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Voter choice and issue salience: environmental preferences and the 2016 Presidential election

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Abstract: A large body of evidence suggests that identity-derived political affiliation is increasingly driving environmental preferences. We consider a variation on the reverse question: under what conditions might issue preferences change voters' party choice? Academic literature predicts that voters are most likely to change their party affiliation when: (1) a party's platform is distinct and transparent; and (2) the issue is important and *personally salient*. We argue that the explicitly anti-environmental campaign message of Donald Trump in the 2016 U.S. Presidential election fulfills the first condition; for the second condition, we exploit the plausibly exogenous spatial variation in EPA Superfund sites to generate a source of exogenous variation in the personal saliency of environmental issues. Our empirical analysis, conducted at both the individual- and county-level, presents evidence on the relationship between Superfund and environmental preferences, establishes a robust causal link from Superfund to voter behaviour, and finally explores the possibility of heterogeneous effects via differing issue salience by age and/or income cohort. We find robust evidence that the presence of a nearby Superfund site did indeed reduce the number of votes for Trump. Specifically, our results imply that almost 490,000 voters that would have otherwise voted for Trump changed their Party vote choice based on their Superfund-induced environmental preferences in the 2016 election. Furthermore, we find evidence of hetergeneous effects of Superfund on voting behavior associated with household income, but not with voter age cohort. In particular, we find that the effect of Superfund on support for Trump grows as household income increases from well below the poverty line to moderately low levels of around $30,000-$40,000, and then tapers off or declines. Significantly, these moderately low-income voters are precisely the income group that are also most likely to vote for Trump, suggesting that educational campaigns aimed at lower-income households to increase personal saliency of environmental issues could potentially have disproportionately large political effects.

Key words: Environmental voting, issue preference, party affiliation, post-materialism, environmental Kuznets curve, Trump

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1 Introduction

Under what conditions might environmental preferences change voters' choice across party platforms? The question is an important one, for even as complex environmental problems increasingly demand coordinated political solutions, evidence suggests that for more and more voters, identity-derived (initial) political affiliation is more likely to drive issue preferences than the reverse. This paper takes advantage of the unique nature of the Trump candidacy in the 2016 US Presidential election to explore the conditions under which voters might change their party choice based on environmental preferences. In particular, political scientists have theorized that voters are more likely to change their party affiliation based on issue preferences when both the issue position of a party is clear, and when the issue is not only important to the voter but also *personally salient* (see, for example, Carsey and Layman, 2006; Ansolabehere and Puy, 2018). Although party vote choice for a single election does not necessarily imply a change in party *affiliation* - e.g. a deeper, more long-term association with a party - the two concepts are related, and changing party vote choice is likely to be one of the first steps to changing party affiliation. We argue that the 2016 election fulfills the first condition; the Trump campaign message of unambiguous, active antipathy towards environmental initiatives was unique in modern American political history - he promised not only to 'cancel' the Paris climate agreement, but also to 'end the war on coal', and suggested that concerns about climate change were a hoax (Bomberg, 2017).

Given the unique and unambiguous environmental position of Trump's campaign, the second condition suggested for a political shift in response to a partisan issue position is that voters must find the issue, in this case the environment, to be not only important but also *personally salient*. However, to isolate a *causal* channel from issue to political preferences we require a source of exogenous variation in issue salience. In the case of concern for the environment, we argue that, conditional on voting patterns from the 2012 Presidential election and a host of socio-economic and demographic features, the spatial distribution of US Environmental Protection Agency (EPA)-designated toxic environmental hazards, or so-called 'Superfund' sites, provides just such a source of exogenous variation in environmental preferences.

Established by Congress in 1980 under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Superfund program provides funds and authority to the EPA to identify and clean up (or force responsible parties to clean up; see Sigman, 2001) contaminated sites that pose a danger to human health and/or the environment. This includes hazardous waste sites associated with manufacturing facilities, processing plants, landfills and mining sites. In addition to protecting human health and the environment by cleaning up polluted sites, Superfund has a mandate to engage in dialogue and collaborate with local communities, with the goal of advocating and strengthening 'early and meaningful community participation' during clean-ups. The existence of a Superfund site thus generates significant local awareness of the potential danger to human health of environmental contamination, as well as highlighting the government's role in cleaning up pollution, remedial action, and environmental protection.

One threat to identification in this framework is that the unconditional variation in the location of Superfund sites could be jointly determined with the pattern of political affiliation, as represented in party voting preferences, across counties. For example, counties with either more or fewer Republicans may be more or less likely to identify Superfund sites, perhaps because of associated variation in local environmental laws and enforcement (Wu and Cutter, 2011; Liu et al., 2014; Holian and Kahn, 2015; Booth, 2017). Thus, to control for baseline political preferences (including any party-orientation that was jointly determined with Superfund location), we condition the analysis on information about the 2012 Presidential vote. Information on the Republican vote (of a county or an individual) associated with the 2012 election controls for all observed and unobserved political characteristics (of a county or an individual) that determined the partisan voting pattern in 2012, including any partisan attributes that might be associated with Superfund. In addition, we control for both individual and county-level variables (as appropriate) that could be correlated both with Superfund sites and voters' attitudes to the environment, e.g. income, age, gender, race and education level, county population, and poverty rate.

At the individual level, we find robust evidence of a positive association between the presence of nearby Superfund sites and a high level of concern for the environment, and we show that this relationship is not driven by unobservable confounding variation in party preferences. We then analyze whether exogenous variation in voters' concern for, and personal experience of, environmental quality via the presence of Superfund sites lowers expected support for Trump in the 2016 election. This proposition is tested at both the individual- and county-level and we find clear evidence consistent with theory: conditional on information from the 2012 Presidential election as well as our set of socio-economic and demographic controls, voters in counties with Superfund sites are statistically significantly less likely to vote for Trump than those in comparable counties without Superfund sites. Specifically, our results imply that almost 490,000 voters that would have otherwise voted for Trump changed their party vote based on their environmental preferences in the 2016 election.

Having established a baseline *average* treatment effect, we then consider what types of voters may be more or less likely to find an exposure to environmental issues to be sufficiently personally salient to lead to a change in voting behaviour. In other words, we investigate whether there may be *heterogeneous* treatment effects. We find three relevant academic literatures that speak to the possibility of heterogeneous effects of Superfund on issue salience, in particular, with respect to age and income: the literature on the so-called 'environmental Kuznets curve' (EKC) (e.g. Shafik, 1994; Grossman and Krueger, 1995; Carson, 2018); the literature on post-materialism (e.g. Inglehart and Flanagan, 1987; Booth, 2017); and, the literature on environmental voting (e.g. Kahn and Matsuaka, 1997; Holian and Kahn, 2015). All three literatures suggest that the personal saliency of environmental issues across individuals *within* countries may be a function of income, but that the shape of any relationship is *ex ante* theoretically ambiguous and hence, is an empirical question. While neither the EKC nor the environmental voting literatures make unambiguous predictions about the effect of age, the post-materialism literature predicts that younger voters may be more strongly effected by exposure to Superfund.

We test for heterogenous effects of age and income by including interactions with these variables and Superfund in both the individual- and county-level analyses. Although we find no evidence of heterogeneous effects of Superfund on voting behavior associated with voter age cohort, we do find a modest effect of household income. In particular, we find that the effect of Superfund on support for Trump grows as household income increases from well below the poverty line to moderately low levels of around \$30,000-\$40,000, and then tapers off. Significantly, these moderately low-income voters are precisely the income group that are also most likely to vote for Trump, suggesting that educational campaigns aimed at lower-income households to increase personal saliency of environmental issues could potentially have disproportionately large political effects.

Our analysis is the first, to our knowledge, to rigorously test the extent to which the personal salience of environmental issues *causally* leads to a switch in voters' party choice. Voters' environmental saliency in Superfund counties has always been higher than in non-Superfund counties, but prior to 2016, when the two main Parties' environmental policy platforms were less distinctive, this made little difference to voting patterns. The clear dichotomy in Party platforms in the 2016 election is what makes the Trump candidacy a useful 'natural experiment' for testing the hypothesis that it takes both a difference in the parties' platforms *and* personal voter issue salience to effect a change in voter behaviour. Superfund generates exogenous variation in the latter while Trump's environmental policy platform generates exogenous variation in the former. Whether, as theory predicts, the combination of issue salience and a distinctive party platform eventually leads to changes in deeper party *affiliation* is another question, but we argue that changing voter choice in a major National election must surely be one of the first steps. The paper proceeds as follows: section 2 reviews the political and economic literature on the relationship between issue preference, party affiliation, and environmental policy. Section 3 describes the data and method, section 4 discusses the empirical results, and section 5 concludes.

2 Issue preferences, party affiliation, voter behavior, and environmental policy

The Trump campaign's message of active antipathy towards environmental protection was unique in modern American political history. Hejny (2018) emphasizes the Trump administration's *explicit* opposition to President Obama's environmental policies, and points out what a far cry this situation was from the more bipartisan environmental cooperation of the past. In fact, in 2016 the League of Conservation Voters (LCV) reported the largest voting gap between Republican and Democrat members' of congress environmental records since they began keeping track in 1970 (Hejny, 2018). Daniels et al. (2012) also notes that the environment was a relatively non-partisan issue in the early 1970s, and in the 1980s and 1990s party affiliation was not closely tied to environmental preferences. For example, Davis et al. (2008) point out that in the 1988 election, Republican George Bush promised to be the 'environmental President' and even attacked his Democratic opponent's environmental record, and many pro-environmental supporters of Bill Clinton in that race were later disappointed with his policy record on the issue. Hejny (2018) documents a rapid shift between the Republican Party's environmental policy platform in 2012 compared to that in 2016, when it stopped promoting environmental protection altogether and extended the conservative critique to the 'environmental administrative state,' specifically targeting the Environmental Protection Agency (EPA).

