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Race and Environmental Worries

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Abstract

We use survey data to document a strong heterogeneity in stated degrees of worry about environmental problems across racial groups. Minorities are significantly more worried about air and water pollution than their white counterparts, even after controlling for socioeconomic factors and pollution exposure. Our finding implies that residential sorting based on heterogeneous financial resources and heterogeneous levels of environmental concern is unlikely to be the only driver of uneven exposure to pollution across racial groups.

Keywords: Residential sorting; pollution; race

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1 Introduction

Decades of social sciences research has documented the disproportionate exposure of pollution by socioeconomic status, a field that is broadly known as *Environmental Justice* (EJ) (Banzhaf et al., 2019). A landmark study in 1987 found that race was the most important factor for siting toxic wastes sites in the United States, where the average percentage of people of color in a ZIP code with at least one commercial hazardous waste facility was two times that of ZIP codes with none (Chavis and Lee, 1987). These disparities remain persistent: an update of the study in 2007 finds similar results (Bullard et al., 2007).

While the pattern of uneven exposure is clear, the empirical evidence on the causal mechanisms that contribute to these patterns is limited. Work in economics and related disciplines have posited that firms may site their polluting activities near disadvantaged populations for reasons ranging from discriminatory preferences (Becker, 1957) to lower labor/land costs and more lax zoning laws (Been, 1994; Hamilton, 1995; Wolverton, 2002). On the other hand, disadvantaged populations may move or "sort" toward polluted neighborhoods (Tiebout, 1956). A large hedonic literature shows that housing prices are lower in areas with more pollution,[1] lowering the costs of living in these communities. The sorting explanation is thus often used to attribute the drivers of uneven pollution burden to income inequality (Banzhaf and Walsh, 2008; Banzhaf et al., 2019). Aside from income-based sorting, heterogeneous tastes is seen as another driver of sorting, where certain groups have lower preferences for environmental quality (Kuminoff et al., 2013; Bakkensen and Ma, 2020). However, the literature has not empirically tested between these alternative drivers of sorting in practice.

In this paper, we aim to evaluate the sorting explanation for uneven pollution exposure by using a novel survey data on individuals' concerns over the environment. To our knowledge, this is the first paper to explicitly incorporate stated preferences for the environment with actual pollution exposure to evaluate potential sorting

[1]The hedonic literature is vast. Some recent examples include Davis (2011); Currie et al. (2015); Haninger et al. (2017).

mechanisms behind environmental justice correlations. We map individuals in the Gallup Poll Social Series (GPSS) survey from 2000 to 2020 to pollution data from the Environmental Protection Agency's (EPA) Risk-Screening Environmental Indicators (RSEI) dataset. We first test whether minorities have systematically lower preferences for environmental quality, conditional on income. We then investigate how the well-documented correlation between pollution and race is affected once we condition on environmental concern. We frame our discussion using a stylized model of residential sorting, simplified from Banzhaf and Walsh (2008). Our model explicitly allows for heterogeneous income *and heterogeneous environmental preferences*. The sorting model predicts that if minorities are more exposed to pollution and all else is equal, then uneven pollution burden must be because minorities have weaker concern over pollution than non-minorities.

In contrast to the model's prediction, our empirical analysis documents that minorities are significantly *more* worried about air and water pollution than their white counterparts. Interestingly, this is true even after we control for socioeconomic factors *and* pollution exposure. Moreover, conditioning on environmental concern actually does not significantly change the correlation between pollution exposure and race. These findings suggest that sorting based on heterogeneous environmental preferences is unlikely to be the only driver of uneven exposure to air and water pollution. Furthermore, we also find that minorities are more worried about global warming and their climate beliefs are more aligned with scientific consensus. This suggests that environmental issues are generally a more salient problem for minorities.

