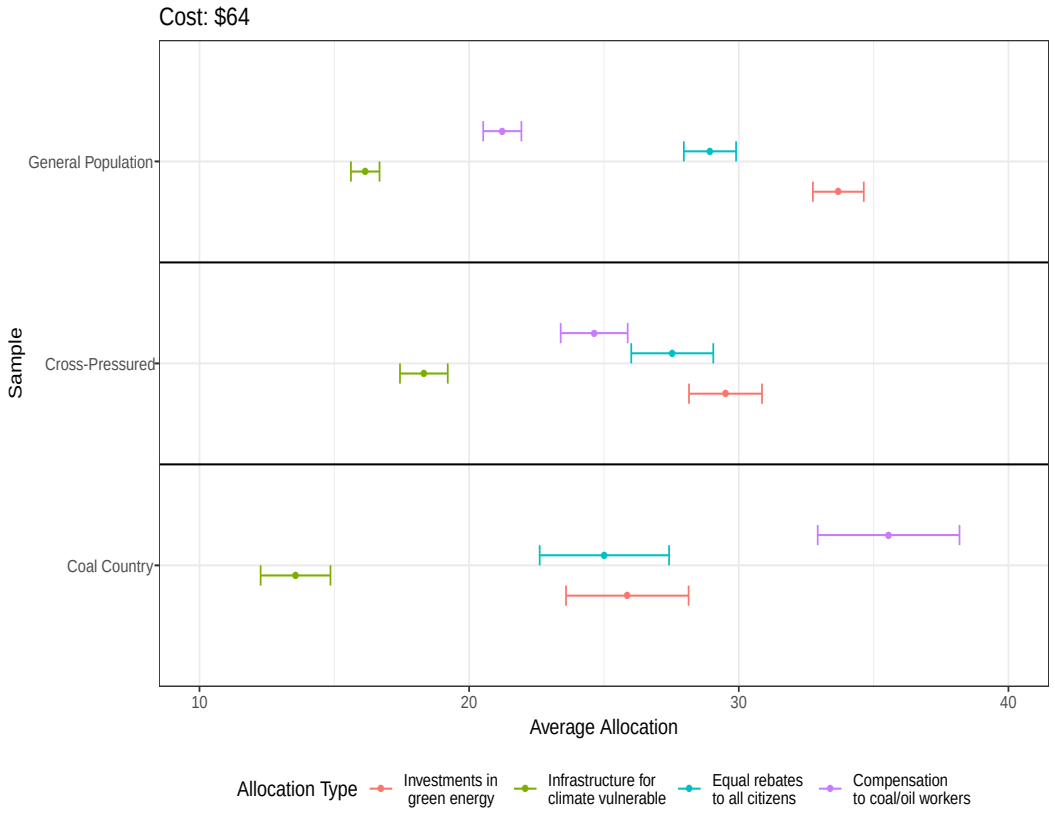

Figure 3: *US preferences for allocation purposes of climate policy funds, by sample.* This figure denotes how respondents in our three samples allocated funds raised from a policy increasing the average monthly household energy costs by $64 across four spending options. Dots represent spending preferences and lines represent 95% confidence intervals.

Examining the General Population sample, we find that the average American is most in favor of green investments (allocating 34% of total funds), followed by an equal rebate to taxpayers (29% of the funds). Notably, at the highest policy cost ($256), the preferred top choices flip, and respondents allocate more to equal taxpayer rebates than to green investments (see Appendix C). These results are consistent with our argument that the average voter in the general population, who is not particularly vulnerable to either climate change or climate policy adjustments, is the least interested in targeted forms of compensation such as transfers and adaptation investments.

Instead, she allocates more to compensatory options that benefit broad sections of society. The shift in favor of equal rebates at high tax levels supports this interpretation. While green technologies provide diffuse mitigation benefits to society, they also benefit specific industries and communities. At high tax levels, the public prefers more egalitarian forms of redistribution guaranteed by taxpayer rebates than compensation with sectoral dimensions.

The Coal Country sample comprises individuals who are exposed only to the economic risks of climate policy. In contrast to the general population, these voters are significantly in favor of direct transfers to workers whose employment is threatened by climate policy, allocating 35% of funds (significantly larger than the 22% allocated by the General Population) to transfers. This preference for direct fiscal transfers to policy-vulnerable individuals is evident even at the highest carbon tax level ($256). Coal Country is the only sample that consistently allocates more money to direct transfers than to other options.

Interestingly, the Cross-Pressured sample reports allocation preferences that mirror the rankings of the General Population sample. Investments in adaptation infrastructure feature as this sample's least favored option, against expectations.[13] Nevertheless, Cross-Pressured respondents are more evenly split among the different compensatory mechanisms proposed in the survey, evidencing an ordering of policy preferences that is the least polarized of the three groups.[14] This suggests that the Cross-Pressured group heeds concerns stemming from both policy and ecological vulnerability while formulating compensation preferences.

Figure 4 presents results from India. Differences in cost levels have little impact; responses are

[13]The aversion to adaptation infrastructure spending in all US groups may reflect voters' preferences for policies in which compensation generates material gains in the short run rather than prevent material losses in the future. Indeed, related literature finds that even in the most vulnerable communities, people want private safeguards rather than public protection from climate change (Dryzek et al., 2011).

[14]Our results do not imply that respondents in the cross-pressured group lack strong opinions about compensation or are indifferent to the set of policy choices. As Sprinz and Vaahtoranta (1994) argue, cross-pressured groups find climate change to be more salient of an issue than other groups, but are torn in their decisions regarding which spending to prioritize.

even more stable in India than in the US. Because of this consistency, we present only the middle (₹560) energy cost responses; Appendix C reports results for the other cost levels.[15] India's General Population sample ranks green investments first, selecting an allocation of funds—34%—that is identical to the proportion allocated in the US. This preference persists at the highest tax level (₹2,240). Evidently, voters in the world's two largest democracies converge in prioritizing green technology investments as their top target of compensation.

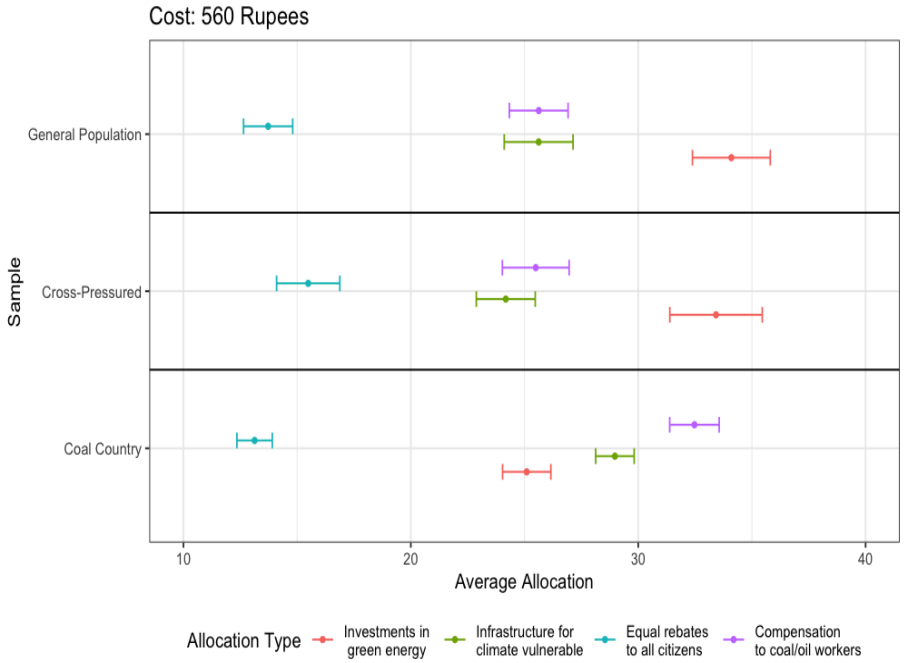

Figure 4: *Indian preferences for allocation purposes of climate policy funds, by sample.* This figure denotes how respondents in our three samples (General Population, Cross-Pressured, and Coal Country) allocated funds raised from a policy increasing the average monthly household energy costs by ₹560 across four spending options. Dots represent spending preferences and lines represent 95% confidence intervals.

Unlike in the US, however, the average Indian does not prefer equal rebates to taxpayers, and in fact ranks this policy last. A similar aversion to equal taxpayer rebates emerges in all the India samples. The fall in support for equal rebates matches rising approval for investments in adaptation infrastructure, which are preferred at the same level as transfers in the General

[15]For our India coal miners sample, each respondent saw all three prices and answered separately to each. For the other samples, each respondent was randomly assigned to consider one of the three prices.

Population sample. Several socioeconomic factors help explain why the choice of equal rebates and infrastructure investments reverses across India and the US. The climate change literature predicts that poorer individuals in developing countries should be favorable to climate adaptation measures, both because they have less individual capacity to adapt and because they are predicted to prioritize economic growth and adaptation when weighing the tradeoffs between growth and mitigation (Greenstone and Jack, 2015). Our India samples do not reject mitigation in favor of adaptation (green investment is at least partially a mitigation choice and is still ranked first), but they evidence high levels of support for adaptation infrastructure.[16] This is in stark contrast to the US, where in all three samples individuals allocate the least amount of money to infrastructural investments.

Turning to one of our most striking findings, respondents in the Indian Coal Country sample revealed policy preferences that mirror those uncovered in the US Coal Country sample. They ranked fiscal transfers to coal workers first, with an allocation (33%) that approximates the proportion estimated in the US coal sample. This parallel finding across the two countries corroborates the congruent desire for compensation to which climate policy vulnerable communities feel entitled.

In both countries, then, the General Population and the Coal Country samples are the groups with the most divergent and polarized preferences. The average voter in both countries evidences distinctively high levels of support for broad-based compensatory mechanisms that will benefit society as a whole. By contrast, the coal samples' top and consistent choice is targeted transfers to compensate workers economically harmed by decarbonization policy. This symmetric pattern of findings provides *prima facie* evidence that material interest is a key driver of coalition preferences regarding compensation in climate policy.

[16]The de-prioritization of redistribution vis-á-vis the US sample is noteworthy. Speculatively, this may stem from a lack of faith in the execution of redistribution in India. India has been described as a 'patronage democracy,' where many aspects of government-supplied benefits including jobs, financial assistance, and public goods are redistributed deliberately along ethnic lines (Chandra, 2004; Gaikwad, Nellis and Wilkinson, 2020). Thus, even if redistribution were appealing, respondents may deem the idea impractical or prone to clientelistic interference.

At the same time, our results also give credence to the claim that voters' allocation choices are motivated by factors apart from self-interest. In particular, we note the considerable baseline support in the General Population surveys for transfers to vulnerable workers, both in the US (21%) and in India (26%). This support is in line with theories of embedded liberalism, which predict a societal contract whereby voters agree to compensate domestic losers of redistributive international economic policies. Our results indicate broad-based interest in compensating climate policy vulnerability—even if in a limited form—among voters in the US and India, indicating mass support for 'just transition' policies that contain employment-based compensatory mechanisms.

Why are the Cross-Pressured more closely aligned to the General Population sample than to the Coal Country sample in the US and India? It is plausible that the average voter is also concerned about ecological vulnerability stemming from climate change, bringing General Population preferences closer to those of the Cross-Pressured group. Consistent with this explanation, we find that ecological vulnerability is higher and more evident in India than in the US; this may be why the General Population and Cross-Pressured samples appear less differentiated in India than in the US.[17] Conversely, it is also possible that voters in the Cross-Pressured sample do not consider themselves to be ecologically vulnerable, a claim emerging from recent work documenting a distorted sense of resilience in coastal communities (Mildenberger, Lubell and Hummel, 2019). Lower perceptions of ecological vulnerability among the Cross-Pressured could explain why this sample appears similar to the General Population. In the Appendix D, we present additional analyses to explore whether subjective assessments of ecological vulnerability inform allocation choices. We find that climate-concerned individuals who are not related to the fossil fuel industry prefer consistently more diffused forms of allocation, namely investments in green energy, in both countries - just like the General Population samples in our main analyses.[18].