Consistent with the relative similarities in environmental messaging between previous Party platforms, most research on voter behavior finds that prior to 2016 the environment rarely figured as a major voting issue. Guber (2001) finds that environmental attitudes had very little impact on individual voting preferences. Leiserowitz (2006) notes that Americans regarded both the environment and climate change as relatively low national priorities, while Repetto (2006) and Hallam and Coffey (2007) also find that environmental preferences had little impact on Presidential voting. Although partisan polarization of public opinion has increased for environmental policy over the past two decades, along with many other social and economic issues (Guber, 2013; McCright et al., 2014; Eun Kim and Urpelainen, 2018), as recently as 2010 Gallup polls found that majorities of both Democrats (74%) and Republicans (51%) indicated they were sympathetic to the environmental movement (Daniels et al., 2012). Eun Kim and Urpelainen (2018) find that even among self-identified Republicans, pro-environmental attitudes and support for spending on environmental initiatives have, on average, stayed more-or-less constant between 1973 and 2012. Where a role for environmental attitudes has been found in prior electoral outcomes, the effect is reported as being relatively small in magnitude (Davis and Wurth, 2003; Davis et al., 2008). Indeed, List and Sturm (2006) specifically choose environmental policy as a canonical example of a 'secondary issue' that is widely believed not be a major determinant of voting outcomes.

More recently a number of scholars have argued that in fact the direction of causality between issue preference and party affiliation is increasingly running in the other direction, so that party identification has become a significant predictor of beliefs and attitudes towards the environment, rather than the reverse (e.g. Daniels et al., 2012; Guber, 2013; Ansolabehere and Puy, 2018). This perspective emerges from an ongoing, broader and more fundamental debate among political scientists concerning whether party affiliation drives issue preferences, or issue preferences drive party affiliation. The first perspective, commonly refered to as the 'Michigan model', is that political party identification is deeply related to social identity and determined by (mostly exogenous) demographic, cultural and psychological characteristics that are fixed over time, and as such it is largely party affiliation itself that shapes voters' political attitudes (e.g. Green et al., 2002; Bartels, 2002). For example, Carsey and Layman (2006) analyze U.S. voter survey data from the National Election Study (NES) on three major policy issues: government spending, welfare for minorities, and abortion. They find that voters who are aware of party differences on an issue, but who do not find that issue to be personally important, do tend to change their personal views on the issue to accommodate the position associated with their party affiliation (with Republicans being more likely than Democrats to convert to more conservative views). Furthermore, for this group of voters none of their personal attitudes on the issues had a statistically significantly effect on changing party identification, a result consistent with the Michigan model.

On the other hand, the opposing hypothesis is that party affiliation emerges and adapts endogenously to voter's political attitudes, thus representing a 'running tally' of political preferences that may evolve over time (e.g. Achen, 1992; Gerber and Green, 1998). Of course, either or both directions of causality could be operational under different circumstances, so a natural question arises as to the conditions under which voters may change their party affiliation. Notably, scholars who have looked closely at this question have emphasized the importance of issue *salience* as a prerequisite condition. For example, in their study of Canadian federal elections in 1997 and 2000, Blanger and Meguid (2002) argue that a party's competence on an issue does not influence voter behavior unless the issue is considered personally important. Carsey and Layman (2006) also find that U.S. voters who are aware of party differences on an issue *and* who also find the issue to be personally salient are more likely to change their party affiliation based on their issue attitudes. Conclude the authors:

> We contend that partisanship and issue attitudes both cause changes in the other. However, the degree to which each orientation exerts a causal influence varies systematically as a function of the importance individuals attach to an issue and the degree to which they are aware of partisan differences on the issue...
>
> [W]e argue that both party-based issue change and issue-based party change among individuals likely occurs, particularly on issues that clearly divide the parties. When party leaders, candidates, and platforms take distinct stands on these issues, it signals to citizens which views on these issues go with each party. This creates pressure for citizens to bring their party identification and views on these issues closer together. Some citizens will do so by altering their party affiliations, while others may move their issue positions closer to the stands of their party's leaders and platforms.
>
> The key theoretical question is who should change their party identifications and who should change their issue preferences? The answer rests on two individual level factors: awareness of party differences on the issue and the salience of that issue. (p. 472)

The political science literature described above predicts two pre-requisite conditions for voters to change their party choice based on environmental preferences: voters must be aware of a clear partisan difference on environmental issues, and they must find environmental issues to be personally salient. However, this latter condition then begs the question of what kind of voter might be more likely to find environmental issues personally salient? In other words, when confronted with an environmental fact or experience (such as the presence of a Superfund site), are there heterogeneous treatment effects on the degree of saliency that might translate into heterogeneous effects on voting behavior? We identify three relevant - and distinct - literatures, which either directly or indirectly provide a theoretical framework to address this question.

First, empirical work on the environmental Kuznets curve (EKC) has shown that at the national level, higher aggregate incomes have a non-linear relationship with some measures of pollution, with environmental quality initially falling as income increases from a low base, before levelling and eventually even improving in some cases as income rises (e.g. Shafik, 1994; Grossman and Krueger, 1995). One possible mechanism through which this relationship could operate has been hypothesized to be greater preferences for a cleaner environment relative to economic growth in wealthier countries (e.g. Carson, 2018). Within richer countries such as the U.S. it is not clear whether increased household and/or county-level income might translate into stronger preferences for environmental policy, but there are several possible channels through which it could play a role. On one hand, lower-income households may find environmental regulation to be more personally salient if, for example, they lack the resources to adapt to environmental hazards (e.g. Shafik, 1994). On the other hand, analogously with cross-country studies, the marginal utility of further consumption relative to environmental goods may be lower in higher income individuals, further increasing their preferences for environmental protection (e.g. Grossman and Krueger, 1995; Stern, 2017; Carson, 2018). In addition, higher income households may also be more highly educated and thus more aware of environmental issues (e.g. Inglehart, 1995; Holian and Kahn, 2015).

The idea that higher-income individuals might display stronger preferences for non-material goods due to the diminishing marginal utility of consumption is mirrored in the post-materialism literature as well, although the focus tends to be on changes in the degree of scarcity at the aggregate level rather than on differences between individuals within a given cohort. For example, using slightly different terminology, Inglehart and Flanagan (1987) explain: "Economic factors tend to play a decisive role under conditions of economic scarcity; but as scarcity diminishes, other factors shape society to an increasing degree... a principle that might be called the diminishing marginal utility of economic determinism." In other words, Inglehart and Flanagan (1987) argue that as countries get richer and more secure, people tend to vote more on the basis of post-materialist values, such as those related to the environment, rather than materialist values that emphasize a stable economy and rising real incomes. The evidence for this theory tends to focus on patterns across countries of differing levels of development; empirical support is weaker when evaluating environmental concern across individuals within countries at the national level (e.g. Dunlap and Mertig, 1997; Brechin, 1999; Dunlap and York, 2008; Fairbrother, 2013), although there is some evidence that environmental preferences may first emerge among individuals of higher socioeconomic status before 'trickling down', particularly in richer countries where concern for the environment is long established (e.g. Pampel and Hunter, 2012; Nawrotzki and Pampel, 2013). Empirical support is stronger for the presence of an 'age cohort' effect that suggests that younger generations will be more oriented towards post-materialist values than their predecessors, at least as long as improvements in personal and economic security have occurred over time (e.g. Booth, 2017). Indeed, in the U.S., both Liu et al. (2014) and Booth (2017) show that individual income only weakly predicts environmental concerns, certainly in contrast to political ideology. The latter study also finds that, consistent with theory, younger people express greater environmental concerns and are more post-materialist than older people.

How such concerns might translate into voting preferences, and hence, into a revealed demand for environmental regulation, is the focus of research on voting patterns associated with environmental propositions, with the demand for environmental regulation typically estimated using aggregated data on binding voting referenda. Theoretically, the demand for environmentally favourable initiatives may depend on both income directly, as well as a number of factors indirectly related to income (and each other) such as spatial location, education, and political affiliation; theory is thus sufficiently ambiguous as to make this an empirical question. While earlier analyses undertaken at the aggregate (county-) level found a positive relationship between mean household income and support for environmental referenda (e.g. Deacon and Shapiro, 1975), other studies at the census tract and lower levels of aggregation have found the reverse. In particular, Kahn and Matsuaka (1997) find a concave relationship between voting for environmental goods and income such that, at any given point in time, richer households exhibit less support for environmental regulation than poorer households. Kahn (2002) suggests that across census tracts, wealthier voters are more likely to perceive that environmental regulation represents a form of redistribution and are less likely to exhibit support for California's environmental ballots. Wu and Cutter (2011) also find that areas with a relatively high number of poor households show the most support for environmental propositions, although throughout the income distribution the relationship overall is nonlinear, with middle-income households showing the lowest level of support, and higher income households showing slightly more support than middle-income, but still less than the lowest income group. However, Kahn (2002) notes that it is possible to be simultaneously 'anti-environmental regulation', e.g. due to being anti-redistribution, and 'pro-environment' at the same time. In some studies, age cohort also plays a role, although again the sign of the relationship is unclear; consistent with the post-materialism literature, Wu and Cutter (2011) find that younger people show more support than older people for environmental regulations, while on the other hand, Kahn (2002) documents a positive relationship between environmental support and the proportion of people aged 65 and above.

Taken together, then, the political science literature predicts that voters who find environmental issues to be *personally salient* are those most likely to change their party affiliation based on their environmental preferences. While (long-run) party affiliation and (short-run) party vote choice are distinct concepts, they are nevertheless related, with the latter surely a precursor of the former. Thus, we investigate voter behavior in the 2016 Presidential election with an eye to estimating how many voters changed their party choice based on environmental preferences. We hypothesize further that this effect may be heterogeneous, in that the degree to which Superfund exposure makes environmental issues more personally salient may vary across individuals by both age and income, although the sign of the relationship of salience with each these characteristics is *ex ante* theoretically ambiguous. In the remainder of this paper we exploit the unique anti-environmental campaign of Donald Trump and the conditionally exogenous distribution of Superfund sites to empirically explore these hypotheses.