Our findings have implications to a growing literature that aims to understand potential mechanisms that lead to uneven exposure to pollution. Individuals may sort toward pollution based on various reasons, including heterogeneous income (Banzhaf and Walsh, 2008), land-use restrictions (Colas et al., 2019), and beliefs (Bakkensen and Barrage, 2017). Other recent papers have provided more nuanced sorting explanations, from constraints posed by housing discrimination (Christensen et al., 2020) to different pollution information sets (Hausman and Stolper, 2020; Ma, 2019). By combining administrative data on pollution exposure with surveyed attitudes on pollution, our analysis allows us to directly control for preferences for environmental

quality in studying the correlation between race and pollution. In doing so, we can assess whether uneven pollution exposure can be fully explained by heterogeneous preferences. If this were the case, then maybe the uneven exposure to pollution would be "efficient" (as in economies where a heterogeneous allocation of resources is driven by trades between agents with heterogeneous preferences and where the first welfare theorem holds). However, this hypothesis does not seem consistent with our empirical findings. Instead, our paper lends support to the idea that other important factors besides heterogeneous tastes (such as choice constraints or disproportionate siting by polluting firms, as surveyed in Banzhaf et al. 2019) are likely to be at play in contributing to uneven pollution exposure.

Our paper proceeds as follows. We construct a stylized sorting model in section 2. Section 3 presents our empirical analysis, including a description of our data, empirical model, and results. Section 4 concludes.

2 Motivating model

We motivate our empirical analysis through the lens of a simple model. Our intentionally parsimonious model (based on Banzhaf and Walsh, 2008) aims to capture the essence of residential sorting over environmental quality. An important ingredient is the heterogeneity in environmental preferences, which is key in mapping the theory to the survey data.

Consider a set of individuals with heterogeneous endowment y and heterogeneous preference parameter α in their utility u over environmental quality $\mathcal{E}$ and consumption c:

$$u(\mathcal{E}, c) = \alpha \ln \mathcal{E} + \ln c.$$

All else equal, an individual with a higher α is more concerned about the environmental quality of his or her residential location. The heterogeneity in this environmental concern parameter α could represent, for example, the differences in the degree of knowledge, attention, or belief about the negative effects of pollution on health and well-being. The heterogeneity in the endowment parameter y could represent, for

example, the differences in income, assets, or human capital.

Each individual chooses a location $\ell \in \{0, 1\}$ to reside, where for simplicity we assume there are two types of locations with heterogeneous environmental quality $\mathcal{E}_\ell$ and cost of living P_ℓ, with

$$\mathcal{E}_1 > \mathcal{E}_0; \quad P_1 > P_0.$$

In other words, type 1 location has better environmental quality (e.g., farther away from sources of pollution) and also a higher cost of living. This ranking reflects the well-documented correlation between environmental amenities and cost of living (e.g., Davis 2011; Currie et al. 2015). The utility from choosing location ℓ is then given by $u(\mathcal{E}_\ell, y - P_\ell)$.

Given endowment y and utility u, an individual chooses the more polluted location type ($\ell = 0$) if and only if

$$u(\mathcal{E}_0, y - P_0) > u(\mathcal{E}_1, y - P_1). \tag{1}$$

With our parametrization of u, this inequality is equivalent to $\frac{y-P_0}{y-P_1} > \left(\frac{E_1}{E_0}\right)^\alpha$.

An immediate implication of (1) is that for a given degree of environmental concern, individuals with lower endowments are more likely to sort toward the polluted location. Formally, for a fixed environmental concern parameter α, there exists an endowment threshold $\bar{y}$, such that those choosing $\ell = 0$ have $y < \bar{y}$. Figure 1a illustrates this simple result. The red solid line represents the set of α and y of individuals who would be indifferent between the two location types. Points above this line represent individuals who would strictly prefer the cleaner location type ($\ell = 1$), and points below represent those who strictly prefer the more polluted location type ($\ell = 0$). The dashed horizontal line represents the fact that for a fixed α, there exists an endowment cutoff $\bar{y}$, above which individuals strictly prefer $\ell = 1$ and below which individuals strictly prefer $\ell = 0$. In words, all else equal, poorer people are more likely to live in more polluted areas. This maps to the standard sorting by income that has been well documented in the literature (e.g., Banzhaf and Walsh, 2008).

Another immediate implication of (1) is that for a given endowment, individuals

with less concern for environmental quality are more likely to sort toward the polluted location type. Formally, for a fixed endowment y, there exists a threshold $\bar{\alpha}$ for the environmental concern parameter such that those choosing $\ell = 0$ have $\alpha < \bar{\alpha}$. Similar to before, the dashed vertical line in Figure 1b illustrates this implication. In simple words, our model implies that after controlling for observable socioeconomic proxies for endowment (e.g., education, income, or wealth), individuals who live in more polluted areas must have lower degrees of concern for environmental quality.