[17]In Appendix D, we present evidence to show that across the Indian samples, respondents reported higher levels of concern about the deleterious ecological effects of climate change than compared to the US samples.

[18]Climate-concerned individuals employed in fossil fuels have more mixed allocation preferences.

The above discussion points to a commonality that emerges across the US and India: Coal Country voters are distinctive and have similar policy preferences regarding compensation. What characteristics of these communities generate such pronounced preferences? We turn to investigating whether issues related to the arrangements and disposition of compensation are particularly salient to this group, triggering policy support in different directions compared to other groups.

Preferences for the Disposition of Compensation

We narrow our focus to targeted compensation schemes that would benefit fossil fuel producing regions poised to be adversely impacted by decarbonization. These types of policy mechanisms have important political implications given that they are aimed at identifying and mobilizing political communities. For example, in the US, transfer schemes exhibit bipartisan support among the public, and countries seeking to transition away from fossil fuel production, such as Germany, are currently discussing potential transfer schemes in detail.[19]

The broad question of "how" to deploy such transfers can be tackled from various perspectives. For example, economic analyses might focus on efficiency considerations or on how to structure retraining opportunities for workers. We focus on a dimension closely connected to voters' preferences: the disposition of funds—namely, whether transfers should flow to the households of individuals directly impacted by the loss of a job, or whether transfers should flow to communities and community organizations. This question addresses issues of trust, but also tackles the importance of collective identity, which we actively explore here. Scholars investigating transfer mechanisms in the context of the trade adjustment literature have argued that community-level transfers are potentially preferable to individually-focused transfers (Rosen and Coalition, 2008; Schoepfle, 2000). A focus on community transfers is also justified by recent work which shows that group-level considerations

[19]Clean Energy Wire. 2019. 'Managing Germany's Coal Phase-Out. `https://www.cleanenergywire.org/news/commission-watch-managing-germanys-coal-phase-out`

influence preferences for redistribution policy more generally (Bernauer and Nguyen, 2015). This distinction matters for compensatory climate policy because governments can structure compensation in either more concentrated or diffused ways (Carley, Evans and Konisky, 2018).

We theorize that voters in fossil fuel communities prefer more community-oriented compensatory mechanisms to individual transfers than the general public. This is because group identities in fossil fuel communities—such as coal mining regions—are closely connected to each other in the carbon economy. For both economic and social reasons, individuals in these regions have shared interests. In coal country, for example, coal workers *as well as non-coal workers* in services and secondary sectors depend on coal employment, and the latter may also reasonably anticipate material losses from decarbonization policy and seek redress. Economically, then, non-coal workers are predicted to support community-level transfers to those that directly compensate coal-related job losses.

Yet fossil fuel communities also evidence strong collective social identities. These communities are geographically concentrated, occupationally specialized, racially/ethnically homogeneous, and intergenerationally dependent on employment in specialized industries like coal (see Hatch (1995) for the US, and McDuie-Ra and Kikon (2016) for India). Theories of social identity predict that when group affiliation is high, individuals prefer policies that enhance group welfare over policies that benefit the population at large (Shayo, 2009; Gaikwad, 2020). When subscribing to a shared group identity, individuals interpret policies that are beneficial to the group as helping all members within the group. If individuals in coal country perceive a strong sense of linked fate connected to their group identity (Ahlquist and Levi, 2014), they may prefer to view compensation in a collective lens. Evidence that fossil-fuel workers in coal country prefer community transfers over specific transfers to coal workers would be consistent with this point of view.

By contrast, members of broad-based communities such as the general population are less attentive to group concerns. Individuals in large, socially and economically diverse groups are less likely

to have developed a shared identity tied to geographically concentrated occupations. The average voter is predicted to be less interested in allocating funds to community-oriented compensatory mechanisms than to individual transfers; this is especially the case for the small minority of individuals with fossil fuel jobs in non-fossil fuel producing regions. In a similar vein, the general public should be less sensitive to community concerns, and less likely to associate policy support with community welfare considerations. Finally, individuals facing both policy and ecological vulnerability are predicted to have cross-cutting preferences. On the one hand, these individuals share interests linked to fossil fuel jobs. On the other hand, cross-pressured individuals face more ecological vulnerability than coal country residents. These pressures should translate into mixed preferences for community-level deployment of compensation and mixed concerns for protecting group identities.

Preferences for Targets of Compensation Deployment

To test these conjectures, we gauged whether respondents preferred that fiscal transfers be given to individual workers or to broader communities affected by climate policy. Respondents were asked if they prefer the government to "*provide funding only to the individuals affected by*" climate policy, or "*provide funding to entire communities*" where such individuals reside. For simplicity, we look at the descriptive frequencies of individuals preferring each type of deployment. We break down the frequencies by whether respondents or their close family members are employed in the fossil fuel industry in order to investigate preferences of both households directly dependent on fossil fuel jobs as well as households that are dependent on unrelated sectors. Figure 5 reports the US results. The broad patterns in Figures 5–8 hold in multivariate regression analyses that control for individual level covariates like gender, age and partisanship (see Appendix E).

Recall, residents of regions that are economically dependent on fossil fuel production ranked compensatory transfer mechanisms as their top policy preference. We see here that these respondents are particularly supportive of transfers *if they are directed at the community level.* Individuals in the

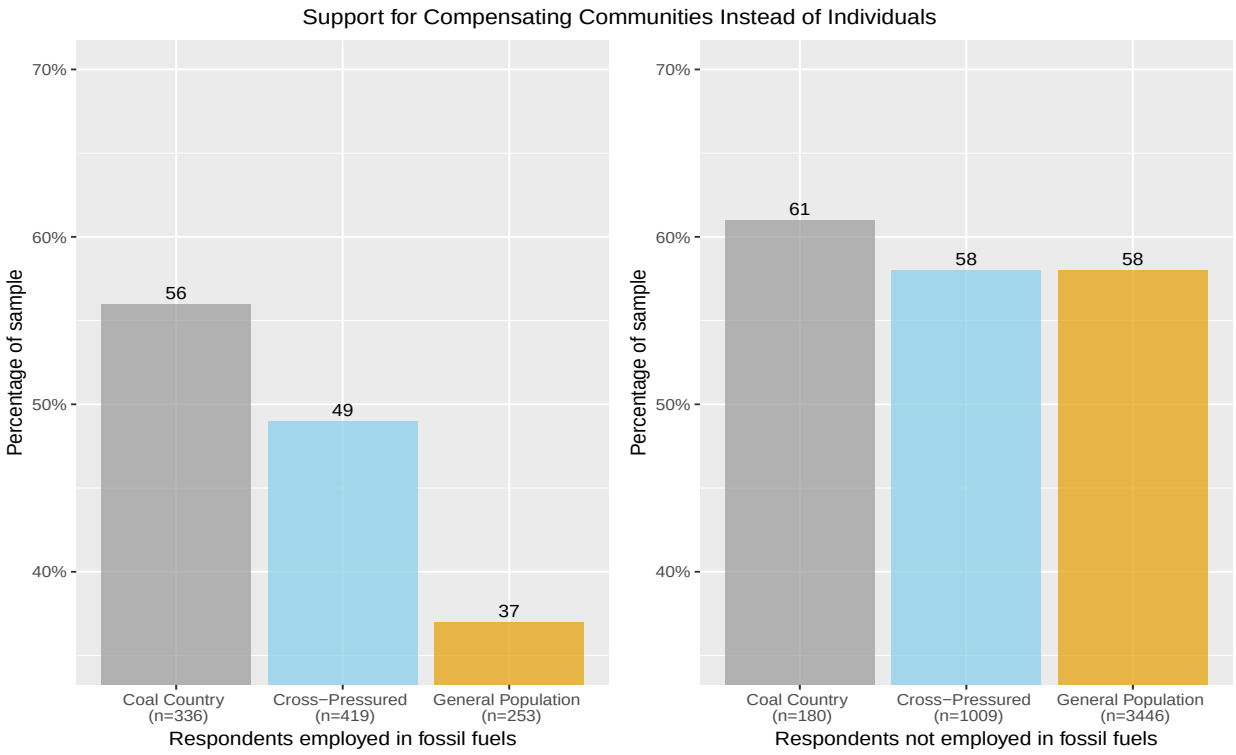

Figure 5: *US preferences for transfers at the community (versus individual household) level by sample and fossil fuel employment.* The bars report the percent preferring community transfers.

Coal Country sample are proportionally more in favor of community-level compensatory transfers, irrespective of their employment status. These results are consistent with claims that both material and non-material factors are important determinants of preferences in Coal Country. Economic self-interest may explain why individuals who are not employed in fossil-fuel jobs in Coal Country prefer community transfers the most. Yet the stark divergence in the preferences of fossil fuel-employed workers—those in coal country are 19 percentage points more likely to support community transfers than those in the general population—suggests that other-regarding factors motivate the choice of group-based allocations in Coal Country.

When comparing respondents who are or are not employed in fossil fuel jobs within each sample, we reach a similar conclusion. In the General Population and Cross-Pressured groups, we find starker divisions across preferences for individual-level compensation (preferred more by those employed in fossil fuels) and community-level compensation (preferred more by those not employed

in the fossil fuel sector), a pattern consistent with materialist accounts of preference formation. In Coal Country, however, the gap between workers who are or are not employed in fossil fuel jobs diminishes considerably, and is in fact statistically insignificant in multivariate analyses (see Appendix E), underscoring cross-sectoral support for community-based compensatory mechanisms.

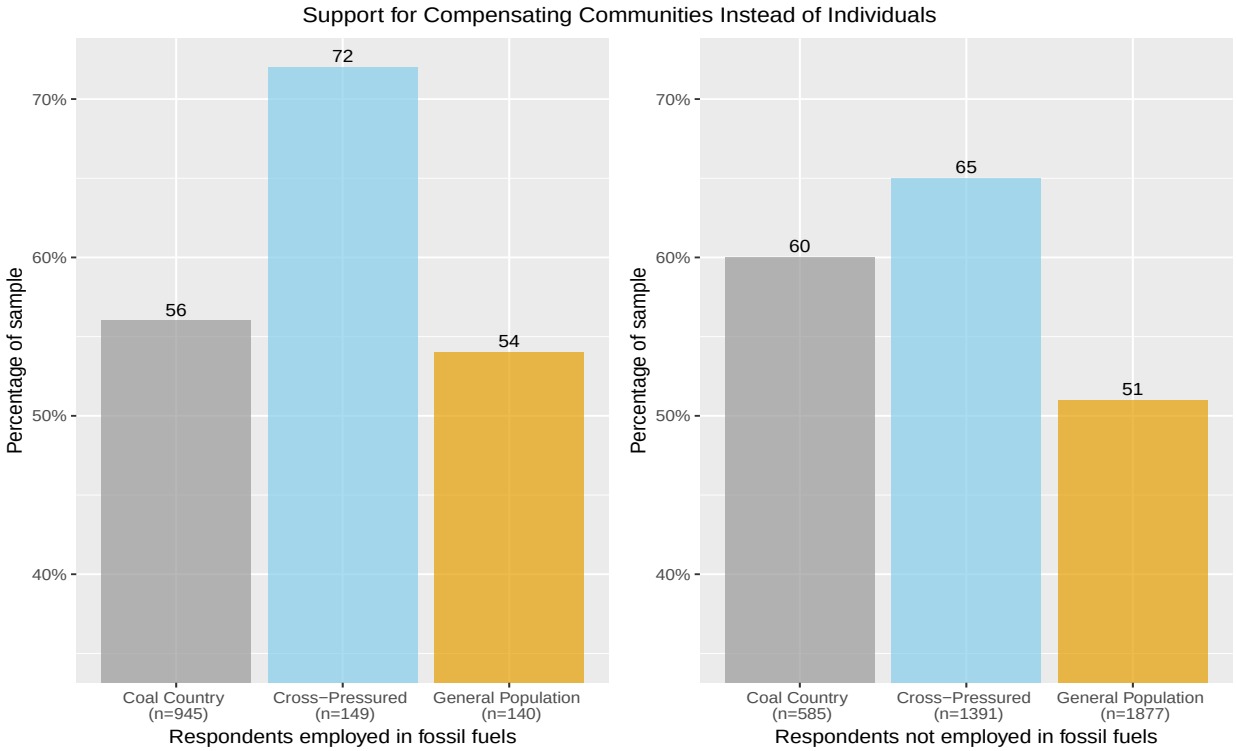

Figure 6: *India preferences for transfers at the community (versus individual household) level by sample and fossil fuel employment.* The bars report the percent preferring community transfers.