3 Data and Method

The data used for our analysis come from a variety of sources at the individual and county level. Our key independent variable of interest is the presence of a Superfund site in a county. The process by which a location is included on the Superfund list starts when a potentially hazardous site is reported to the EPA by Federal, State, local authorities, or individuals. If a preliminary evaluation determines that the site poses a threat to human health and/or the environment, a more detailed inspection is performed and the potential danger associated with the site is given a 'Hazard Ranking System' (HRS) score from 0 to 100. Sites with HRS scores over

28.5 are eligible for Appendix B of the National Contingency Plan, known as the 'National Priorities List' (NPL). Also, sites can be placed on the NPL list if they are designated as 'top priority' by local authorities if there is significant threat to human health or if the EPA otherwise deems it more cost-effective to deal with the contamination via the remedial NPL process rather than by other emergency measures. For most of the analysis, we consider the full list of proposed, current, deleted, and SSA (Superfund Alternative Approach) Superfund sites; each of these sites will have generated significant local attention to the particular environmental problem at hand and brought attention to the government's role in environmental clean-up. Among the sample of counties for which we have Census Bureau data (see below) there are 704 sites on the full CERCLA list, which we label 'Superfund'. As a robustness check we also present results using only a smaller subset of 560 sites on the NPL. Data on Superfund sites were downloaded from the U.S. EPA's Superfund website.

Data on the county-level 2016 and 2012 Presidential election results were downloaded from information compiled from Townhall.com and the Guardian newspaper by Tony McGovern and made publicly available on Github.com. Data on absolute numbers of voter registrations and turnouts come from the U.S. Election Assistance Commission's (EAC) 2016 Election Administration and Voting survey. We compute an estimate of the 2016 voting age population of each county by first calculating the voting age proportion of the total population in 2010 using the Census Bureau's population age distribution in 2010, and then multiplying this fraction by the total population in 2015. This estimated voting age population is then used in the denominator to calculate county-level voter participation rates. Data on exposure to import competition come from Autor et al. (2013) and is measured as the average growth in import exposure between the 1990-2000 sub-period and the 2000-2007 sub-period in the commuting zone in which a county lies. Import exposure is measured as a combination of pre-existing industrial structure and the increase in imports over the period see (see Autor et al., 2013, 2016), and although import competition could come from any country, in practice the greatest increase in this period is from China. Thus, we name this variable 'China shock'.

County-level census data used in the analysis were collected for the most recent year available for each variable in early March 2017 from the Census Bureau's data portal. Census data come from a combination of census data collected every ten years and are available for all counties. The Census Bureau's American Community (ACS) 3-year Survey is drawn from over 3.5 million randomly selected households across the country 'to provide communities with reliable and timely demographic, housing, social, and economic data' (US Census Bureau ACS Guide). County-level total population, median household income, and poverty rates are from 2015. County-level measures of population by age, and unemployment rate data are from 2010; employment data are from 2009; urban share data are from 2000, and educational, labor force participation, and household income shares are averaged over the period 2005-2009. Since the analysis is purely cross-sectional we rely on the not unreasonable assumption that the *relative* values of control variables across counties will not have shifted significantly, but to the extent that the cross-sectional distribution changed before 2016, this will introduce some measurement error into the estimation.

Individual survey data comes from the 2016 Cooperative Congressional Election Survey (CCESS16), a high quality matched random sample national survey of over 64,000 individuals that is publicly available online (Ansolabehere and Schaner, 2017). We extract data related to concern for the environment, alongside data related to individuals' votes in the 2016 and 2012 Presidential elections, household income, age, gender, race, and education level. Only voters who answered the post-election survey and who reside in a sample county included in the county-level analyses are included, leaving us with a maximum sample of 29,515. Household income in the CCESS16 survey is binned across 16 categories; we use the midpoint of each bin as the value of household income. The average household income of the sample of individual voters is higher than the average median household income of the counties (with a mean survey household income over \$76,000 compared to an average county median income of just under \$50,000), but this is consistent with the relatively high income inequality in the U.S.; we expect mean income to be higher than median income. The CCESS16 individuals also voted in smaller numbers for Trump than our county figures, but again a direct comparison is difficult since the aggregated county level statistics include many larger, less-populated counties with relatively high numbers of Trump voters. The remaining demographics are fairly well matched between the datasets. Summary statistics for all variables used in the analysis are presented in Table 1.

The estimation strategy is very straightforward; for county-level analysis we model the county-level republican vote percentage as a function of Republican candidate Mitt Romney's share of the 2012 Presidential vote, our measures of Superfund sites, and a variety of economic and demographic controls, clustering robust standard errors at the state level.

$$Trump\%_{2016i} = \alpha + \beta_1 Romney\%_{2012i} + \beta_2 Superfund_i + X_i'\Pi + \mu_i, \tag{1}$$

Controlling for the 2012 Republican vote on the RHS of the regression is similar to modeling the excess share won by Trump in 2016 over Romney in 2012, but with the advantage that we do not impose the *ad hoc* constraint that the coefficient is 1 on the Romney 2012 share. The Romney variable essentially captures, in one variable, all the county-level characteristics that determined the Republican vote in the 2012 election, including attitudes towards the environment. Thus to the extent that differences across counties in partisan voting behaviour (e.g. influenced by attitudes about the environment) has remained stable between 2012 and 2016, the inclusion of the Romney share variable should capture these, and only *newly* salient variables should show up as statistically significant.

The dependent variables modeled using individual survey data are binary dummy variables, and these are estimated using linear probability models:

$$Response_i = \alpha + X_i'\Pi + \mu_i, \tag{2}$$

The regression tables report coefficient estimates and their associated robust p-values in parentheses, indicating statistical significance at the .001, .01 and .05 levels with asterisks as explained in the tables' footnotes. County-level regression cluster standard errors at the state level, and individual level regressions cluster standard errors at the county level. Some regression specifications restrict the estimation to a subset of data and/or additionally control for state fixed effects, and this is noted both in the text and in the relevant tables.

4 Results

Our empirical analysis, conducted at both the individual- and county-level and informed by previous research in the economics and political science literatures, follows a straightforward chain of argument by first presenting evidence on the relationship between Superfund and environmental preferences, then establishing a robust causal link from Superfund to voter behaviour, and finally exploring the possibility of heterogeneous effects of Superfund on voting behavior, via differing issue salience by age and/or income cohort.

4.1 Superfund sites and environmental preferences

As discussed in section 1, a mandate of the Superfund program is community outreach, so we expect that residents of counties with Superfund sites will be exposed to more news and information about environmental hazards than those of counties without Superfund sites. For example, a search of the website of the local newspaper in one (randomly chosen) county with a Superfund site, the *Sun Chronicle* of North Attleboro, MA (population 43,500), turned up 256 articles that included the term 'Superfund.' On the other hand, a similar search of the *Cranston Herald*, the local newspaper of Cranston RI (population 81,000), a nearby town just over on the other side of Providence that does not have a Superfund site, turned up exactly zero such articles.

But does this heightened awareness of environmental hazards translate into greater concern for the environment? We first investigate whether having one or more Superfund sites nearby raises voters' concern about the environment using responses in the CCES16 survey. In Table 2 column (1) we model the likelihood voters indicate that the environment has 'Very High Importance' - *MIP Environment* - as a function of whether there is a Superfund site, controlling for the log of household income, age cohort, gender, race and education level.

We find that voters who live in counties with at least one Superfund site are more likely to indicate that the environment is of very high importance, and this is highly statistically significant.

A possible concern with the results in column (1) is that counties with Superfund sites may differ in political orientation from those without for unobservable reasons. Since research suggests that voters' attitudes about the environment are increasingly driven by their political affiliation (e.g. Liu et al., 2014; Booth, 2017), we may be observing the results of their differing political orientation rather than the direct effect of a Superfund site. To test for this possibility, in column (2), we control for whether the respondent voted for Mitt Romney in the 2012 Presidential election as a proxy for voter party affiliation. Clearly, to the extent that environmental attitudes might drive political voter choice, the Romney variable is likely to be endogenous, and thus we interpret the results in column (2) with care. We find that those respondents who voted for Romney in 2012 are much less likely to consider the environment to be very important (with causality between these two variables uncertain). However, the coefficient on Superfund remains positive and statistically significant even when controlling for past voter behavior, suggesting that the significance of Superfund is likely not driven by unobservable omitted variables correlated with political affiliation.

In column (3), we drop the (potentially endogenous) Romney variable but additionally control for some county-level characteristics that could be correlated both with Superfund sites and with voters' attitudes towards the environment - specifically, county-level median income, poverty rate, urban share, and total population. The Superfund variable remains positive and robustly statistically significant. Then, in column (4) we introduce state fixed effects to control for unobservable characteristics that are common within - but differ across - states. However, even with state fixed effects controlling for average differences in attitudes towards the environment between states, we still find respondents in those counties with Superfund sites to be more likely to rate the environment as very important than voters in the same state but in a county without a Superfund site.

In Table 2 column (5) we keep the county-level controls and state fixed effects but separate our dummy for Superfund into '1 Superfund site' and '2 or more Superfund sites' and find that the effect is statistically equivalent; the coefficient on each (0.029) is identical to that on our Superfund variable in column (4). Thus, having one Superfund site is enough to raise the profile of environmental issues as personally salient, and more sites do not increase this (at least to an extent that can be captured in the survey).