A corollary and most important implication of the sorting model is that if minorities are disproportionately exposed to pollution compared to whites, even after controlling for various socioeconomic factors (as the aforementioned environmental justice literature has documented and as is the case in our data), then *minorities must have lower degrees of concern for environmental quality*. This is the key implication that motivates our subsequent empirical analysis.

3 Empirical analysis

3.1 Data

Our primary source of data on environmental concern is the environmental edition of the Gallup Poll Social Series, which is conducted in March of each year. Gallup provides individual-level responses to a variety of environmental issues. The key variables we use are the respondents' stated degrees of worry or concern[2] over air pollution and concern over water pollution. The respondents' levels of concern are coded as a great deal (-1), a fair amount (-2), a little (-3), or not at all (-4).[3] In additional analyses (to be described later), we also include a variable for the respondents' stated perception on the seriousness of global warming. Gallup also provides detailed social, economic, and political attributes, including respondents' locations (ZIP code and/or county), political leanings, education level, race, sex,

[2]Throughout, we will use the terms worry and concern interchangeably.

[3]We invert Gallup's original values (e.g., we convert a value of 2 to a value of -2). This way, a higher index intuitively represents a higher degree of concern.

age, and income level. In total, there are over 6,000 responses gathered from 2000 to 2020; ZIP code-level data is available beginning in 2008. Table A2 in the Appendix provides more details of the Gallup data.

For exposure to environmental pollution, we use the Environmental Protection Agency's (EPA) Risk-Screening Environmental Indicators (RSEI) dataset.[4] These data combine information on the location and amount of chemicals emitted from facilities that report to the Toxics Release Inventory (TRI) with chemical transport models and toxicity data to better reflect human exposure and health damages from TRI emissions. For a measure of pollution exposure for each respondent in our Gallup data, we use the average RSEI index of pollution for the respondent's county. A higher index means more pollution exposure.

Lastly, for additional control variables, we obtain the following: county-level data from 2010 to 2018 on total population sizes from the U.S. Census Bureau American Community Survey (ACS) 1-year estimates, county-level data from 2000 to 2019 on wages and employment from the Bureau of Labor Statistics Quarterly Census on Employment and Wages (QCEW), as well as the county-level median housing values obtained from the Decennial Census. Table A1 in the Appendix provides the summary statistics of our data.

For a preliminary look at the data, Figure 2 plots the time series of the average degrees of worry over air pollution (left panel) and over water pollution (right panel) by race. It reveals an interesting pattern: minority respondents, especially black and Hispanic, are on average more concerned about environmental quality than white respondents. Our subsequent analysis shows that this ranking remains even after we control for various socioeconomic differences between racial and ethnic groups.

[4]The data can be downloaded here: https://www.epa.gov/rsei.

3.2 Main result: heterogeneous environmental worries

We now formally investigate whether there are heterogeneous degrees of environmental concerns across race. Our main regression specification is as follows:

$$worry = \alpha_0 + \beta race + \gamma X + \alpha_{year} + \alpha_{state} + \epsilon, \tag{2}$$

where *worry* is the respondents' stated degree of concern about either air or water pollution, *race* is a dummy variable for whether the respondent is minority (we will also break down the minority dummy into finer racial groups), X is a vector of controls, α_{year} is the survey year fixed effect, and α_{state} is the fixed effect for the state in which the respondent lives.[5] Our controls include: stated employment status, degree of worry about unemployment risk, income, age, political ideology, education status, gender, marital status, and whether the respondent has children under 18 years old.

The key coefficient of interest is β. If β is zero, then it means that, after controlling for observable differences in socioeconomic factors and the relevant differences across states and time, there is no heterogeneity in the degree of environmental concern across race. If $\beta < 0$, then it means that minorities are *less* concerned about environmental pollution (as the sorting model in Section 2 predicted). If $\beta > 0$, then the reverse would be true: minorities are instead *more* concerned about pollution (the opposite of the model's prediction).