Figure 6 reports the results from India. There are high levels of support for community level compensation relative to individual compensation.[20] Nevertheless, it is noteworthy that like in the US, the General Population sample is least in favor of community transfers. This low ranking of community-oriented transfers indicates that the average Indian weighs group considerations least when considering compensation deployment. The Coal Country sample in India has near identical preferences to its US counterpart with respect to fossil fuel workers (56% in both countries) and non-fossil fuel workers (60% in India and 61% in the US). But in contrast to the US, India's Cross-

[20]This pattern may be explained by a point discussed earlier: Indians across all samples report more concern about climate change than Americans (see Appendix A for self-reported indicators of climate concerns).

Pressured group registers highest support for community-level compensation; intersecting policy and ecological vulnerability is associated with heightened group-based considerations in India. Fossil fuel workers in this group are most supportive of community transfers, pointing again to the role of other-regarding preferences in shaping deployment choices. Overall, group-related considerations feature highly in India's policy and ecologically vulnerable regions. India's Coal Country and Cross-Pressured samples are on average significantly more likely to prefer community transfers to individual transfers than the General Population (see Appendix E). This supports our conjecture that decarbonization risks affect not only those employed specifically in fossil fuel industries but also broad sections of society in regions dependent on fossil fuel production.

Comparing the results from the US and India, our main conclusion is that community-oriented sentiments appear strong among communities of voters in both countries who face policy threats from climate change. Coal Country voters value the community fabric that has evolved from high levels of coal industry employment and plausibly fear the material losses that the community as a whole stands to incur from decarbonization policies. This finding is in line with evidence indicating the diffused consequences of economic retrenchment in trade-affected industries (Margalit, 2011).

Role of Community Identity

We have shown thus far that individuals in embattled coal mining regions have distinct preferences supporting community-oriented transfers. To examine whether these preferences are related to identity-related consideration, we probe the extent to which policy support varied when the policy in question affected regional identities. Protecting the identity of coal miners and their communities has been a topic of considerable political debate in recent years, surfacing repeatedly, for example, during the 2016 US presidential campaign. To measure the importance that respondents attach to the identity (and therefore political salience) of coal communities, we asked:

Some people say that the government should not pass policies that harm jobs in industries like

the coal industry because such policies will threaten the identities of coal workers and their surrounding communities, which are closely tied to coal mining. Do you agree? [(1) strongly disagree to (4) strongly agree]

Figures 7 and 8 present the results for US and India, respectively. With respect to the US, we find evidence aligned with our previous results about the differences between coal country and the general population. In the General Population sample, a wide chasm—a 33 percentage point difference—emerges in the responses of those who are or are not employed in the fossil fuel industry. Congruent with materialist accounts, respondents who are not employed in fossil fuel jobs are least concerned about policies that threaten the identities of fossil fuel communities, while those who are employed evidence greatest concern. By contrast, the gap between the preferences of respondents who are or are not employed in fossil fuel jobs closes significantly in the Coal Country sample (20 percentage points) and the Cross-Pressured sample (10 percentage points). Material concerns are evident even in samples experiencing policy vulnerability, with fossil fuel workers reporting more concern about policies that threaten group identity than non-fossil fuel workers. That said, industry of employment is not as significant a predictor of concern over policies that threaten group identities in these samples as in the general population sample, corroborating the claim that group identities are more salient in fossil fuel regions than in the general public.

Our results from India are even more elucidating. We observe strong opposition to policies that threaten the identities of coal industry workers, and this opposition is most concentrated in Coal Country. Respondents in Coal Country, regardless of fossil fuel employment, oppose identity-threatening policies at greater rates than in the General Population. While 54% of fossil fuel workers in the General Population oppose these policies, the corresponding proportion in Coal Country is a staggering 78%. Evidently, identity-related considerations feature highly in the minds of Coal Country respondents. That Cross-Pressured samples have preferences in between the General Population and Coal Country samples further buttresses this interpretation.

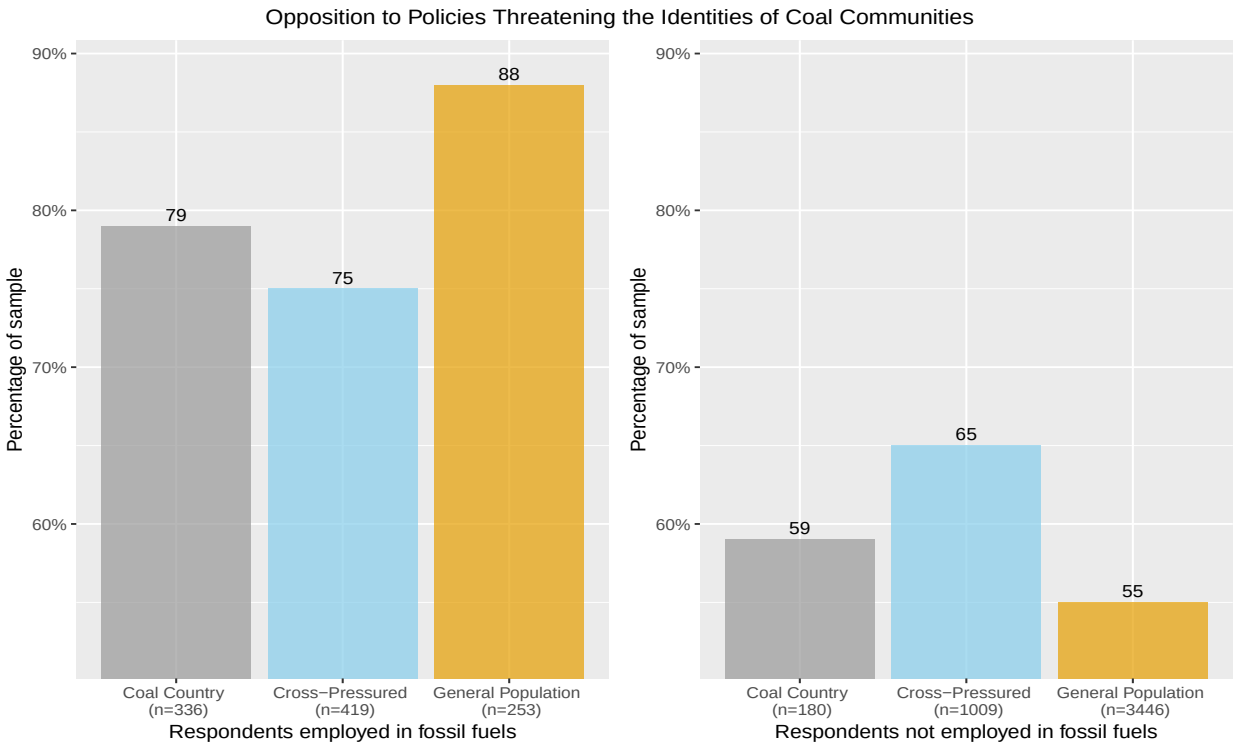

Figure 7: *US preferences for blocking policy measures that threaten the identity of the coal communities.* The bars report the percent of opposing respondents by sample and employment.

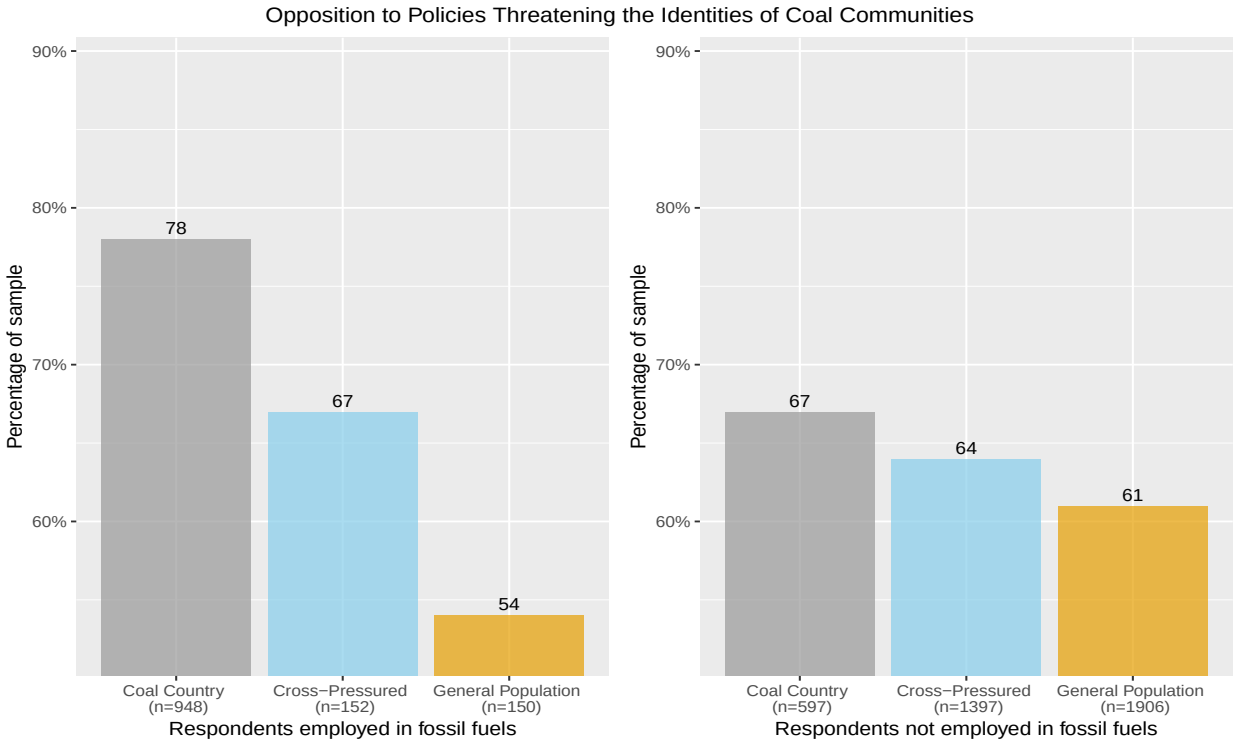

Figure 8: *India preferences for blocking policy measures that threaten the identity of the coal communities.* The bars report the percent of opposing respondents by sample and employment.

These identity results help explain our prior finding that Coal Country voters favor community transfers most. Coal mining regions are consolidated in voicing resistance to policies threatening the identities of coal workers and their surrounding communities and in seeking transfers to compensate the community at large. The cross-sectoral basis of this support points to identity-related factors as important determinants of preference formation over the disposition of compensation policy in these regions. The general public by contrast is less interested in compensating broad-based vulnerability in fossil fuel communities. Evidently, to purchase societal buy-in in coal communities, policies will need to go beyond appeasing individual workers and instead engage communities since demand for compensation arises from more than just the individual employees who will directly bear the costs of decarbonization. More generally, our results indicate that policy reforms—in climate and other distributive domains—will need to prioritize compensation in ways that effectively address the polarization that we document between average voters and more vulnerable communities.