A lingering concern may be that, despite the extensive control set and the inclusion of the Romney variable, there may still be unobservable county-level characteristics correlated with both political affiliation and the location of Superfund sites. In addition, Ansolabehere and Puy (2018) discuss the potential emergence of 'naive salience' for issues that are located close together on the political spectrum. To check whether the Superfund variable may be picking up either unobservable political tendencies or politically related issues, in Table 3 columns (6)-(7) we reproduce regression specification (4) but use the responses of whether a voter finds 'Very Important' other issues that may be correlated with attitudes towards the environment, namely gun control and gay marriage. The coefficients on Superfund for both of these issues are very small and not statistically significantly different from zero. In column (8), we do the same for a more 'neutral' issue, government deficits, and again find no relationship with Superfund (similar null results were found for all other issues; results available upon request from the authors). Finally, the CCESS16 survey also asked respondents binary questions about whether or not they supported a series of described policies. In column (9), we model whether or not respondents indicate support for the statement "Strengthen enforcement of the Clean Air Act and Clean Water Act even if it costs US jobs". In this case, we find that respondents in Superfund counties are statistically significantly more likely to support such a policy compared to those in counties without Superfund sites. Thus, overall we find convincing evidence that the presence of a Superfund site indeed increases concern for the environment, and that this is not associated with other issue (politically associated) preferences unrelated to the environment.

4.2 Environmental preferences and voter behavior

Having established that voters who live in a county with a Superfund site find environmental issues to be more personally salient than those that live in a county with no Superfund sites, we now turn to the question of whether the presence of Superfund also lowers support for Trump. All together about a quarter of U.S. counties have one or more Superfund sites. So, to address this question examine the distribution of Superfund sites across the country, and see how this correlates with county-level support for Trump in the 2016 Presidential election. In section 4.1, we provided evidence that the variation in Superfund is uncorrelated with traditionally 'liberal' political preferences other than those related to the environment. Nevertheless, to control for any remaining background confounding variation in party affiliation, in all regressions we control for our proxy for party affiliation - the percentage of the vote won by Mitt Romney in 2012 (for county-level analyses) or whether a survey respondent voted for Romney (in the individual-level analyses).

In Table 4, we consider the relationship between the county-level vote for Trump and the presence of Superfund sites. In column (10), we observe that the presence of at least one Superfund site (our Superfund dummy variable) is associated with a 2.4% lower vote excess share for Trump, i.e. controlling for the Republican share of the vote in 2012. In column (11), we disaggregate this effect between counties with exactly one Superfund site and those with two or more, finding that the effect on the Trump vote more than doubles from 1.4% to 3.9%. In column (12), we further discriminate between one, two to four, and five or more Superfund sites. Again, we observe a strong 'dose-response' pattern, with the reduction in expected Trump vote increasing from 1.4% to 3.4% to 5.8%.

The pattern found in Table 4 is striking: a statistically significant and meaningfully large effect on the excess Trump vote share that increases as the number of Superfund sites increases. However, the presence of Superfund sites could be correlated with other attributes associated more strongly with Trump than with the previous Republican Presidential candidate, and this could create an omitted variable bias. Thus, in Table 5 we explore this possibility by additionally controlling for a host of additional characteristics that have been associated with Trump voters. In column (13), we add county-level controls for median household income, the poverty rate, the share of white, black, Hispanic and Asian people in the population, the total population, the share that live in an urban area, and age distribution. Many of these variables are indeed statistically significant and carry the expected sign. Their inclusion reduces the estimate on the Superfund dummy from -2.4% to -1.1%, but it remains highly statistically significant. In column (14), we add more control variables related to county-level economic characteristics, including the degree to which a county experienced growth in its import exposure (a so-called 'China shock'), the unemployment rate, male labor force participation rate, and the share of manufacturing and mining in non-farm employment. The inclusion of the extra economic controls slightly reduces the coefficient on Superfund, now to -1%, but again it remains highly statistically significant. Then, in column (15) we additionally control for State fixed effects. In other words, we ask whether the observed relationship between Trump vote and our Superfund dummy variable is observed across counties *within* states, in effect controlling for all additional unobservable characteristics that are common across all counties within a State. The regression with state fixed effects in column (15) explains nearly 97% of the variation in Trump support across counties, and although the coefficient on the Superfund dummy is now reduced in magnitude to -.6%, it nevertheless remains highly statistically significant.

The results from Table 5 suggest that the presence of a nearby Superfund site did indeed reduce the number of votes for Trump. Specifically, there were 30.87 million votes for Trump cast in Superfund counties; the (most conservative) results from the county-level analysis in column (15) suggest that in the absence of Superfund, Trump *would* have recieved 31.36 million votes in those counties. Thus, our county-level results imply that almost 490,000 voters who would have otherwise voted for Trump changed their political affiliation based on their environmental preferences, at least during the 2016 election. Obviously, this was not a sufficiently large effect to change the outcome of the election but the order of magnitude is not politically insignificant.

Following our exploration of the relationship between Superfund and Trump's support at county scale, in Table 6 we exploit individual voter survey data to examine the extent to which living in a county with a Superfund site influences the likelihood of a vote for Trump. As with the county-level analysis, to control for 'generic' party affiliation we include a proxy variable that indicates whether or not the voter supported Mitt Romney in the 2012 election. We also include a set of standard socio-economic controls, including the log of household income as well as age, gender, race, and education category. In column (16), we find that, consistent with the county-level results from Table 4, the presence of one or more Superfund sites significantly reduces the likelihood that a voter will support Trump. In column (17), we find this effect also follows a 'dose-response' pattern, with two or more Superfund sites reducing the likelihood of supporting for Trump to a larger extent. In column (18), we additionally control for state fixed effects as well as our set of county-level control variables that could be correlated with both having a Superfund site and support for Trump, including county-level median household income, urban share, total population and poverty rate. However, even with the state- and county-level controls, the coefficient on 2+ Superfunds remains negative and statistically significant.

To explore whether the effect on Trump support from living in a Superfund county is indeed moderated via attitudes towards the environment, in column (19) of Table 6 we control for whether or not a voter found the environment to be a 'Very Important' issue. As previously discussed, we take care in interpreting this regression since party affiliation, voter behavior, and environmental attitudes are potentially highly endogenous. Yet, once environmental attitudes are controlled for, the Superfund variables are no longer statistically significant. The results from column (19) thus support our interpretation that the relationship between Superfund and Trump support detected in columns (16)-(18) is driven by variation in environmental attitudes rather than by some other unobservable omitted variable.

4.2.1 Placebo tests

A potential concern with the results from Table 6 may be that individuals who live in counties with Superfund sites are just somehow less 'Republican' than other counties, for unobservable reasons not captured in our individual-level, county-level and Romney-2012-vote control variables, and that our results are picking up these unobservable confounders. To test for this possibility, in columns (20) and (21) of Table 7 we perform a type of placebo test to explore whether living in a Superfund county equally reduced support for Mitt Romney in the 2012 Presidential election. Specifically, our theoretical framework predicts that a voter who finds the environment to be personally salient is less likely to choose a candidate when the candidate's party platform is distinctive and clear on the issue. As we have discussed in section 2, the candidacy of Mitt Romney in the 2012 Presidential election was relatively unremarkable in this regard, so in the absence of unobservable confounding variables correlated with Superfund, we would not expect voters in these counties to be less likely to vote for him.

Indeed, as expected, in column (20) we find the coefficient estimates on the Superfund dummies are not statistically significantly different from zero, which is consistent with our interpretation that the pattern of lower Trump support in Superfund counties is novel and unique to the 2016 election and that the relationship between Trump support and Superfund is not driven by unobservable confounders. The regression specification in column (20) is slightly different from those reported in Table 6, however, in that we do not have data on voters' underlying party preferences. Although we do not have individual voting data from before 2012, we do have some information on individuals' *Party identification*, specifically whether, generally speaking, they think of themselves as a Democrat, Republican, Independent, or Other. Party identification is not the ideal control for this experiment - the question was asked between September 28th and November 7th, 2016, on the eve of the 2016 election, and thus may already exclude those voters who had already moved away from the Republican Party due to dissatisfaction with the Trump campaign. This makes Party identification a weaker control for "intrinsic initial Republicanness," (e.g. voters who might be expected to vote the Republican ticket under other circumstances) than the Romney vote variable in our analysis of the Trump vote. In any event, in column (21) we run another placebo test, this time also controlling for Republican identification, and find again that the relationship between Superfund and the Republican vote is still not observed in the 2012 election, which confirm our results in column (20).

4.2.2 Instrumental Variables Estimation

So far we have focused on estimating the specific, isolated effect of Superfund sites on voting behavior, and have shown that the presence of a Superfund site had a non-negligible effect on support for Trump in 2016. That by itself is interesting and suggests a number of policy implications, although a more general question we have yet to address is the political order of magnitude of environmental preferences on voter behavior. As we discussed in sections 1 and 2, most scholars have found environmental preferences to have had little impact on previous U.S. elections (e.g. Guber, 2001; Leiserowitz, 2006; Repetto, 2006; Hallam and Coffey, 2007); but, at the same time, the Trump campaign was unique with respect to the divisiveness of its environmental message. Given the results on Superfund, it is not implausible to speculate that environmental preferences more generally may have played a much larger role in 2016 than in elections past. However, as we also discussed in section 2, a considerable literature documents the increasing importance of initial party affiliation in driving issue preferences, including environmental preferences (e.g. Daniels et al., 2012; Guber, 2013; Ansolabehere and Puy, 2018). Thus it would be inappropriate to model the vote for Trump as a function of environmental preferences using OLS, as clearly the regression would suffer from reverse causality.