There is a potential omitted variable bias with regression (2), as it does not control for pollution exposure. If minorities are more exposed to pollution (as documented in the literature), then they would be naturally more worried about the quality of their environment. To help address this issue, we include the RSEI index for pollution exposure, measured at the county where each respondent lives. In addition, pollution exposure could be endogenous: individuals less concerned about the environment may choose to live in areas more exposed to pollution. To help address this issue, we use the RSEI index of pollution in 2000, before our survey data was collected,

[5] Our data does not have enough spatial variation across counties for us to include county fixed effects.

rather than concurrent pollution levels. This leads us to our second specification:

$$worry = \alpha_0 + \beta race + \delta \log(pollution_{2000}) + \gamma X + \alpha_{year} + \alpha_{state} + \epsilon, \qquad (3)$$

where $pollution_{2000}$ is the pre-sample county-level average RSEI pollution index.

Table 1 presents our main results. Column 1 reports the estimates for our main specification (2) for worry about air pollution. Column 2 further replaces the race dummy of whether the respondent is a minority with a race category for whether the respondent is black, Hispanic, Asian, or other. Columns 3 and 4 are similar to columns 1 and 2, except that they include the pollution control (specification (3)). Columns 5 to 8 then repeat the exercises in columns 1 to 4 for worry about drinking water pollution.

Throughout Table 1, we find a striking and robust pattern: all else equal, minorities are *more* concerned about pollution than whites. The estimated coefficients for β in columns 1, 3, 5, and 7 are statistically significant at the 1 percent level. They are also economically significant, with the magnitude of the estimated coefficients being about a quarter to a third of the standard deviation of worry variables. That is, the racial factor explains about a quarter to a third of the variation in environmental worries in our data. Columns 2, 4, 6, and 8 paint a similar picture: all else equal, different minority groups (especially black, Hispanic, and Asian) are more concerned about air and water pollution.

Some additional results are noteworthy. Income is negatively correlated with environmental worry. This could be partially because individuals with higher income have more resources to protect themselves from the perverse effects of pollution and are thus less worried. Furthermore, political ideology seems to matter: compared to moderates, liberals are more concerned, and conservatives are less concerned about environmental quality.

The apparent contradiction between our main empirical results and the main implication of our sorting model is informative. Our evidence suggests that sorting, especially the kind of sorting based on heterogeneous environmental concern, is unlikely a main driver of disproportionate exposure to air and water pollution. In

other words, lack of environmental concern cannot explain minority groups' relatively higher exposure to pollution.

3.3 Robustness checks

Our main result that minorities are more concerned about the environment than non-minorities is robust to a battery of checks, as reported in Appendix Table A3. We consider four robustness exercises to verify heterogeneity in environmental worries. First, we repeat the regression specification (3) controlling for Gallup-provided survey respondent weights. Gallup assigns each respondent a weighting factor to correct for non-response bias and unequal selection probability and makes its final survey representative of the U.S. population. Demographic weighting factors are computed according to the Census Bureau Current Population Survey (CPS). The first row of Table A3 shows that the coefficients on the minority variable remain positive and statistically significant after re-weighting each response.

Next, we consider replacing specification (3) with an ordered probit specification, as the *worryair* and *worrywater* response variables are encoded as ordinal rather than continuous quantities. In the ordered probit specification, the coefficients on the minority variable remain positive and significant, as shown in the second row of Table A3. We also attempt to control for individual-level savings and debt in specification (3) using two additional questions in the Gallup survey that ask respondents about their current levels of savings and debt, respectively. Additional information about respondents' savings and debt levels may better reflect respondents' wealth levels than their income alone. Unfortunately, data for these questions is only available between 2003 to 2005, hence the sample size for this specification is drastically reduced. These estimates, which lose statistical significance, are listed in row three of Table A3.

Lastly, we repeat regression (3) with an additional control for local employment growth, which may be correlated with both economic activity and pollution (for example, through the opening of new manufacturing sites). We use data on employment from the BLS Quarterly Census on Employment and Wages and define local

employment growth as the February (the month before the Gallup survey) over-the-year percent change in employment in each respondent's county. The fourth row of Table A3 shows the estimated coefficients, which are positive and statistically significant.

3.4 Heterogeneous exposure, revisited

Recall from the discussion of our model in Section 2, the motivation of our main empirical analysis in Section 3.2 hinges on the stylized fact that minorities are more exposed to pollution than their white counterparts. Even though the aforementioned environmental justice literature has documented this fact, a concern is that this heterogeneous pollution exposure may not be a feature of our data sample.