Conclusion

Effective greenhouse gas emissions abatement is poised to impact the lives of individuals and communities around the world. Just as in other policy arenas where there is a net welfare gain that accompanies concentrated losses, such as trade policy, acting on climate change requires understanding the salience of policy preferences and overcoming the resistance of certain localized "losers" of climate policy. Against this backdrop, we explored preferences over different forms of climate-related compensation for vulnerable communities within the United States and India, the world's two largest democracies. Our study is one of the first to seriously engage with the design of decarbonization policies that confront distributional political realities (e.g., Kono, 2020; Bergquist, Mildenberger and Stokes, 2020; Jakob et al., 2020).

Converting policy opponents into supporters presents one of the biggest challenges in implement-

ing successful climate mitigation policy. Our research suggests that mobilizing sufficient support will be difficult because different groups of people prefer different levels, forms, and targets of compensation. The most cohesive and potentially antagonistic group standing in the way of mitigation policy consists of the communities that are currently confronted by the wage and employment consequences of climate policy but do not face significant ecological vulnerability. Our results indicate that governments have much to do to appease these voters.

Another important group of voters are those who are pressured by both policy and ecological vulnerabilities. They desire a fair mix of allocations for different types of compensation. If climate change continues to cause adverse weather events that increase in intensity and frequency, more communities will probably become "cross-pressured," thereby pushing the policy agenda to divide carbon tax revenues among several compensatory programs. And finally, it is noteworthy that the general population in both countries prefers broad-based compensatory mechanisms like investments in green technologies and equal rebates. A referendum on a climate action plan containing these policy levers would muster majoritarian support.

While a gap exists between the coal community and the general population, a salutary feature of our findings is that the average voter is willing to divert a significant proportion of carbon taxes to compensate job losses in the fossil fuel industry. This points to a pathway forward for policymakers seeking to mobilize support for climate policy from different domestic constituencies. Our data shows that compensation can in fact strengthen the public foundations for ambitious climate policy if provided in targeted and credible ways. Consequently, this paper provides some validity to moves by governments in countries such as Australia, Germany, and South Africa that have sought to quiet climate policy opposition with employment-based compensation arrangements.

References

Ahlquist, John S and Margaret Levi. 2014. *In the interest of others: Organizations and social activism*. Princeton University Press.

Aklin, Michaël and Matto Mildenberger. 2018. "Prisoners of the Wrong Dilemma: Why Distributive Conflict, Not Collective Action, Characterizes the Politics of Climate Change." *Working Paper* .

Aldy, Joseph E, Matthew J Kotchen and Anthony A Leiserowitz. 2012. "Willingness to pay and political support for a US national clean energy standard." *Nature Climate Change* 2(8):596–599.

Autor, David H, David Dorn, Gordon H Hanson and Jae Song. 2014. "Trade adjustment: Worker-level evidence." *The Quarterly Journal of Economics* 129(4):1799–1860.

Barbier, Edward B. 2014. "A global strategy for protecting vulnerable coastal populations." *Science* 345(6202):1250–1251.

Bechtel, Michael M, Federica Genovese and Kenneth F Scheve. 2019. "Interests, norms and support for the provision of global public goods: the case of climate co-operation." *British journal of political science* 49(4):1333–1355.

Bechtel, Michael M and Kenneth Scheve. 2013. "Mass Support for Climate Cooperation Depends on Institutional Design." *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* 110(34):13763–8.

Bergquist, Parrish, Matto Mildenberger and Leah Stokes. 2020. "Combining Climate, Economic, and Social Policy Builds Political Support for Climate Action in the US." *Environmental Research Letters* 15(5).

Bernauer, Thomas. 2013. "Climate Change Politics." *Annual Review of Political Science* 16(1):421–448.

Bernauer, Thomas and Quynh Nguyen. 2015. "Free trade and/or environmental protection?" *Global Environmental Politics* 15(4):105–129.

Bliuc, Ana-Maria, Craig McGarty, Emma F. Thomas, Girish Lala, Mariette Berndsen and RoseAnne Misajon. 2015. "Public division about climate change rooted in conflicting socio-political identities." *Nature Climate Change* 5(3):226–229.

Breetz, Hanna, Matto Mildenberger and Leah Stokes. 2018. "The political logics of clean energy transitions." *Business and Politics* 20(4):492–522.

Brody, Samuel D, Sammy Zahran, Arnold Vedlitz and Himanshu Grover. 2007. "Examining the relationship between physical vulnerability and public perceptions of global climate change in the United States." *Environment and behavior* 40(1):72–95.

Campbell, Troy H and Aaron C Kay. 2014. "Solution Aversion: On the Relation Between Ideology and Motivated Disbelief." *Journal of personality and social psychology* 107(5):809–824.

Carattini, Stefano, Steffen Kallbekken and Anton Orlov. N.d. "How to win public support for a global carbon tax." *Nature*. Forthcoming.

Carley, Sanya, Tom P Evans and David M Konisky. 2018. "Adaptation, culture, and the energy transition in American coal country." *Energy Research & Social Science* 37:133–139.

Carley, Sanya, Tom P Evans, Michelle Graff and David M Konisky. 2018. "A framework for evaluating geographic disparities in energy transition vulnerability." *Nature Energy* 3(8):621–627.

Carlsson, Fredrik, Peter Martinsson and Alpaslan Akay. 2011. "The effect of power outages and cheap talk on willingness to pay to reduce outages." *Energy Economics* 33(5):790–798.

Chandra, Kanchan. 2004. "Why Ethnic Parties Succeed: The Political Mobilization of Castes in India.".

Colgan, Jeff, Jessica F Green and Thomas Hale. 2020. "Asset Revaluation and the Existential Politics of Climate Change." *International Organization, Forthcoming* .

Cooper, Jasper, Sung Eun Kim and Johannes Urpelainen. 2018. "The broad impact of a narrow conflict: How natural resource windfalls shape policy and politics." *The Journal of Politics* 80(2):630–646.

Coppock, Alexander and Oliver A McClellan. 2019. "Validating the demographic, political, psychological, and experimental results obtained from a new source of online survey respondents." *Research & Politics* 6(1).

Dryzek, John S, Richard B Norgaard, David Schlosberg et al. 2011. Climate change and society: approaches and responses. In *The Oxford Handbook of Climate Change and Society*, ed. John S. Dryzek, Richard B. Norgaard and David Schlosberg. pp. 3–17.

Dubash, Navroz. 2012. *Handbook of climate change and India: development, politics and governance*. Routledge.

EDGAR. 2017. "CO2 Time Series 1990-2015 per Region/Country." European Commission - Joint Research Centre. Emissions Database for Global Atmospheric Research (EDGAR).
URL: *https://bit.ly/3hvsw9q*

Egan, Patrick J and Megan Mullin. 2012. "Turning personal experience into political attitudes: The effect of local weather on Americansâ perceptions about global warming." *The Journal of Politics* 74(3):796–809.

Gaikwad, Nikhar. 2020. "Identity Politics and Economic Policy." *Columbia University, Book Manuscript* .

Gaikwad, Nikhar, Gareth Nellis and Steven Wilkinson. 2020. "The Determinants of Popular Support for Environmental Policy in India." *Columbia University, Working paper* .

Gaikwad, Nikhar and Pavithra Suryanarayan. 2020. "Attitudes toward Globalization in Ranked Ethnic Societies." *Columbia University, Working paper* .

Genovese, Federica. 2019. "Sectors, Pollution, and Trade: How Industrial Interests Shape Domestic Positions on Global Climate Agreements." *International Studies Quarterly* 63(4):819–836.

Genovese, Federica and Endre Tvinnereim. 2019. "Who opposes climate regulation? Business preferences for the European emission trading scheme." *The Review of International Organizations* 14(3):511–542.

Greenstone, Michael and B Kelsey Jack. 2015. "Envirodevonomics: A research agenda for an emerging field." *Journal of Economic Literature* 53(1):5–42.

Hatch, Michael T. 1995. "The politics of global warming in Germany." *Environmental Politics* 4(3):415–440.

Healy, Andrew and Neil Malhotra. 2009. "Myopic voters and natural disaster policy." *American Political Science Review* 103(3):387–406.

Howe, Peter D, Matto Mildenberger, Jennifer R Marlon and Anthony Leiserowitz. 2015. "Geographic variation in opinions on climate change at state and local scales in the USA." *Nature Climate Change* 5(6):596–603.

Jagers, Sverker C, Johan Martinsson and Simon Matti. 2019. "The impact of compensatory measures on public support for carbon taxation: An experimental study in Sweden." *Climate policy* 19(2):147–160.

Jakob, Michael, Jan Christoph Steckel, Frank Jotzo, Benjamin K Sovacool, Laura Cornelsen, Rohit Chandra, Ottmar Edenhofer, Chris Holden, Andreas Löschel, Ted Nace et al. 2020. "The future of coal in a carbon-constrained climate." *Nature Climate Change* 10(8):704–707.

Jenkins, J. 2019. "Why carbon pricing falls short and what to do about it." *Kleinman Center for Energy Policy* Available at https://kleinmanenergy.upenn.edu/policy-digests/why-carbon-pricing-falls-short.

Kennard, Amanda. 2020. "The Enemy of My Enemy: When Firms Support Climate Change Regulation." *International Organization* 74(2):187–221.

Keohane, Robert O and David G Victor. 2016. "Cooperation and discord in global climate policy." *Nature Climate Change* 6:570–575.

Kono, Daniel Yuichi. 2020. "Compensating for the climate: unemployment insurance and climate change votes." *Political Studies* 68(1):167–186.

Margalit, Yotam. 2011. "Costly jobs: Trade-related layoffs, government compensation, and voting in US elections." *American Political Science Review* 105(1):166–188.

McDuie-Ra, Duncan and Dolly Kikon. 2016. "Tribal Communities and Coal in Northeast India: The Politics of Imposing and Resisting Mining Bans." *Energy Policy* 99(4):261–269.

Meckling, Jonas. 2011. *Carbon coalitions: Business, climate politics, and the rise of emissions trading*. MIT Press.

Meckling, Jonas, Nina Kelsey, Eric Biber and John Zysman. 2015. "Winning coalitions for climate policy." *Science* 349(6253):1170–1171.

Mildenberger, Matto, Mark Lubell and Michelle Hummel. 2019. "Personalized risk messaging can reduce climate concerns." *Global Environmental Change* 55:15–24.

Newell, Peter and Matthew Paterson. 2010. *Climate capitalism: global warming and the transformation of the global economy*. Cambridge University Press.

Rentier, Gerrit, Herman Lelieveldt and Gert Jan Kramer. 2018. "Varieties of coal-fired power phase-out across Europe." *Energy Policy* 132:620–632.

Rosen, Howard and Trade Adjustment Assistance Coalition. 2008. "Designing a National Strategy for Responding to Economic Dislocation." *Testimony before the Subcommittee on Investigation and Oversight House Science and Technology Committee, June* 24.

Schoepfle, Gregory. 2000. US Trade Adjustments Assistance Policies for Workers. In *Social Dimensions of US Trade Policies*, ed. A.V. Deardorff and R.M. Stern. p. 95.

Shayo, Moses. 2009. "A model of social identity with an application to political economy: Nation, class, and redistribution." *American Political science review* 103(2):147–174.

Sprinz, Detlef and Tapani Vaahtoranta. 1994. "The interest-based explanation of international environmental policy." *International Organization* 48(1):77–105.

Stokes, Leah C. 2016. "Electoral backlash against climate policy: A natural experiment on retrospective voting and local resistance to public policy." *American Journal of Political Science* 60(4):958–974.

Tingley, Dustin and Michael Tomz. 2014. "Conditional cooperation and climate change." *Comparative Political Studies* 47(3):344–368.