However, if we accept two key identification assumptions, namely that (a) the distribution of Superfund sites is exogenous to individual political affiliation, and (b) the mechanism through which Superfund affects voter choice is only through environmental preferences (e.g. the exclusion restriction), then we can use Superfund sites to instrument for environmental preferences, eliminate the channel of reverse causality, and derive an average *causal* estimate of the effect of general environmental preferences on voting behavior in the 2016 Presidential election. The key identification assumptions necessary for valid causal inference have already been discussed in this paper; we have argued that the conditional spatial variation of Superfund is plausibly exogenous, and presented evidence that the mechanism through which Superfund changes a voter's party affiliation is via its effect on their environmental preferences, and in particular the personal *saliency* of environmental issues.

Table 8 presents the IV estimation of the effect of rating the environment to be a 'Very Important' issue (*MIP Environment*) on the likelihood of voting for Donald Trump in the 2016 Presidential election. We instrument for *MIP Environment* using dummy variables for the presence of one, two or more, two to three, four to five, and five plus Superfund sites in a county. Allowing multiple dummies for Superfund and a flexible form in the first stage not only generates a better fit, but also has the advantage that we can run over-identification tests of the exclusion restriction, which in all cases fails to reject the exclusion restriction by a healthy margin.

The results in Table 8 suggest that environmental preferences indeed had a large and significant causal effect on voting patterns in the 2016 Presidential election. In fact, the coefficient estimates on environmental preferences are larger in magnitude than age, race, or education level. In columns (22) and (23), we present the IV estimates with and without State fixed effects; in the latter case (column 23), the coefficient on environmental preferences is barely significant at the 5% level. Yet, in Democratic 'blue' states there may be less variation in environmental preferences between Superfund and non-Superfund counties, and so, in column (24) we restrict the sample to Republican-won states only. The coefficient estimate increases and is again comfortably statistically significant.

While the IV approach has some real advantages, there are several serious caveats as well. First, while we can include environmental preferences because we have an instrument, it is impossible to control for other attitudes and preferences because they are endogenous. So, the observation that the coefficient on environmental preferences is very large should not be interpreted as meaning that they are more important than other issues - that is something we do not know. Second, in most of our analysis so far we have argued that the *conditional* variation of Superfund is exogenous, and have included voter behavior in the 2012 election as a proxy variable to control for unobservable dimensions of political affiliation. However, in the case of the IV strategy it would clearly not be appropriate to control for the Romney vote in 2012 as an explanatory variable in the first-stage regression, for the same reasons of reverse causality (in reverse) discussed above. Thus, all the results in Table 8 omit the Romney control, and although we do control for county-level variables and state fixed effects, the identification assumption that Superfund is exogenous, while still plausible, is arguably weakened. Third, it may be that the "type" of environmental preferences formed from exposure to Superfund have different political implications than (similarly measured) environmental preferences that have evolved via other mechanisms, and thus our estimated local average effect may not be representative of the political consequences of increases in environmental preferences more generally. Last but not least, while in Table 2 we find Superfund to be robustly and statistically significantly correlated with *MIP Environment*, the coefficient is small and it is entirely possible that the economic magnitude of the effect of Superfund may be (relatively) dwarfed by other factors. Indeed, in Table 8 we observe that the first-stage regression F-statistics are quite small, and never exceed the threshold of 10 suggested by Staiger and Stock (1997) as a test for weak instruments. Thus, with weak instruments there is a real risk that the IV estimates are too large.

Overall, especially in the context of the rest of the analysis presented in this paper, we are comfortable drawing the conclusion from Table 8 that environmental preferences may have played a much more significant *causal* role in the 2016 election than in previous years. However given the caveats outlined above, we are less committed to the specific point estimates generated by our IV approach.

In sum, despite the documented increasing tendency for party affiliation to determine issue preference rather than the reverse, consistent with the theoretical prediction that voters for whom the environment is an issue of personal salience and *may* have a higher likelihood of changing their voting behavior, both the county- and individual-level results from Tables 5 and 6 suggest that the presence of a nearby Superfund site did indeed reduce the number of votes for Trump. Furthermore, the IV analysis in Table 8 suggests that, beyond our estimates of the isolated impact of Superfund only, in practice environmental preferences more generally could have had a much more significant effect on voting behaviour in 2016, contrasting with its role as a 'secondary issue' in previous electoral cycles. Given that a change in voter behavior is thus not only possible, but also of a magnitude that could potentially play a pivotal role, a natural question then arises: what types of voters were more likely to change their party vote choice on the basis of their personally-salient environmental preferences?

4.3 Heterogeneous effects, Superfund, and environmental salience

Having established a baseline *average* treatment effect of Superfund on environmental preferences and voting behavior in section 4.2, we now turn our attention to the question of what types of voters may be more or less likely to find an exposure to environmental issues, via Superfund, to be of sufficient personal salience to lead to a change in voting behaviour. In other words, we investigate whether there may be *heterogeneous* treatment effects of Superfund. As discussed in section 2 we find three distinct academic literatures - on the EKC, post-materialism, and environmental voting - that suggest relevant hypotheses with respect to age and income. While neither the EKC nor the environmental voting literatures make unambiguous predictions about the effect of age, the post-materialism literature predicts that younger voters may be more strongly effected by exposure to Superfund. All three literatures suggest that the personal saliency of environmental issues across individuals *within* countries may be a function of income, but that the shape of any relationship is *ex ante* theoretically ambiguous.

4.3.1 Heterogeneous effects and age cohort

As discussed in section 2, research on post-materialism suggests that, within countries, age cohort is the best predictor of post-materialist values, including stronger environmental preferences. And indeed, in Table 2, we do in fact find that voters under 30 years of age are statistically significantly more likely to find the environment to be a 'Very Important' issue. A natural extension of this claim is that, when confronted with challenging environmental information such as that embodied in a nearby Superfund site, younger voters may find this information particularly personally salient, and thus be more likely to change their voting behavior as a result. In Table 9, we test whether younger voters (under age 30) display a stronger response to being exposed to a superfund site, and/or if this translates into a greater likelihood of changing voting behavior. Column (25) of Table 9 shows whether the effect of a Superfund on survey respondents' likelihood of rating the environment as a 'Very Important' issue is greater for respondents under 30 years of age. We do so by controlling for the *interaction* of Superfund with a dummy for age under 30 years (*Age*$\leq$*30*), in addition to our set of individual control characteristics. While the coefficient on Superfund is positive and highly significant, the interaction of Superfund with *Age*$\leq$*30* is not statistically significant. In column (26), we additionally include county-level controls and state fixed effects, but still the interaction term is not statistically significant. Thus, although younger people are indeed more likely to have stronger environmental preferences generally, when exposed to information and publicity about environmental hazards associated with Superfund sites, their concern does not increase more than the population as a whole. In other words, we find no evidence of heterogeneous post-materialist *saliency* effects of Superfund sites.

Although we find no evidence of heterogeneous effects of age cohort in terms of the importance of the environment as an issue, in Table 9 columns (27) and (28) we explore whether we might still nevertheless observe post-materialist heterogenous effects in political behavior. Specifically, in column (27) we look at both Superfund and the interaction of Superfund and *Age*$\leq$*30* in explaining the likelihood of voting for Trump in the 2016 Presidential election, controlling for the full set of individual and county-level variables and state fixed effects. However, again, we find the interaction term is small and not statistically significant. As in Table 6, we find two or more Superfund sites to have the largest effect on the likelihood for voting for Trump; in column (28), we similarly look for an effect of the interaction of *Age*$\leq$*30* with 2+ Superfunds, but again, find no evidence of any heterogeneous effects associated with age cohort.

4.3.2 Heterogeneous effects and household income

Both the EKC and environmental voting literatures suggest a number of possible mechanisms through which income, both at the household- and aggregate-level, could play a role in the generation of environmental preferences and political affiliation. To investigate whether Superfund could have heterogeneous effects by income, in Table 10 we use the individual survey data to explore the relationship between Superfund with both environmental attitudes and voting behavior in the 2016 election by income cohort.

Specifically, we divide individuals and counties into three broad income categories each. We categorize counties according to whether county-level median household income is low ($\leq$ \$40,000) or high ($\geq$ \$70,000), and individuals according to whether household income is low ($\leq$ \$30,000) or high ($\geq$ \$80,000). Thus, the omitted reference category in each is 'medium', which corresponds to a median household income of between \$40-70,000 at the county level, or a household income of between \$30-80,000 at the individual level. We then interact these income category dummies with our Superfund variables. In columns (29) and (30), we model environmental attitudes and interact the income categories with one or more Superfund sites ('1 Superfund'), and in columns (31) and (32) we model whether the respondent voted for Trump and interact the income categories with two or more Superfund sites ('2+ Superfunds'). The latter is the variable we found most robustly significant in the earlier analysis. In all cases we control for the full set of individual socio-demographic variables (not reported to save space), and each case we present two regressions, with and without the state fixed effects and county-level controls.

In Table 10 columns (29) and (30), we find that respondents from lower-income households and/or from counties with *higher* median household incomes are more likely to rate the environment as a 'Very Important' issue. Living in a more affluent area may increase the chance someone is exposed to pro-environmental messages, but having a personally low income may increase personal vulnerability to environmental issues. However, when we interact the income categories with Superfund, we find that living in a county with one or more Superfund sites statistically significantly increases concern for the environment beyond the baseline increase (associated with 'medium' income categories), only in counties with *low* median household income. Thus, overall, we find concern for the environment increases across households from *all* income levels in counties with one or more Superfund sites, and this general increase in concern will be even higher still if the county's median household income is relatively low.

In Table 10 columns (31) and (32), we turn our attention to voting behavior and find that none of the income category dummies are by themselves statistically significant given that we are controlling for whether or not a voter voted for Romney in 2012, which will capture most if not all of the Republican-income relationship. Yet, when we interact the income categories with 2+ Superfunds, we find that it is individuals with low individual household incomes who are less likely to vote for Trump. We parse this out further in column (33), separating out five different low-to-medium income categories and again interacting these category dummies with 2+ Superfunds. The results suggest that the anti-Trump effect of Superfund sites is strongest (and most statistically significant) among households with incomes in the $20-30,000 range, just at the high end of the 'Low' category used in columns (29)-(32).