In this section, we confirm the fact that minorities are disproportionately exposed to pollution within the context of our survey data. Specifically, we revisit the race and exposure relationship, via the following specification:

$$\log(pollution) = \alpha_0 + \beta race + \gamma X + \alpha_{year} + \alpha_{state}, \tag{4}$$

where the left-side variable is the log of the average pollution index for the county in which the survey respondent lives and for the year in which the respondent was surveyed. As before, *race* is either a dummy for minority or a category variable for various racial groups. X is the vector of controls, which include the control variables as described in specifications (2) and (3). We further include the county-level housing price index as a control variable. To help reduce endogeneity concerns, we include the pre-sample housing price index from 2000.

Columns 1 and 2 of Table 2 report the estimates for equation (4). They show that, in our sample, minority groups, in particular black respondents, are more exposed to pollution relative to white respondents. This correlation resonates with the finding in the environmental justice literature. Our results thus confirm that there is uneven exposure to pollution in our data, as previously documented in the literature (e.g., Banzhaf et al. 2019).

There is a further implication of the sorting model. If those with a lower degree

of worry about environmental quality sort toward more polluted areas, as the theory would predict, then controlling for environmental worry should reduce the correlation between race and pollution in equation (4). To see if this is the case, we include the stated worry about air and water pollution as additional control variables on the right hand side of (4). Columns 3 and 4 of Table 2 report the estimates for these regressions. They show that the correlation between race and pollution exposure remains robust after controlling for environmental worry. The estimates for the race dummy, and especially the estimates for the black category, remain statistically significant. Their magnitudes are only slightly smaller than those in the corresponding columns 1 and 3.

3.5 Seriousness of global warming

We have documented that minorities are more concerned about *local* air and water pollution relative to white counterparts. But could it simply be because of a survey bias? For example, could it be because minorities are more likely to respond pessimistically to surveys about their outlooks? In other words, is the difference in stated degrees of worry largely "nominal?" This section will provide some additional results: they are also more concerned about *global* warming, and interestingly, their views about the cause and effects of global warming are also more aligned with the scientific consensus. These findings suggest that environmental problems are generally a more salient issue for minorities, and thus it is unlikely that the difference in degrees of worry is purely nominal.

We rerun our main specification (2) but replace worry over air or water with respondents' views about global warming. Gallup provides three useful variables: view of seriousness of global warming, whether human activities is the main cause of global warming, and whether global warming causes more intense hurricanes (see Table A2 for details about these variables). We also include worry about air and water as control variables.

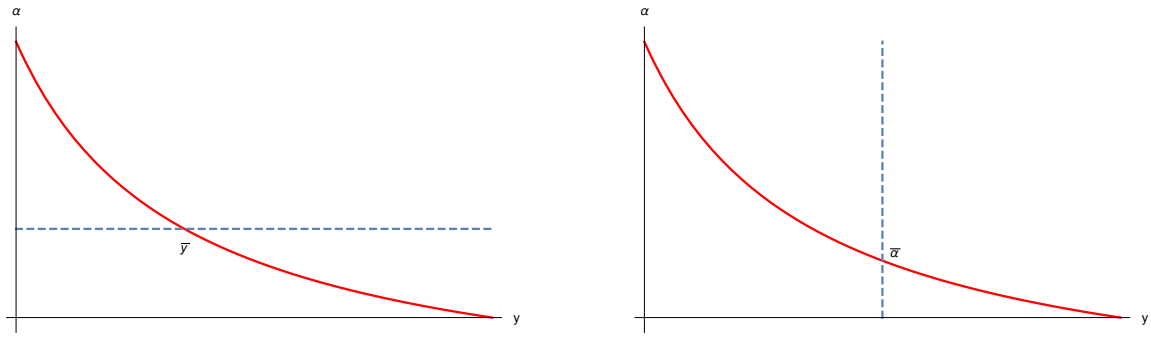
Table 3 reports the results. Column 1 shows that minorities are significantly more likely to worry about the seriousness of global warming (and there is correlation

between worry over local pollution and view over the seriousness of global warming). Column 2 shows that minorities are also more likely to think that emissions from human activities are the main cause of global warming. Similarly, column 3 shows that minorities are more likely to think that global warming increases the intensity of hurricanes. Together, columns 2 and 3 suggest that minorities' views on the cause and effects of global warming are more aligned with the scientific consensus.