Appendix

"Creating Climate Coalitions: Mass Preferences for Compensating Vulnerability in the World's Two Largest Democracies"

The Appendix contains the following sections:

A. Descriptive statistics of the US and Indian samples

B. Additional information regarding sampling strategy

C. Choices of US and Indian respondents in the allocation exercise

D. Additional results for compensation and investment choices based on self-reported, subjective (rather than geographical) information on vulnerability for both the US and India

E. Additional analyses and regressions models based on the questions regarding identity and community for both the US and India

A Descriptive statistics

A.1 US Sample

	General Population	Cross-Pressured	Coal Country
Female	53%	60%	62%
Median Age	46 years	35 years	37 years
College Degree	35%	33%	29%
Employed	54%	62%	51%
Ideology: Liberals	29%	15%	18%
Ideology: Conservatives	34%	43%	39%
Concerned by Climate Change	76%	73%	69%
N	3702	1428	516

Table A.1: Descriptive statistics of US samples. 'College Degree' includes college graduates and graduate degrees. 'Employed' refers to self-employed or paid employees.

A.2 India Sample

	General Population	Cross-Pressured	Coal Country
Female	65%	59%	30%
Median Age	36 years	35 years	36 years
Attained Secondary School	48%	47%	42%
Employed	77%	78%	75%
Voted for BJP	60%	65%	48%
Below National Median Income	40%	42%	45%
Scheduled Caste/Dalits	12%	12%	22%
Scheduled Tribes	3%	5%	10%
Other Backward Classes	35%	45%	32%
Upper Caste	39%	30%	31%
Muslim	8%	6%	5%
Concerned by Climate Change	91%	89%	93%
N	2102	1573	1556

Table A.2: Descriptive statistics of India samples. 'Secondary School' includes individuals who have completed secondary school or higher. 'Employed' refers to self-employed or paid employees. 'Voted for BJP' refers to whether respondents voted for the Bharatiya Janata Party (BJP) in the last Lok Sabha election.

B Additional Information Regarding India Samples

The implementation of our surveys in India required a more involved sampling strategy than in the US. Here we describe the decisions we took to identify the relevant samples.

1. General Population

The general population sample was conducted using Computer Assisted Telephone Interviewing (CATI), drawing on all mobile phone and landline connections in India.[21] Our research firm employed an automated predictive dialer to select phone numbers from all telecom circles and digital exchanges in India. India's high telephone density rate allowed enumerators to access the vast majority of demographic groups in the country.[22] Members of low-frequency demographic groups were over-sampled to obtain a geographically and socio-economically representative sample. The sample covered the entire geography of India, excluding only some remote north-eastern states and union territories. Respondents could choose to take the survey in eleven languages: Hindi, Punjabi, Gujarati, Marathi, Kannada, Malayalam, Tamil, Telugu, Odiya, Bangla and Asamiya. The survey was conducted by the firm CVoter News Pvt. Ltd.

2. Coal Country

The Coal Country sample captures parts of the India heavily dependent on coal industry employment, and thus vulnerable to the economic threats of climate policy. This sample was constructed by combining two surveys: a representative survey of coal mining districts as well as a targeted survey of coal miners, as described below.

[21] Telephone surveys are advantageous since they alleviate privacy and social desirability concerns for respondents in group settings. Additionally, the medium facilitates interviews with hard-to-reach demographic groups, boosting representativeness of the sample. Interviews were recorded and supervised in real time, augmenting the quality of responses.

[22] Because incoming calls are free of cost, we were able to access poorer citizens in our sample frame.

(a) Coal Mining Districts

First, we identified districts in India that are most heavily dependent on coal mining in order to capture parts of the Indian population most exposed to potential job losses from decarbonization. We identified coal mining districts using the 2015 Government of India publication, "Statistics of Mines in India: Volume I (Coal)," which provides statistics on "employment, production, productivity and other associated aspects in coal mines" in India.[23] In association with the Mines Act, 1952, and the Coal Mines Regulations, 1957, India's central government provides this regular statistical report on the country's coal mines and operations. We used the report's record of average daily employment to construct a list of all districts across India with at least one coal mine in operation that actively employed workers.[24] From this list, we excluded 4 districts that also ranked high on ecological vulnerability; these districts were classified and sampled as cross-pressured districts (see below). Our final sample contains 39 districts from nine states (Assam, Chhattisgarh, Jammu and Kashmir, Jharkhand, Madhya Pradesh, Maharashtra, Orissa, Telengana, and West Bengal), and represents to our knowledge the most comprehensive sample of districts with coal mining employment in India.

(b) Coal Miners

Given India's high levels of population density, we anticipated difficulty in locating workers employed directly in coal mines through the representative sample of coal mining districts above. Therefore, to supplement our Coal Country sample, we selected three districts with high coal employment—Dhanbad, Sahdol, and West Bardhman[25]—in which we conducted in-person interviews with 850

[23] "Statistics of Mines in India: Volume I (Coal)." 2015. Directorate General of Mines Safety, Ministry of Labour Employment, Government of India.

[24] Coal mining districts vary in intensity of coal employment. The largest district (Dhanbad in Jharkhand) contained 88 mines and employed 50,567 workers in 2015, while the smallest district (Narsigpur in Madhya Pradesh) contained 1 mine and employed 20 workers in 2015.

[25] These districts are in the states of Jharkhand, Madhya Pradesh, and West Bengal respectively. We selected districts with the highest levels of coal employment that were feasible to survey. Dhanbad and West Bardhman have the country's top two levels of coal employment. Sahdol has the country's fifth highest level of coal employment. We excluded two districts in Telangana state with higher levels of coal employment than Sahdol due to local conflicts that posed a threat to enumerator safety

coal industry workers. These individuals were identified and interviewed by the survey firm Morsel Research & Development. These interviews involved the same list of questions as our other samples, along with additional qualitative follow-up questions asking respondents about how they made decisions regarding allocations, community or individual transfers, and other key responses.

3. Cross-Pressured

Cross-pressured districts capture parts of India's population exposed to both job losses from decarbonization policy and the ecological threat of climate change. For completeness, we distinguished coal mine and coal plant districts, and then identified those districts that were ranked high on measures of climate vulnerability.

(a) Coal Mines Cross-Pressured

To identify the coal mines cross-pressured districts, we combined the district-level coal mines data (discussed above) with an index of climate vulnerability developed by researchers at India's Central Research Institute for Dryland Agriculture (CRIDA). The CRIDA "Atlas on Vulnerability of Indian Agriculture to Climate Change" ranks each district in India based on 4 indicators: exposure, sensitivity, adaptive capacity, and vulnerability.[26] Based on these rankings, each district is assigned one of following five vulnerability ratings: Very High, High, Medium, Low, and Very Low. From the universe of coal mining districts, we selected all districts that were ranked "Very High" in terms of overall climate vulnerability. This generated a sample of four districts (Godda, Pakur, Bokaro, and Bilaspur) across two states that we deemed cross-pressured.

[26]Rama Rao C A, Raju B M K, Subba Rao A V M, Rao K V, Rao V U M, Kausalya Ramachandran, Venkateswarlu B and Sikka A K. 2013. "Atlas on Vulnerability of Indian Agriculture to Climate Change." Central Research Institute for Dryland Agriculture, Hyderabad. https://bit.ly/36sLCdJ, accessed last on September 28, 2020.

(b) Coal Plants Cross-Pressured

We used the Global Coal Plant Tracker database to identify the universe of coal plants that are located in India.[27] The database contains information on 1,866 coal plants in India—including those that are in operation, have been retired, have been announced, and are in development. The database also contains information on individual plant capacity and estimates of each plant's associated annual carbon dioxide emissions. The locations of coal plants in the Global Coal Plant Tracker database were webscraped and assigned latitude and longitude information.[28]

We used geo-coordinates to situate each coal plant within one of the 652 districts in present day India. We found that 423 districts in India are not associated with coal production; by contrast 229 districts have some association with coal activity. For each district in the country, we pulled in the total population, rural population, and urban population, and educational achievements indicators from the 2011 census. We also hand-coded whether a district was located on a coast or not and whether it was neighboring a coastal district.

We then combined this district-level plant data with the climate vulnerability index developed by CRIDA (discussed above). Our final sample for the Coal Plants Cross-Pressured includes all districts that have a plant and also rank among the country's top 140 most climate vulnerable districts. In the end, 25 districts across the states of Bihar, Gujarat, Haryana, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu and Uttar Pradesh were included in the sample.

[27] See https://endcoal.org/tracker/ (accessed last on October 13, 2017).

[28] For this step in the research, we are very grateful to Johannes Urpelainen, Noah Zucker, and Ricky Clark, who kindly shared with us the latitude and longitude data of existing coal mines.

C Allocations Across All Tax Levels

C.1 US Sample

In the main text, we presented the results of the compensation choices respondents made based on a policy that would raise household energy cost by $64. In Table A.3 we further present results from the lower ($16) and upper ($256) cost levels presented to US participants. The main findings are as follows:

- The average respondent in the 'General population' is least interested in targeted forms of compensation such as fiscal transfers or adaptation infrastructure spending and most interested in compensatory options that benefit broad sections of society. They especially favor rebates at high tax levels.
- The average respondent in the 'Coal' sample is significantly in favor of direct transfers to people whose employment stands to be threatened by climate policy, at all levels of tax.
- The average respondent in the 'Cross-Pressured' (coastal/fossil fuel) sample has preferences that lie in between those of the 'Coal' and the 'General Population' samples.

$16 Tax			
	General Population	Cross-Pressured	Coal Country
Compensation to	22	26	37
Fossil Fuel Workers	(*21, 23*)	(*25, 27*)	(*34, 40*)
Infrastructure for	16	19	13
Climate Vulnerable	(*15, 16*)	(*18, 20*)	(*12, 14*)
Investment in Green	37	31	28
Energy	(*35, 38*)	(*30, 33*)	(*25, 30*)
Equal Rebates to All	26	24	23
Citizens	(*25, 27*)	(*23, 26*)	(*20, 25*)
$64 Tax			
	General Population	Cross-Pressured	Coal Country
Compensation to	21	25	36
Fossil Fuel Workers	(*20, 22*)	(*23, 26*)	(*33, 38*)
Infrastructure for	16	18	14
Climate Vulnerable	(*15, 17*)	(*17, 19*)	(*12, 15*)
Investment in Green	34	30	26
Energy	(*33, 35*)	(*28, 31*)	(*24, 28*)
Equal Rebates to All	29	28	25
Citizens	(*28, 30*)	(*26, 29*)	(*23, 27*)
$256 Tax			
	General Population	Cross-Pressured	Coal Country
Compensation to	21	25	35
Fossil Fuel Workers	(*20, 21*)	(*23, 26*)	(*32, 37*)
Infrastructure for	16	18	12
Climate Vulnerable	(*15, 16*)	(*17, 19*)	(*11, 13*)
Investment in Green	31	28	24
Energy	(*30, 32*)	(*26, 29*)	(*21, 26*)
Equal Rebates to All	33	30	30
Citizens	(*32, 34*)	(*28, 31*)	(*27, 32*)

Table A.3: Allocations across all tax levels for US samples. Each figure corresponds to the average percentage allocation for each compensatory category. Figures in parentheses refer to standard errors.

C.2 India Sample

Table A.4 presents the results for the three cost levels (₹140, ₹560, and ₹2,240) presented to India participants.

The main findings are as follows:

- While the US 'General population' prefers green technology investments at the lower two cost levels and equal rebates to tax payers at the higher cost level, the average Indian is most interested in green technology investments at all cost levels. These investments constitute relatively diffused compensatory options that benefit broad sections of society.

- Like in the US, the average respondent in the 'Coal Country' sample is significantly in favor of direct transfers to people whose employment stands to be threatened by climate policy, at all levels of tax.

- The average respondent in the 'Cross-Pressured' (coal employment/high ecological vulnerability) sample has preferences that lie very close to the 'General Population' sample. This is possibly driven by the high levels of concern for climate change in the General Population.