The individual survey results presented in Table 10 are interesting and provocative, suggesting that while a Superfund site increases widespread concern for the environment generally, it is primarily moderately low (but not too low)-income voters who are most likely to change their voter behavior in response to their concerns about the environment. Individuals from households below or just above the poverty line are less likely to vote for Trump, but this effect is not statistically significantly different from the overall (also negative) average effect. Individuals from households earning more than $40,000 are also no less likely than the average to vote for Trump. However, individuals from households that earn sufficiently to keep them above the poverty line but not enough for them to feel economically secure (i.e. between $20-30,000) display a strong, statistically significant drop in their support for Trump (even controlling for whether or not they voted for Romney in the 2012 election) in counties where there are two or more Superfund sites (the effect is similar for 'one or more Superfund sites' but not quite as large; not reported but available on request).

In Table 11, we further explore the relationship between Superfund sites, voter behavior, and income, but at the county level. In particular, in column (34) we continue to include the full set of county-level control variables and state fixed effects (not reported to save space but available upon request), but now introduce an interaction term between Superfund and median household income. For the full sample, while the coefficient estimate on the interaction term is negative, it is not statistically significant.

However, as we discussed in section 2, research has shown that political orientation is associated with attitudes towards the environment, with Democrats more likely than Republicans to support a pro-environmental policy platform (Liu et al., 2014; Booth, 2017; Eun Kim and Urpelainen, 2018). If voters across all income groups in predominantly Democratic counties already view the environment as important, and already view Trump as undesirable for myriad other reasons, then the additional presence of a Superfund site may not result in any change in voting behavior; after all, you can only vote against Trump once per election. In order to test whether personal salience for the environment, as a reason to change party vote choice, may be more relevant in more Republican-leaning areas, in column (35) we restrict the sample to states won by Trump in 2016. In the Republican state-only sample, we find a negative and statistically significant coefficient on the interaction of Superfund and household median income. Specifically, as median household income is measured in thousands-of-dollars, the coefficient on Superfund is .04 and the coefficient on the interaction term is -0.001, the results from column (35) suggests that the turning point is a household median income of $40,000. Then, for every $10,000 increase in household median income, the presence of at least one superfund site reduces the expected Trump vote by 1%.

From Table 11 column (35) alone, we cannot tell from our aggregate (or 'ecological') data which income group is most important for the results, but the individual-level results from Table 10 suggest that it is primarily *lower*-income individuals with household income of between $20-30,000 who are primarily shifting their votes away from the Republican Party. To investigate which income cohort of voters are driving the results in column (35), in columns (36) and (37) we relax the linear assumption on the functional form of the interaction of specification (34) and instead substitute our continuous variable of median household income with the shares of households in different income brackets (including both level and interaction with Superfund). Specifically, we consider how support for Trump will change when the share of households earning less than $30,000 increases (in other words, median county income falls due to increased low-income share), and how it changes when the share of households earning more than $150,000 increases (in other words, median county income increases due to increases in high-income share), with the omitted (very broad) reference category being households earning between $30-150,000.

In column (36), we find that the baseline effect of Superfund is negative and statistically significant, while the coefficient on the share of households with incomes below \$30,000 and the associated interaction with Superfund is positive and statistically significant. In other words, as the proportion of lower-income households falls, the expected vote for Trump falls and this decrease is even greater (more than doubled) when there is a Superfund in the county. Thus, an increase in median household income, which is the result of a having a smaller share of households with lower incomes, may explain the observed county-level pattern. In column (37), we explore the opposite, i.e. what happens if the share of higher-income households (with incomes over \$150,000) is higher? In this case, the interaction with Superfund is also positive, but the coefficient estimate is extremely small (0.00000146 to be precise) and significant only at 5%. We conclude that the effect on voting from changes in the share of top income households is unlikely to differ much from the (significant) baseline effect, and that the estimated heterogeneous effects of county-level median income on Superfund's effect on voting behavior from column (35) is primarily driven from below rather than above the median.

Taken together, the individual- and county-level results from Tables 10 and 11 suggest that the effect of Superfund on support for Trump grows as household income increases from well below the poverty line to moderately low levels of around \$30,000, and then tapers off and begins to decline after household income passes about \$40,000.

5 Discussion

Overall, the results tell a compelling story about the interaction of issue saliency and voter preferences. The combination of Donald Trump's Presidential campaign in 2016 and Superfund provides an interesting 'natural experiment' which enables us to test the hypothesis that it takes both a significant difference between the parties' environmental policy platforms, and personal voter salience with respect to environmental issues, to effect a change in voter behaviour. A big advantage of this approach is that we are able to make stronger statements about *causal* effects: Trump's environmental position generates exogenous variation in the former, while the EPA's Superfund program generates exogenous variation in the latter. The nearby presence of a Superfund site raises environmental awareness and concern, with more individuals across all income categories rating the environment as a 'Very Important' issue and expressing support for policies that enforce clean air and water standards, even at the expense of jobs. At the county level, we observe that having a Superfund site also lowers the expected vote for Trump in a striking 'dose-response' pattern. This relationship is mirrored in the individual survey data; controlling for a host of socio-economic controls as well as voting behavior in the 2012 Presidential election, the presence of one or more Superfund sites (and especially two or more Superfund sites) lowers the likelihood an individual will vote for Trump. This pattern does not seem to be related to unobservables correlated with party affiliation, for the effect does not show up in the (less environmentally divergent) 2012 election, nor does it appear when we explore alternative but traditionally partisan issues. However, the mechanism *does* appear to be connected to concern for the environment since the importance of Superfund disappears when we control for whether or not an individual finds the environment to be a "Very Important" issue.

Trump's campaign platform on the environment also emphasized a downsizing in the role of the EPA as the country's predominant environmental regulator (e.g. Hejny, 2018). This suggests an alternative hypothesis that it is actually increased support for the EPA and the Superfund program itself, not environmental preferences *per se*, that are driving our results (and could violate the exclusion restriction of the IV analysis in section 4.2.2). These two interpretations are naturally related, and might tell the same story in terms of issue salience and party platform. Yet, the issues are slightly different in that the Superfund program could simply be viewed as an example of effective government, which might challenge some conservative voters' views on the desirability of 'small government'. One way to test for this would be to test the degree to which Superfund plays a role in either individuals' personal support for the EPA, or the degree to which they find government to be effective, but unfortunately no questions in the CCESS16 survey were appropriate for this exercise so we leave this question for future research.

Our quantitative estimates suggest that, on the basis of their environmental preferences, up to half-a-million voters across the U.S. switched their party affiliation away from the Republicans in the 2016 Presidential election. Although younger voters' baseline concern for the environment is greater, we find no evidence that they respond more strongly to the presence of a Superfund site than older voters. This result therefore provides little, if any, support for the post-materialism hypothesis on age cohorts. We do, however, find a non-linear interaction with Superfund and household income, which suggests that the effect of a Superfund site on voting behavior increases as household income increases along the low end of the income distribution, but then tapers off and declines as household income increases above $40,000 or so. This figure is consistent with the results from previous research on the demand for environmental regulation (e.g. Kahn and Matsuaka, 1997; Kahn, 2002; Wu and Cutter, 2011), yet in these previous studies the extent of support for a particular environmental regulation or initiative may be confounded by preferences for other issues such as redistribution, unlike our "cleaner" measure of concern for the environment.

In conclusion, we find that Superfund sites increase the political salience of the environment as a voting issue, and that this effect changes voting behavior, at least some cases, and is particularly strong for households 'just getting by.' Importantly, these moderately low-income voters belong precisely to the income group that is also most likely to vote for Trump (e.g. Rothwell and Diego-Rosell, 2016), which suggests that educational and informational campaigns aimed at lower-income households to increase the personal saliency of environmental issues could potentially have disproportionately large political effects. Such campaigns might be effective in some counties with relatively large Republican-leaning voters, but where the Superfund program is presently absent, and could potentially make a difference in tight races between candidates with divergent views on policy towards the environment. Finally, while our data does not allow us to explore whether these shorter-run changes in voters' party choice might lead to longer-run changes in deeper political affiliation, they surely constitute a first step along that journey, and we leave it to future research to shed more light on this question.

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6 Tables

Table 1: Summary Statistics

Variable	Obs	Mean	St. Dev.	Min	Max
		County-Level Data			
Trump 2016 %	2711	0.64	0.16	0.08	0.95
Romney 2012 %	2711	0.61	0.15	0.06	0.97
Superfund	2711	0.26	0.44	0	1
Superfund sites	704	2.28	2.67	1	23
NPL	2711	0.21	0.40	0	1
NPL sites	560	2.08	2.35	1	23
Median HH Income (000)	2710	48.64	12.10	22.89	125.90
Poverty rate	2710	15.99	6.21	3.40	47.40
Voter participation rate	2710	0.45	0.08	0.13	0.81
White share of pop.	2711	79.93	19.52	2.80	99.20
Black share of pop.	2711	7.57	13.36	0	85.70
Hispanic share of pop.	2711	8.20	13.67	0	95.70
Asian share of pop	2711	1.12	2.44	0	43.90
Population	2710	9.75	33.38	0.01	1003.47
Urban share	2710	0.69	0.40	0	1
Share age$\geq$ 50yrs	2711	0.37	0.06	0.14	0.61
Share age$\leq$25yrs	2711	0.13	0.04	0.07	0.49
China shock	2671	3.65	4.79	-0.77	65.55
Unemployment rate	2711	6.84	3.14	0	36.10
Male LFPR	2711	0.67	0.09	0.18	1
Manufacturing share	2681	0.14	0.13	0	1
Mining share	2681	0.02	0.06	0	0.78
		CCESS16 Individual Voter-Level Data			
Voted for Trump	29515	0.40	0.49	0	1
Voted for Romney	29515	0.39	0.49	0	1
Republican Identification	29514	0.28	0.45	0	1
MIP Environment	9014	0.37	0.48	0	1
MIP Gun Control	9003	0.47	0.50	0	1
MIP Gay Marriage	9013	0.17	0.38	0	1
MIP Gov. Deficit	9014	0.41	0.49	0	1
Clean Air & Water	39540	0.58	0.49	0	1
HH income	29515	76,260	60,641	5,000	500,000
Age$\leq$30	29515	0.08	0.27	0	1
Age$\geq$55	29515	0.48	0.50	0	1
Male	29515	0.47	0.50	0	1
White	29515	0.78	0.41	0	1
Black	29515	0.09	0.29	0	1
Hispanic	29515	0.06	0.23	0	1
Educ$\leq$HS	29515	0.22	0.41	0	1
Educ$\geq$Univ.	29515	0.43	0.49	0	1