4 Conclusion

We document a significant heterogeneity in stated concerns over air and water pollution across racial groups, even after controlling for differences in socioeconomic variables and pollution exposure. All else equal, minority respondents are *more* worried about pollution than white respondents. Our analysis implies that, conditional on socioeconomic factors such as income and education, uneven pollution exposure across racial groups cannot be fully explained by residential sorting with heterogeneous preferences for environmental quality. To our knowledge, our paper is the first to explicitly incorporate stated preferences for environmental quality to evaluate a potential sorting explanation for the well documented correlation between race and pollution exposure.

Our findings imply that other important factors besides heterogeneous preferences and heterogeneous economic resources could be at play in explaining uneven pollution exposure. The literature has suggested alternative theories relating to firm decisions, bargaining between various stakeholders, and political economy (see the survey in Banzhaf et al., 2019). For example, Christensen and Timmins (2018) argue that discrimination constrains neighborhood choices of minorities: minorities are more likely to be steered in their housing search towards less desirable neighborhoods, including areas that are more polluted. Going forward, we believe that it is important to empirically explore these alternative reasons behind uneven exposure.



(a) Sorting by endowment (b) Sorting by environmental concern

Figure 1: Equilibrium sorting. In both figures, the solid red line represents the set of endowment y and environmental preference parameter α of individuals who are indifferent between the two location types. Individuals strictly prefer the more polluted location ($\ell = 0$) if and only if the points associated with their y and α lie below this indifference line. The horizontal dashed line in Panel (a) represents the fact that for a fixed α, individuals choose $\ell = 0$ if and only if $y < \bar{y}$. Similarly, the vertical dashed line in Panel (b) represents the fact for a fixed y, individuals choose $\ell = 0$ if and only if $\alpha < \bar{\alpha}$.

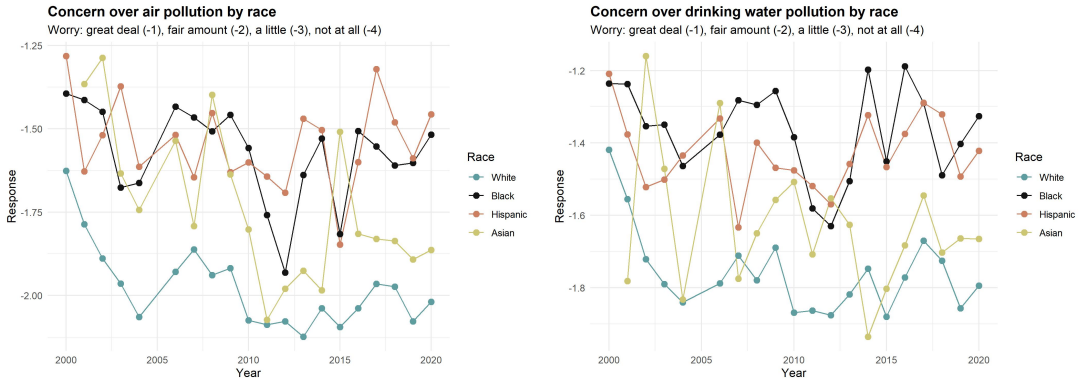


Figure 2: Average stated worry over air pollution or drinking water pollution, separated by race.

	worry air				worry water			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
minority	0.309***		0.274***		0.255***		0.244***	
	(0.0433)		(0.0368)		(0.0345)		(0.0275)	
black		0.335***		0.283***		0.347***		0.306***
		(0.0559)		(0.0498)		(0.0497)		(0.0401)
hispanic		0.319***		0.295***		0.192***		0.234***
		(0.0605)		(0.0516)		(0.0470)		(0.0274)
asian		0.288***		0.295***		0.243***		0.210***
		(0.0952)		(0.0771)		(0.0555)		(0.0618)
other		0.175**		0.126*		0.136		0.0297
		(0.0828)		(0.0735)		(0.0859)		(0.0817)
log pollution			0.0119**	0.0115**			0.000493	-0.000278
			(0.00521)	(0.00526)			(0.00528)	(0.00534)
income	-0.0122*	-0.0120*	-0.0138**	-0.0137**	-0.0167***	-0.0168***	-0.0183***	-0.0180***
	(0.00610)	(0.00610)	(0.00536)	(0.00531)	(0.00611)	(0.00613)	(0.00481)	(0.00481)
liberal	0.199***	0.196***	0.198***	0.196***	0.110***	0.109***	0.0797**	0.0777**
	(0.0285)	(0.0288)	(0.0265)	(0.0268)	(0.0335)	(0.0339)	(0.0300)	(0.0300)
conservative	-0.351***	-0.352***	-0.360***	-0.361***	-0.259***	-0.257***	-0.299***	-0.299***
	(0.0290)	(0.0289)	(0.0268)	(0.0266)	(0.0329)	(0.0337)	(0.0224)	(0.0229)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.201	0.201	0.190	0.190	0.169	0.171	0.163	0.164
N	8446	8446	6184	6184	8440	8440	6182	6182