140 Rupee Tax			
	General Population	Cross-Pressured	Coal Country
Compensation to	25	25	33
Fossil Fuel Workers	(*23, 26*)	(*24, 27*)	(*32, 34*)
Infrastructure for	25	26	29
Climate Vulnerable	(*24, 26*)	(*25, 27*)	(*28, 30*)
Investment in Green	36	33	25
Energy	(*34, 38*)	(*31, 35*)	(*24, 26*)
Equal Rebates to All	13	15	13
Citizens	(*12, 14*)	(*14, 16*)	(*12, 14*)
560 Rupee Tax			
	General Population	Cross-Pressured	Coal Country
Compensation to	26	25	32
Fossil Fuel Workers	(*24, 27*)	(*24, 27*)	(*31, 34*)
Infrastructure for	26	24	29
Climate Vulnerable	(*24, 27*)	(*23, 25*)	(*28, 30*)
Investment in Green	34	33	25
Energy	(*32, 36*)	(*31, 35*)	(*24, 26*)
Equal Rebates to All	14	15	13
Citizens	(*13, 15*)	(*14, 17*)	(*12, 14*)
2,240 Rupee Tax			
	General Population	Cross-Pressured	Coal Country
Compensation to	26	25	32
Fossil Fuel Workers	(*25, 27*)	(*23, 26*)	(*31, 33*)
Infrastructure for	25	25	29
Climate Vulnerable	(*24, 27*)	(*24, 27*)	(*29, 30*)
Investment in Green	34	35	25
Energy	(*33, 36*)	(*33, 37*)	(*24, 26*)
Equal Rebates to All	13	16	13
Citizens	(*12, 14*)	(*15, 17*)	(*12, 14*)

Table A.4: Allocations across all tax levels for India samples.

D Subjective Ecological Vulnerability Analysis

While in the main text we exploit aggregate (geography, i.e. sample-related) measures of ecological vulnerability, in additional analyses we operationalize other forms of individual (self-reported) vulnerability concerns. Other research finds that subjective concerns seem to be closely linked to beliefs in the effectiveness of climate policy and general awareness about local conditions of climate change (Mildenberger, Lubell and Hummel, 2019). Subjective measures capture whether the environmental impacts of climate change are predicted to be less severe than warranted and where the socioeconomic impacts of implementing climate change regulation are anticipated to be more acute. Consequently, they seem particularly useful because "solution aversion" (Campbell and Kay, 2014) serves as a primary motivator for policy inaction on climate change.

To capture the more subjective measure of self-reported climate concern, we asked respondents early in the survey whether they were concerned about the impact climate change has on the communities in which they live. We then combined these responses with whether or not respondents indicated they were employed in the fossil fuel sector, which may also affect 'solution aversion' attitudes. The figures below report the results at each cost level for the pooled data. We find that:

- On average, individuals in the US and India that indicate employment in the fossil fuel industry place more money into direct transfers. In the US, however, these amounts are higher for those not concerned about the effects of climate change on their communities; the opposite is true for India.

- Even if not personally involved in the fossil fuel industry and not concerned, the average respondent wants a relatively substantial level of direct transfers. This finding buttresses the singular preference of subjects in job-threatened-only positions ('Employed') and the more mixed preferences of cross-pressured ('Concerned and Employed') individuals.

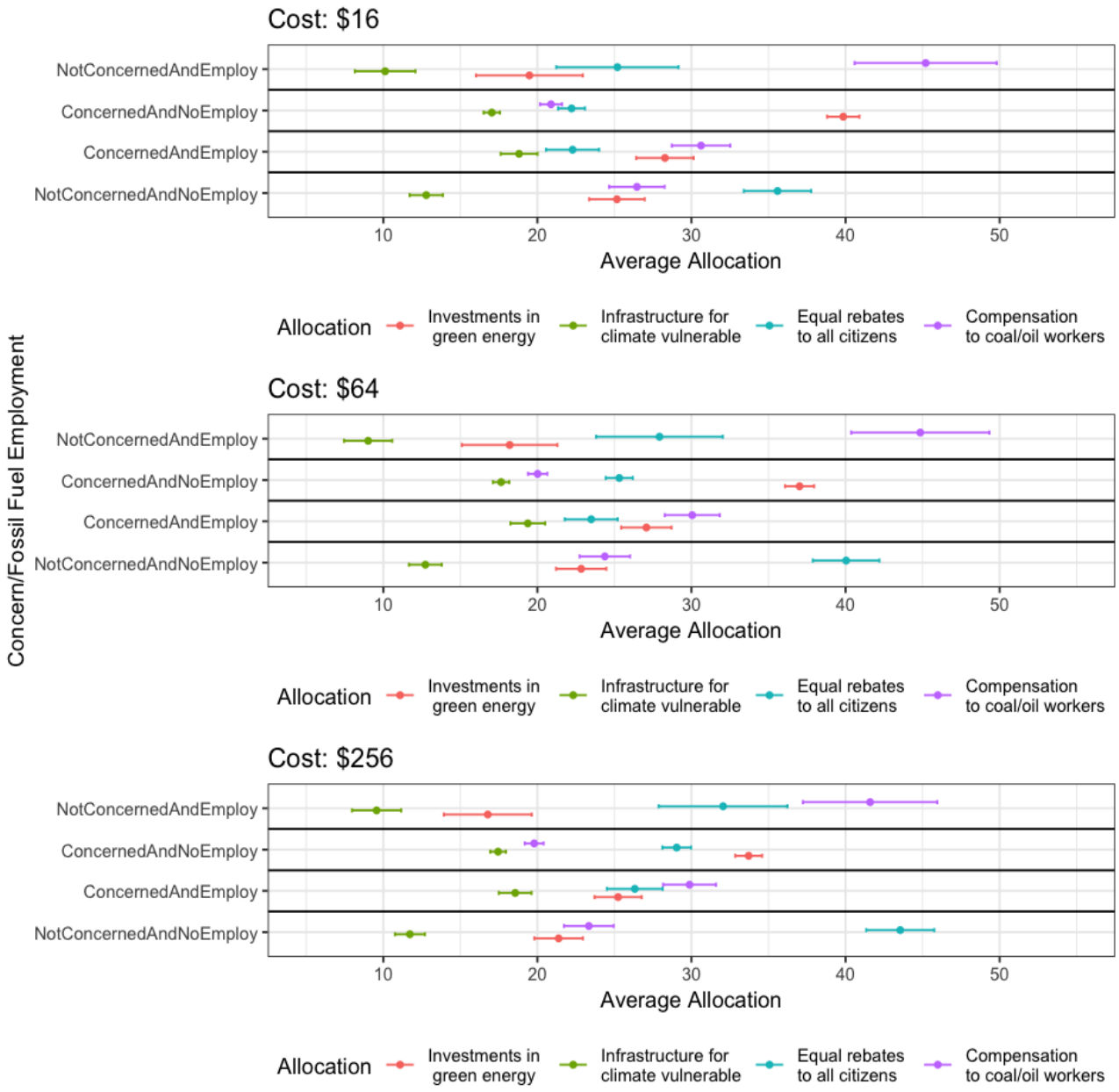

Figure A.1: US allocation preferences by subjective vulnerability concerns and fossil fuel employment.

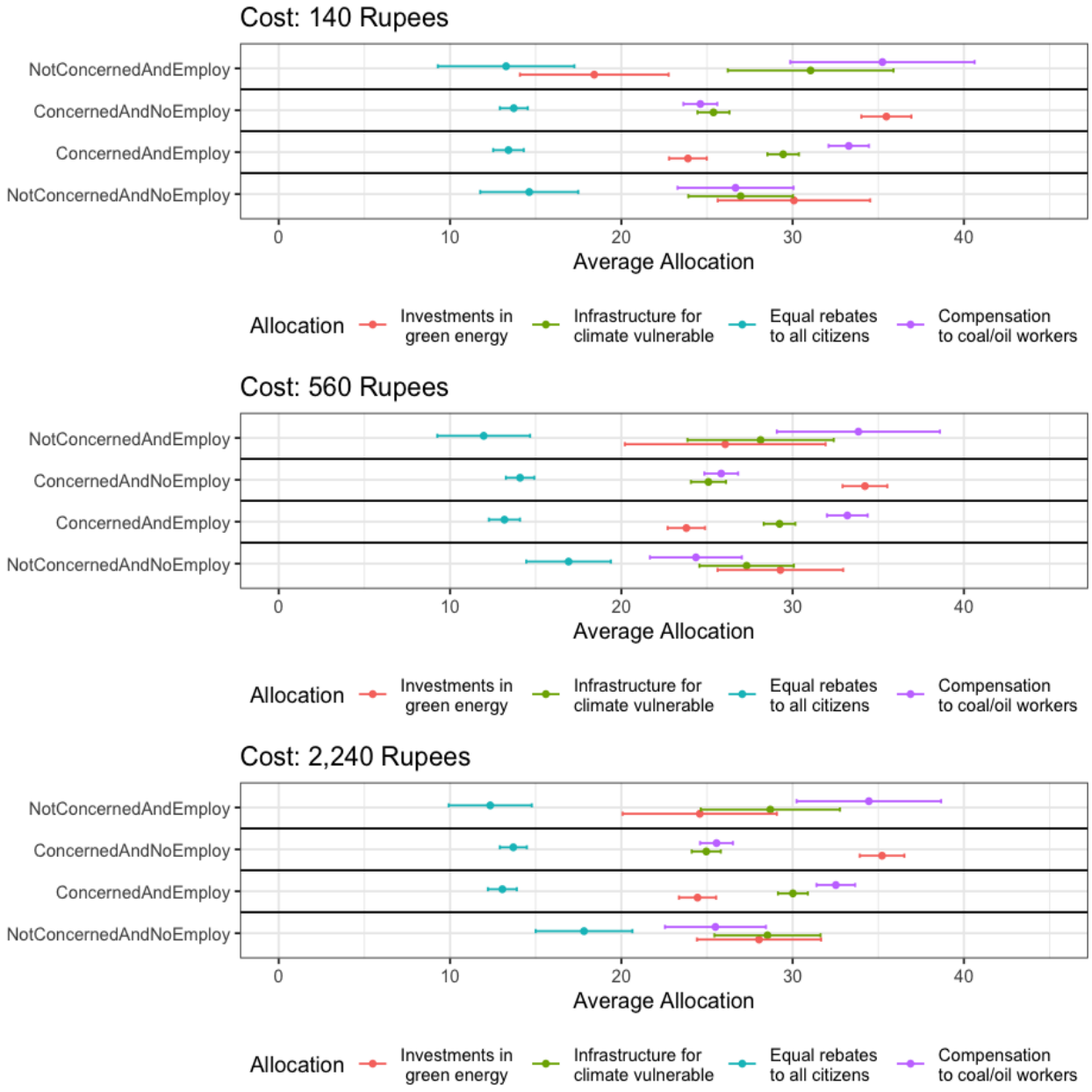

Figure A.2: India allocation preferences by subjective vulnerability concerns and fossil fuel employment.

E Identity and Community Additional Analyses

Here we present additional findings based on the questions regarding community and identity.

1. We first report in tabular format the full set of results that were graphically illustrated in the main paper.

2. We then present results from regressions where the outcome is the question targeting the mode of deployment of compensation with respect to 'direct transfers.' The purpose of the regression models is to test whether the key interpretations offered in the main text of the paper (i.e., proportional support for policies across groups) hold when if we control for observable confounding variables. We show the complete set of coefficients (including the control variables) of the full models.

   In the US, we find that the binary variable indicating whether a respondent is in the Coal Country sample is significant and negative when we control for individual employment in the fossil fuel industry. This supports the claim that Coal Country residents prefer having community-based compensatory mechanisms over direct transfers to individual households. The Cross-Pressured sample's preferences for community deployment, by contrast, are statistically indistinguishable from those of the General Population. In India, there are striking differences between the preferences of the Coal Country and Cross-Pressured samples on the one hand and the General Population on the other, with the former two samples significantly more likely to prefer compensatory deployments to communities.

   Additionally, we present regression results using the same models but focusing on the question of whether respondents agree to oppose policies that threaten coal communities' identities. In the US, we find that the Coal Country sample and, to a lesser extent, the Cross-Pressured sample are more opposed to policies that threaten coal identities compared to the General

Population, although this effect diminishes when we control for fossil fuel employment. In India, there is strong and consistent opposition to policies that threaten coal identities in the Coal Country and Cross-Pressured samples relative to the General Population.