Table 2: MIP is the Environment

	(1) MIP Environment	(2) MIP Environment	(3) MIP Environment	(4) MIP Environment	(5) MIP Environment
Superfund	0.059***	0.035**	0.042***	0.029*	
	(0.000)	(0.001)	(0.001)	(0.024)	
1 Superfund					0.029
					(0.083)
2+ Superfunds					0.029
					(0.051)
Voted for Romney in 2012		-0.460***			
		(0.000)			
Log HH income (individual-level)	-0.045***	-0.025***	-0.050***	-0.048***	-0.048***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HH median income (county-level)			0.003***	0.003***	0.003***
			(0.000)	(0.000)	(0.000)
Age≤30	0.075**	0.040	0.070**	0.068**	0.068**
	(0.002)	(0.173)	(0.004)	(0.005)	(0.005)
Age≥55	0.033**	0.063***	0.034**	0.029**	0.029**
	(0.003)	(0.000)	(0.002)	(0.010)	(0.010)
Male	-0.075***	-0.038***	-0.077***	-0.076***	-0.076***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
White	0.006	0.027	0.016	0.020	0.020
	(0.755)	(0.180)	(0.422)	(0.320)	(0.320)
Black	0.069**	-0.090**	0.064*	0.075**	0.075**
	(0.006)	(0.002)	(0.011)	(0.003)	(0.003)
Hispanic	0.036	-0.006	0.026	0.029	0.029
	(0.296)	(0.883)	(0.447)	(0.411)	(0.412)
Educ≤HS	-0.040**	-0.029*	-0.036*	-0.034*	-0.034*
	(0.006)	(0.046)	(0.013)	(0.016)	(0.016)
Educ≥University	0.082***	0.034**	0.078***	0.077***	0.077***
	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)
Poverty Rate (county-level)			0.007***	0.008***	0.008***
			(0.000)	(0.000)	(0.000)
Urban share (county-level)			0.031	0.012	0.012
			(0.404)	(0.743)	(0.743)
Total population (county-level)			0.000	0.000	0.000
			(0.069)	(0.078)	(0.098)
State fixed effects	N	N	N	Y	Y
N	9014	7768	9014	9014	9014
R^2	0.025	0.230	0.029	0.038	0.038

robust p-values clustered at county level in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Other Issues and Superfund

	(6) Gun Control	(7) Gay Marriage	(8) Government Deficit	(9) Clean Air & Water
Superfund	0.008	0.002	-0.011	0.018*
	(0.484)	(0.845)	(0.420)	(0.026)
Log(HH income) (individual)	0.007	-0.008	-0.002	-0.023***
	(0.314)	(0.138)	(0.790)	(0.000)
HH median income (county-level)	0.002*	0.000	-0.002*	0.003***
	(0.012)	(0.475)	(0.024)	(0.000)
Age$\leq$30	-0.021	0.055*	-0.108***	0.068***
	(0.365)	(0.011)	(0.000)	(0.000)
Age$\geq$55	0.089***	-0.037***	0.065***	-0.051***
	(0.000)	(0.000)	(0.000)	(0.000)
Male	-0.087***	-0.036***	0.074***	-0.050***
	(0.000)	(0.000)	(0.000)	(0.000)
White	0.013	0.038*	-0.071**	-0.036***
	(0.584)	(0.020)	(0.002)	(0.000)
Black	0.212***	0.002	-0.062*	0.071***
	(0.000)	(0.935)	(0.047)	(0.000)
Hispanic	0.083*	0.015	-0.030	0.021
	(0.014)	(0.578)	(0.401)	(0.122)
Educ$\leq$HS	0.015	-0.001	0.021	-0.049***
	(0.327)	(0.957)	(0.151)	(0.000)
Educ$\geq$University	0.016	0.016	-0.072***	0.089***
	(0.204)	(0.071)	(0.000)	(0.000)
Poverty rate	0.004*	0.001	-0.003	0.008***
	(0.037)	(0.518)	(0.109)	(0.000)
Urban share	0.026	0.011	-0.017	0.042*
	(0.486)	(0.699)	(0.662)	(0.043)
Total population	0.000*	0.000*	-0.000	0.000***
	(0.015)	(0.048)	(0.146)	(0.000)
State fixed effects	Y	Y	Y	Y
N	9003	9014	9013	39540
R^2	0.037	0.032	0.014	0.049

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
robust p-values clustered at county level in parentheses

Table 4: Trump share of 2016 vote and Superfund sites

	(10) Trump %	(11) Trump %	(12) Trump %
Romney 2012 %	0.970***	0.964***	0.963***
	(0.000)	(0.000)	(0.000)
Superfund	-0.024***		
	(0.000)		
1 Superfund site		-0.014**	-0.014**
		(0.003)	(0.003)
2+ Superfund sites		-0.039***	
		(0.000)	
2-4 Superfund sites			-0.034***
			(0.000)
5+ Superfund sites			-0.058***
			(0.000)
constant	0.057**	0.060**	0.061**
	(0.005)	(0.003)	(0.003)
N	2710	2710	2710
R^2	0.892	0.893	0.894

Robust p-values clustered at state level in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Trump share of 2016 vote and Superfund sites, more controls

	(13) Trump %	(14) Trump %	(15) Trump %
Romney 2012 %	0.843***	0.840***	0.867***
	(0.000)	(0.000)	(0.000)
Superfund	-0.011**	-0.010**	-0.006**
	(0.004)	(0.003)	(0.008)
HH Median Income	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)
Poverty rate	-0.000	-0.001	-0.001
	(0.611)	(0.055)	(0.087)
White share of population	0.001***	0.001**	0.001**
	(0.000)	(0.003)	(0.002)
Black share of population	-0.000*	-0.001*	-0.001***
	(0.036)	(0.041)	(0.000)
Hispanic share of population	-0.000	-0.000	-0.000
	(0.370)	(0.329)	(0.127)
Asian share of population	-0.002	-0.004*	-0.002
	(0.117)	(0.011)	(0.173)
Total Population	-0.000	-0.000	-0.000
	(0.079)	(0.099)	(0.083)
Urban share	-0.011*	-0.016***	-0.014***
	(0.012)	(0.000)	(0.000)
Share age≥50yrs	-0.150*	-0.170**	-0.139***
	(0.012)	(0.002)	(0.000)
Share age≤25yrs	-0.470***	-0.443***	-0.454***
	(0.000)	(0.000)	(0.000)
China shock		-0.000	-0.000
		(0.287)	(0.285)
Unemployment rate		0.001	0.002**
		(0.175)	(0.001)
Male LFPR		-0.084***	-0.080***
		(0.000)	(0.000)
Manufacturing share		0.043***	0.029***
		(0.000)	(0.000)
Mining share		0.073***	0.051***
		(0.000)	(0.000)
constant	0.275***	0.345***	
	(0.000)	(0.000)	
State fixed effects	N	N	Y
N	2709	2642	2642
R^2	0.944	0.947	0.967

Robust p-values clustered at state level in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: Individual Survey Data

	(16) Voted for Trump in 2016	(17) Voted for Trump in 2016	(18) Voted for Trump in 2016	(19) Voted for Trump in 2016
Superfund	-0.017**			
	(0.003)			
1 Superfund		-0.008	-0.004	-0.000
		(0.258)	(0.516)	(0.986)
2+ Superfunds		-0.020**	-0.015*	-0.001
		(0.001)	(0.029)	(0.892)
Voted for Romney	0.712***	0.712***	0.709***	0.715***
in 2012	(0.000)	(0.000)	(0.000)	(0.000)
MIP_Environment				-0.121***
				(0.000)
Log(HH income)	-0.003	-0.003	-0.000	-0.016**
(individual)	(0.262)	(0.307)	(0.916)	(0.001)
HH median income			-0.002***	-0.002***
(county-level)			(0.000)	(0.000)
Age≤30	-0.064***	-0.063***	-0.063***	-0.116***
	(0.000)	(0.000)	(0.000)	(0.000)
Age≥55	0.002	0.002	0.001	0.017*
	(0.722)	(0.734)	(0.831)	(0.024)
Male	0.028***	0.028***	0.030***	0.005
	(0.000)	(0.000)	(0.000)	(0.457)
White	0.017*	0.016*	0.014	-0.033
	(0.044)	(0.049)	(0.117)	(0.075)
Black	-0.082***	-0.082***	-0.088***	-0.123***
	(0.000)	(0.000)	(0.000)	(0.000)
Hispanic	-0.021	-0.021	-0.024	-0.059
	(0.120)	(0.127)	(0.073)	(0.056)
Educ≤HS	0.041***	0.041***	0.038***	0.008
	(0.000)	(0.000)	(0.000)	(0.439)
Educ≥University	-0.066***	-0.066***	-0.063***	-0.056***
	(0.000)	(0.000)	(0.000)	(0.000)
Poverty rate			-0.004***	-0.004**
(county-level)			(0.000)	(0.005)
Urban share			-0.057***	-0.010
(county-level)			(0.001)	(0.699)
Total population			0.000	-0.000
(county-level)			(0.104)	(0.628)
State fixed effects	N	N	Y	Y
N	29515	29515	29515	7543
R^2	0.562	0.562	0.565	0.654

robust p-values clustered at county level in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Individual Survey Data: Placebo Tests