3. Finally, we explore whether the overall differences in support for community transfers and the protection of identities documented in the manuscript holds when we control for other variables. To do this, we estimate a regression model for each sample and include a dummy variable indicating whether an individual is employed in the fossil fuel industry along with the set of controls.

   For the US, we found that the difference between fossil fuel workers and non-fossil fuel workers remains but is small and statistically insignificant. In contrast, fossil fuel workers in the cross-pressured and general population samples prefer direct compensation rather than community based schemes. For the question on protecting identity, we also recover similar results as reported in the paper body.

   In the India regressions, we see small differences between fossil fuel workers and non-fossil fuel workers across samples, in line with the finding documented above that the major differences in India are cross-sample.

E.1 US Sample

		Community Level Compensation	Household Level Compensation
Employed in fossil fuel industry	General Population (n=253)	37%	63%
	Cross-Pressured (n=419)	49%	51%
	Coal Country (n=336)	56%	44%
Not employed in fossil fuel industry	General Population (n=3446)	58%	42%
	Cross-Pressured (n=1009)	58%	42%
	Coal Country (n=180)	61%	39%

Table A.5: *US preferences for transfers at the community and individual household level by fossil fuel employment.* For each sample in our US study, each cells reports the percent preferring either community or individual level transfers.

		Support for threatening policy	Opposition to threatening policy
Employed in fossil fuel industry	General Population (n=253)	12%	88%
	Cross-Pressured (n=419)	25%	75%
	Coal Country (n=336)	21%	79%
Not employed in fossil fuel industry	General Population (n=3446)	45%	55%
	Cross-Pressured (n=1009)	35%	65%
	Coal Country (n=180)	41%	59%

Table A.6: *US preferences for blocking policy measures that threaten the identity of coal communities.* Each cells report the percent of respondents calculated based on the raw frequencies.

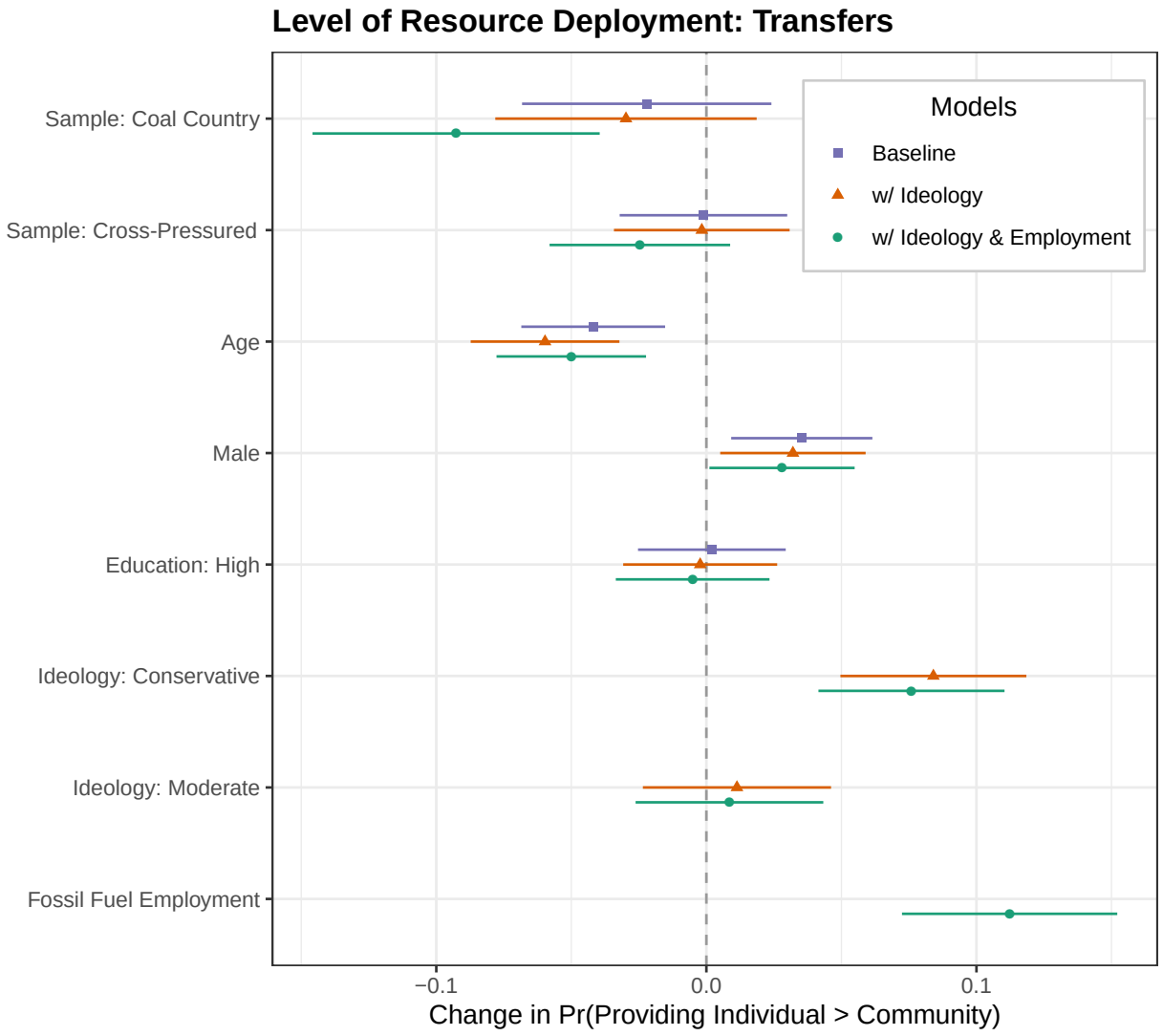

Figure A.3: This figure illustrates the relationship between US samples and preferences for direct transfers going to individuals instead of community organizations. Linear regression coefficients with 95% confidence interval. Reference group is 'General Population'. Controls in the baseline model (squares) include sex, age, and education. Additional models also include respondents' ideology (triangles) and fossil fuel employment status (circles).

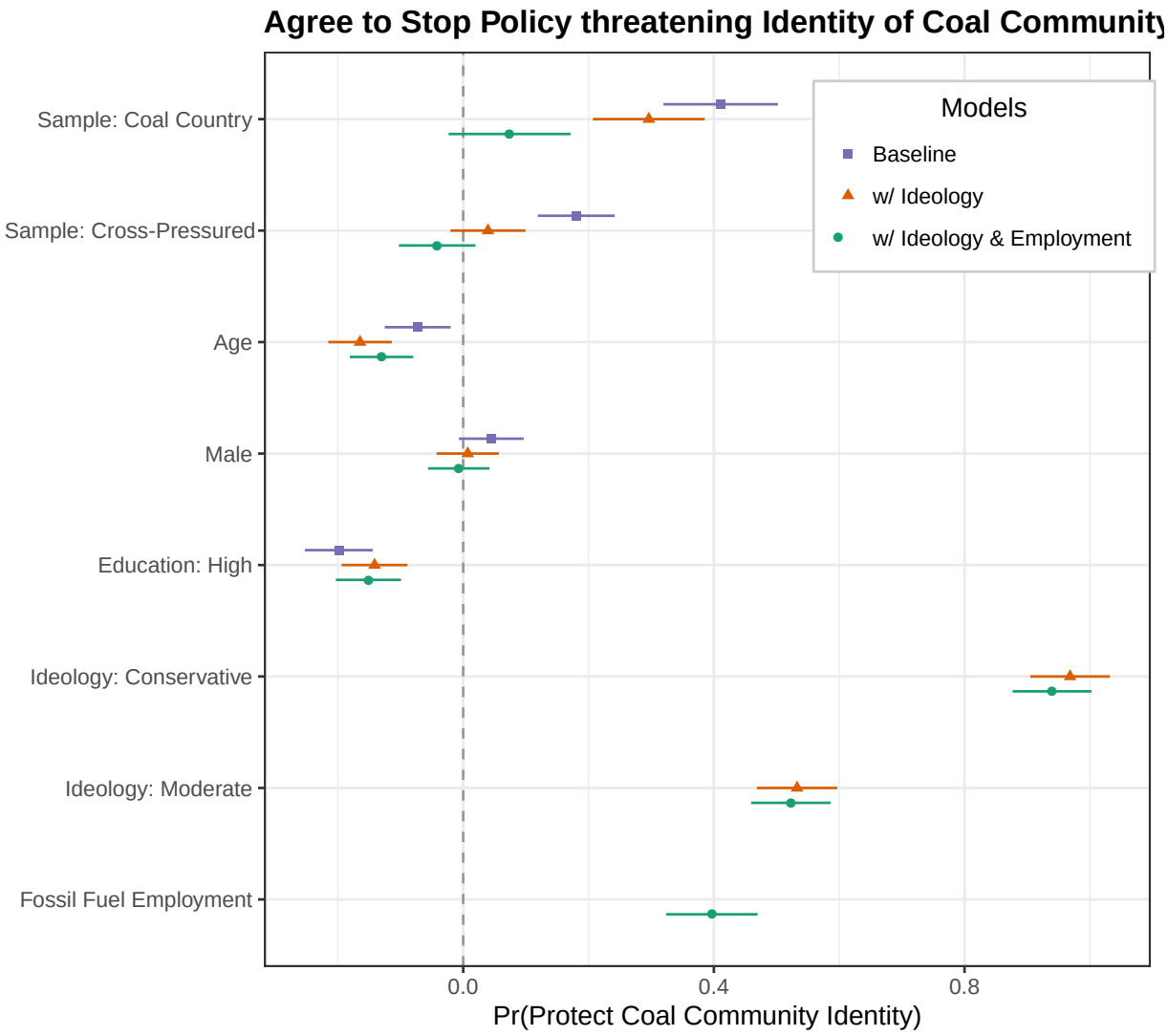

Figure A.4: This figure illustrates the relation between US samples and preferences for blocking policy that threatens coal identity. Linear regression coefficients with 95% confidence interval. Reference groups as Figure A.3.

Table A.7: US Results By Sample

	Dependent variable:					
	Community Over Individual Transfers			Protecting Job Identity		
	(Coal Country)	(Cross-Pressured)	(General Population)	(Coal Country)	(Cross-Pressured)	(General Population)
Fossil Fuel Employment	−0.036	−0.091***	−0.172***	0.155***	0.085***	0.264***
	(0.049)	(0.030)	(0.033)	(0.040)	(0.027)	(0.031)
Age	−0.001	0.002**	0.001***	0.0002	−0.003***	−0.002***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.0005)
Gender: Male	0.003	−0.008	−0.038**	−0.106***	−0.031	0.010
	(0.048)	(0.028)	(0.017)	(0.039)	(0.025)	(0.016)
Education: High	0.018	−0.008	0.009	−0.031	−0.134***	−0.071***
	(0.048)	(0.029)	(0.018)	(0.039)	(0.026)	(0.017)
Ideology: Conservative	−0.036	−0.039	−0.089***	0.468***	0.267***	0.399***
	(0.064)	(0.040)	(0.021)	(0.052)	(0.036)	(0.019)
Ideology: Moderate	−0.056	0.024	−0.010	0.302***	0.103***	0.254***
	(0.065)	(0.041)	(0.021)	(0.053)	(0.037)	(0.019)
Constant	0.672***	0.506***	0.550***	0.347***	0.695***	0.479***
	(0.097)	(0.050)	(0.031)	(0.080)	(0.045)	(0.029)
Observations	466	1,302	3,538	466	1,302	3,540
R^2	0.005	0.016	0.021	0.198	0.091	0.146
Adjusted R^2	-0.008	0.011	0.019	0.188	0.087	0.145
Residual Std. Error	0.497 (df = 459)	0.496 (df = 1295)	0.492 (df = 3531)	0.409 (df = 459)	0.446 (df = 1295)	0.458 (df = 3533)
F Statistic	0.354 (df = 6; 459)	3.409*** (df = 6; 1295)	12.571*** (df = 6; 3531)	18.919*** (df = 6; 459)	21.561*** (df = 6; 1295)	100.652*** (df = 6; 3533)

*p<0.1; **p<0.05; ***p<0.01

Note: For the "Community Over Individual Transfers" dependent variable, community preference is coded as '1,' and individual preference is coded as '0.'

E.2 India Sample

		Community Level Compensation	Household Level Compensation
Employed in fossil fuel industry	General Population (n=140)	54%	46%
	Cross-Pressured (n=149)	72%	28%
	Coal Country (n=945)	56%	44%
Not employed in fossil fuel industry	General Population (n=1877)	51%	49%
	Cross-Pressured (n=1391)	65%	35%
	Coal Country (n=585)	60%	40%

Table A.8: *Indian preferences for transfers at community and individual household level by fossil fuel employment.* For each sample in our India study, each cells report the percent preferring either community or individual level transfers for each row.

		Support for threatening policy	Opposition to threatening policy
Employed in fossil fuel industry	General Population (n=150)	46%	54%
	Cross-Pressured (n=152)	33%	67%
	Coal Country (n=948)	22%	78%
Not employed in fossil fuel industry	General Population (n=1906)	39%	61%
	Cross-Pressured (n=1397)	36%	64%
	Coal Country (n=597)	33%	67%

Table A.9: *Indian preferences for blocking policy measures that threaten the identity of coal communities.* Each cells report the percent of respondents calculated based on the raw frequencies.

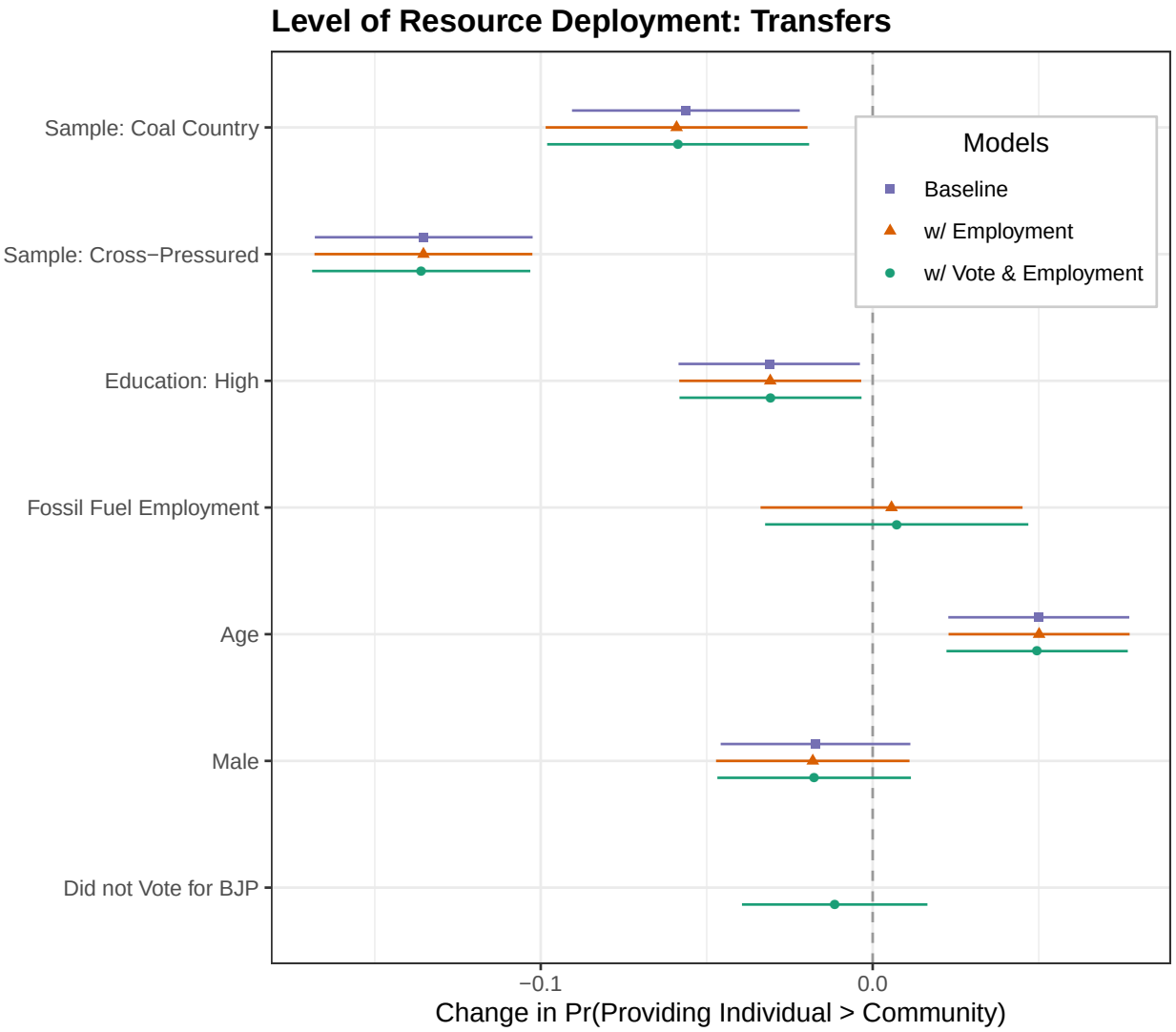

Figure A.5: This figure illustrates the relationship between India samples and preferences for direct transfers going to individuals instead of community organizations. Linear regression coefficients with 95% confidence interval. Reference group is 'General Population'. Controls in the baseline model (squares) include sex, age, and education. Additional models also include respondents' fossil fuel employment status (triangles) and a dummy variable for if they voted for the Bharatiya Janata Party (BJP) in the last Lok Sabha election (circles).

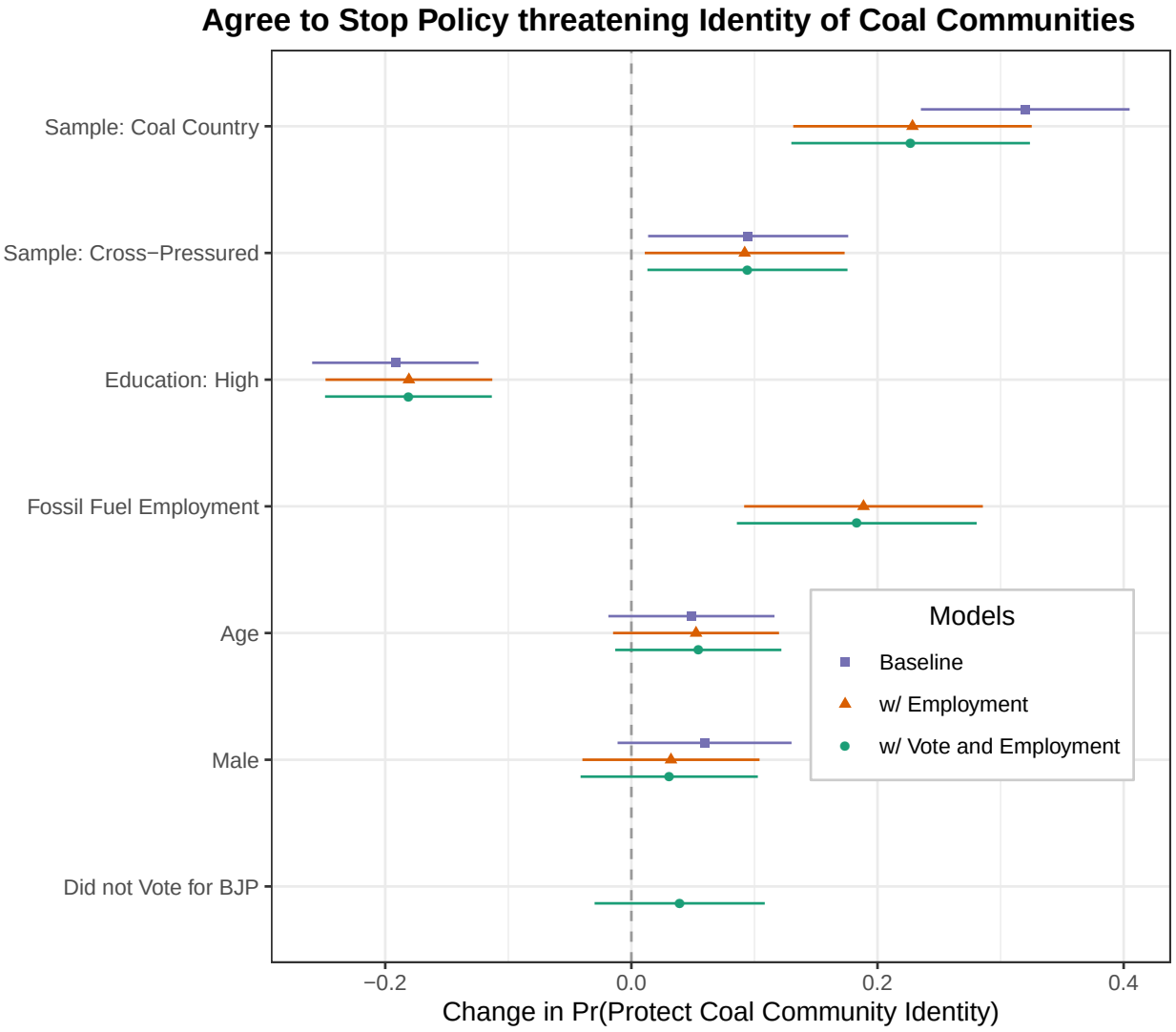

Figure A.6: This figure illustrates the relation between the India samples and preferences for blocking policy that threatens coal identity. Linear regression coefficients with 95% confidence interval. Reference groups as Figure A.5.

Table A.10: India Results By Sample

	Dependent variable:					
	Community Over Individual Transfers			Protecting Job Identity		
	(Coal Country)	(Cross-Pressured)	(General Population)	(Coal Country)	(Cross-Pressured)	(General Population)
ffemploy_rollup	−0.065**	0.070*	0.018	0.040	0.029	−0.059
	(0.031)	(0.041)	(0.044)	(0.027)	(0.041)	(0.042)
age_survey	−0.002**	−0.002*	−0.002**	0.002*	0.0003	−0.0001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
sex	0.056*	0.010	0.012	0.094***	−0.005	−0.014
	(0.032)	(0.025)	(0.024)	(0.028)	(0.025)	(0.023)
eduEduHigh	0.012	0.008	0.050**	−0.089***	−0.012	−0.068***
	(0.027)	(0.025)	(0.023)	(0.023)	(0.025)	(0.022)
Voting1Not BJP	−0.012	0.051**	0.007	0.047**	−0.027	0.006
	(0.026)	(0.026)	(0.023)	(0.023)	(0.026)	(0.022)
Constant	0.610***	0.676***	0.543***	0.495***	0.654***	0.664***
	(0.071)	(0.057)	(0.052)	(0.062)	(0.057)	(0.050)
Observations	1,522	1,523	1,989	1,537	1,531	2,027
R^2	0.007	0.008	0.006	0.039	0.001	0.007
Adjusted R^2	0.004	0.004	0.003	0.035	-0.002	0.004
Residual Std. Error	0.493 (df = 1516)	0.475 (df = 1517)	0.499 (df = 1983)	0.434 (df = 1531)	0.479 (df = 1525)	0.487 (df = 2021)
F Statistic	2.266** (df = 5; 1516)	2.322** (df = 5; 1517)	2.328** (df = 5; 1983)	12.290*** (df = 5; 1531)	0.396 (df = 5; 1525)	2.661** (df = 5; 2021)

*p<0.1; **p<0.05; ***p<0.01

Note: For the "Community Over Individual Transfers" dependent variable, community preference is coded as '1,' and individual preference is coded as '0.'