	(20) Voted for Romney in 2012	(21) Voted for Romney in 2012
1 Superfund	-0.011	-0.001
	(0.354)	(0.899)
2+ Superfunds	-0.010	-0.000
	(0.391)	(0.981)
Republican		0.625***
		(0.000)
Log(HH income)	0.045***	0.020***
(Individual)	(0.000)	(0.000)
HH median income	-0.004***	-0.002***
(County-level)	(0.000)	(0.000)
Age≤30	-0.078***	-0.047***
	(0.000)	(0.000)
Age≥55	0.064***	0.062***
	(0.000)	(0.000)
Male	0.056***	0.053***
	(0.000)	(0.000)
White	0.052***	-0.006
	(0.000)	(0.526)
Black	-0.323***	-0.212***
	(0.000)	(0.000)
Hispanic	-0.101***	-0.089***
	(0.000)	(0.000)
Educ≤HS	0.039***	0.009
	(0.000)	(0.177)
Educ≥University	-0.090***	-0.049***
	(0.000)	(0.000)
County-level controls	Y	Y
State Fixed Effects	Y	Y
N	29515	29514
R^2	0.114	0.420

County-level controls: Poverty Rate, Urban Share, Total Population.
Robust p-values clustered at county level in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Individual Survey Data: Instrumental Variables Estimation

	(22) Voted for Trump in 2016	(23) Voted for Trump in 2016	(24) Voted for Trump in 2016
Sample:	All States	All States	Republican States
MIP Environment	-0.747**	-0.589	-0.863*
	(0.002)	(0.055)	(0.020)
Log(HH income)	-0.011	-0.006	-0.011
(individual-level)	(0.408)	(0.695)	(0.498)
HH median income	-0.001	-0.003*	-0.002
(county-level)	(0.116)	(0.017)	(0.137)
Age$\leq$30	-0.100**	-0.114**	-0.124**
	(0.005)	(0.003)	(0.006)
Age$\geq$55	0.062***	0.053***	0.065**
	(0.000)	(0.000)	(0.002)
Male	0.029	0.041	0.013
	(0.183)	(0.119)	(0.678)
White	-0.007	-0.008	-0.026
	(0.741)	(0.693)	(0.454)
Black	-0.311***	-0.330***	-0.359***
	(0.000)	(0.000)	(0.000)
Hispanic	-0.093*	-0.108**	-0.087
	(0.019)	(0.006)	(0.225)
Educ$\leq$HS	0.019	0.024	0.004
	(0.303)	(0.201)	(0.870)
Educ$\geq$University	-0.092***	-0.103***	-0.101***
	(0.000)	(0.000)	(0.000)
Poverty rate	-0.002	-0.006	-0.004
(county-level)	(0.568)	(0.072)	(0.350)
Urban share	0.022	0.000	0.010
(county-level)	(0.609)	(0.993)	(0.844)
Total population	-0.000	-0.000	-0.000
(county-level)	(0.401)	(0.125)	(0.458)
State Fixed Effects	N	Y	Y
N	8130	8130	4341
1st-Stage $F-Stat$	3.17	1.7	1.5
Over-ID $p-value$	0.92	0.48	0.93

robust p-values in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Instruments: 1 Superfund, 2+ Superfunds, 2-3 Superfunds, 4-5 Superfunds, 5+ Superfunds

Table 9: Testing for Heterogeneous Effects: Age cohort with Individual Survey Data

	(25) MIP Environment	(26) MIP Environment	(27) Voted for Trump in 2016	(28) Voted for Trump in 2016
Superfund	0.057***	0.026	-0.011	
	(0.000)	(0.054)	(0.070)	
1 Superfund				-0.004
				(0.520)
2+ Superfunds				-0.014*
				(0.036)
Superfund* Age≤30	0.052	0.062	-0.001	
	(0.302)	(0.203)	(0.936)	
2+ Superfund* Age≤30				-0.007
				(0.649)
Voted for Romney in 2012			0.709***	0.709***
			(0.000)	(0.000)
Log(HH income) (individual)	-0.044***	-0.048***	-0.000	-0.000
	(0.000)	(0.000)	(0.895)	(0.913)
Age≤30	0.038	0.024	-0.062***	-0.059***
	(0.367)	(0.560)	(0.000)	(0.000)
Age≥55	0.033**	0.029**	0.001	0.001
	(0.003)	(0.009)	(0.830)	(0.831)
Male	-0.075***	-0.076***	0.030***	0.030***
	(0.000)	(0.000)	(0.000)	(0.000)
White	0.007	0.021	0.014	0.014
	(0.740)	(0.308)	(0.117)	(0.118)
Black	0.070**	0.076**	-0.088***	-0.088***
	(0.005)	(0.003)	(0.000)	(0.000)
Hispanic	0.037	0.030	-0.024	-0.024
	(0.284)	(0.398)	(0.072)	(0.073)
Educ≤HS	-0.040**	-0.034*	0.038***	0.038***
	(0.006)	(0.016)	(0.000)	(0.000)
Educ≥University	0.082***	0.077***	-0.063***	-0.063***
	(0.000)	(0.000)	(0.000)	(0.000)
County-Level Controls	N	Y	Y	Y
State fixed effects	N	Y	Y	Y
N	9014	9014	29515	29515
R^2	0.025	0.039	0.565	0.565

County-level controls: HH Median income, Poverty Rate, Urban Share, Total Population.
Robust p-values clustered at county level in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: Testing for Heterogeneous Effects: Income Cohort with Individual Survey Data

	(29) MIP Environment	(30) MIP Environment	(31) Voted for Trump in 2016	(32) Voted for Trump in 2016	(33) Voted for Trump in 2016
Superfund	0.060***	0.039*			
	(0.001)	(0.039)			
1 Superfund			-0.008	-0.002	-0.000
			(0.265)	(0.821)	(0.981)
2+ Superfunds			-0.014	-0.013	-0.010
			(0.060)	(0.095)	(0.205)
Low (indiv.) HH income* Superfund(s)	-0.029	-0.035	-0.026*	-0.024*	
	(0.298)	(0.208)	(0.013)	(0.024)	
high (indiv.) HH income* Superfund(s)	0.009	0.001	0.007	0.005	
	(0.710)	(0.962)	(0.412)	(0.523)	
Low Median HH inc* Superfund(s)	0.129*	0.121	0.029	0.045	
	(0.048)	(0.051)	(0.406)	(0.183)	
High Median HH inc* Superfund(s)	-0.048	-0.051	-0.004	0.001	
	(0.163)	(0.101)	(0.762)	(0.940)	
HH income ≤$10K* 2+ Superfunds					-0.042
					(0.102)
HH income $10-20K* 2+ Superfunds					-0.009
					(0.581)
HH income $20-30K* 2+ Superfunds					-0.035*
					(0.014)
HH income $30-40K* 2+ Superfunds					-0.017
					(0.229)
HH income $40-50K* 2+ Superfunds					0.000
					(0.970)
romney2012			0.711***	0.710***	0.710***
			(0.000)	(0.000)	(0.000)
Low HH income (individual)	0.081***	0.081***	0.007	0.006	
	(0.000)	(0.000)	(0.342)	(0.385)	
High HH income (individual)	-0.049*	-0.048*	-0.007	-0.006	
	(0.012)	(0.013)	(0.267)	(0.336)	
Low Median HH income (county-level)	-0.069**	-0.049	0.015	0.009	
	(0.007)	(0.085)	(0.132)	(0.417)	
High Median HH income (county-level)	0.063*	0.051	-0.015	-0.016	
	(0.020)	(0.056)	(0.208)	(0.134)	
State fixed effects	N	Y	N	Y	Y
County-level controls	N	Y	N	Y	Y
N	9014	9014	29515	29515	29515
R^2	0.026	0.037	0.563	0.564	0.564

County-level controls: Urban Share, Total Population, HH income category dummies (column 32).
Also included but not displayed: Age≤30, Age≥55, Male, White, Black, Hispanic, Educ≤HS,≥University
Robust p-values clustered at county level in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: Testing for Heterogeneous Effects: Income Cohort with County-Level Data

	(34) Trump %	(35) Trump %	(36) Trump %	(37) Trump %
Sample:	All States	Republican States	Republican States	Republican States
Romney 2012 %	0.868***	0.829***	0.825***	0.823***
	(0.000)	(0.000)	(0.000)	(0.000)
Superfund	0.005	0.040***	-0.055***	-0.008**
	(0.580)	(0.000)	(0.000)	(0.002)
HH Median Income	-0.002***	-0.002***		
	(0.000)	(0.000)		
HH Median Income* Superfund	-0.000	-0.001***		
	(0.221)	(0.000)		
Share of HHs w/income≤30K			0.103***	
			(0.000)	
Share of HHs w/income≤30K* Superfund			0.141***	
			(0.000)	
Share of HHs w/income≥150K				-0.000
				(0.114)
Share of HHs w/income≥150K* Superfund				0.000*
				(0.031)
Poverty rate	-0.001	-0.001		0.001*
	(0.093)	(0.117)		(0.033)
State fixed effects	Y	Y	Y	Y
N	2642	1972	1972	1972
R^2	0.967	0.964	0.962	0.960

Included but not displayed: white, black, Hispanic, and Asian share of population, Total population, Urban share, Shares age ≤25 and ≥50 yrs, China shock, Unemployment rate, Male LFPR, Manufacturing share, Mining share.

Note: Robust p-values clustered at state level in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$