Table 1: Main results: Disproportionate environmental worries. Other controls include stated employment status, degree of worry about unemployment risk, age, education status, gender, marital status, and status of having children under 18 or not. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

	log pollution			
	(1)	(2)	(3)	(4)
minority	0.194**		0.177*	
	(0.0895)		(0.0918)	
black		0.637***		0.620***
		(0.130)		(0.131)
hispanic		-0.234		-0.250
		(0.164)		(0.164)
asian		0.0321		0.0183
		(0.299)		(0.300)
other		-0.130		-0.143
		(0.339)		(0.337)
worry air			0.102	0.102
			(0.0722)	(0.0725)
worry water			-0.0370	-0.0406
			(0.0591)	(0.0598)
Other controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adjusted R-squared	0.0238	0.0290	0.0248	0.0299
N	3509	3509	3508	3508

Table 2: Disproportionate pollution exposure, revisited. Other controls include stated employment status, degree of worry about unemployment risk, income, age, education status, gender, marital status, political ideology, status of having children under 18 or not, and county-level housing price index for year 2000. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	(1) gw serious	(2) gw cause	(3) gw hurricanes
minority	0.179***	0.0313*	0.280***
	(0.0443)	(0.0180)	(0.0850)
worry air	0.216***	0.128***	0.206***
	(0.0157)	(0.00884)	(0.0504)
worry water	0.0636***	0.0343***	0.0950**
	(0.0171)	(0.0120)	(0.0470)
income	-0.0129**	-0.00593*	-0.0262
	(0.00608)	(0.00322)	(0.0163)
conservative	-0.375***	-0.255***	-0.319***
	(0.0381)	(0.0183)	(0.0788)
liberal	0.342***	0.114***	0.119
	(0.0267)	(0.0136)	(0.0952)
Other controls	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R-squared	0.317	0.285	0.278
N	8302	7591	535

Table 3: Views about global warming. First column: view of seriousness of global warming. Second column: belief over whether pollution from human activities is the main cause of global warming. Third column: belief over whether global warming causes more intense hurricanes. Other controls include stated employment status, degree of worry about unemployment risk, age, education status, gender, marital status, and status of having children under 18 or not. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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Online Appendix

Table A1: Mean, conditional mean, and standard deviation of main variables

	mean	std	mean, minority	mean, white
worry air	-1.965	0.937	-1.627	-2.066
worry water	-1.765	0.930	-1.458	-1.856
global warming serious	0.655	0.674	0.817	0.607
worry unemployment	-2.224	1.027	-2.034	-2.281
employed	0.938	0.242	0.900	0.949
income indicator	6.437	2.519	5.701	6.672
age	44.670	14.139	39.630	46.175
conservative	0.392	0.488	0.322	0.413
liberal	0.230	0.421	0.264	0.220
some college	0.277	0.447	0.282	0.275
college graduate	0.246	0.431	0.218	0.255
postgraduate	0.240	0.427	0.190	0.255
female	0.424	0.494	0.431	0.421
has child	0.397	0.489	0.472	0.374
married	0.573	0.495	0.430	0.616
white	0.770	0.421	0.000	1.000
black	0.089	0.285	0.386	0.000
hispanic	0.093	0.291	0.406	0.000
asian	0.027	0.161	0.116	0.000
other race	0.021	0.144	0.092	0.000
savings index	-2.734	1.090	-2.771	-2.726
debt index	-3.467	1.088	-3.479	-3.464
pollution indicator (RSEI)	13935	148364	11138	14661

Table A2: Gallup variable definitions

Variable Name	**Description**	**Scale**
envworry air	Worry: Air Pollution	A great deal (-1), A fair amount (-2), Only a little (-3), Not at all (-4)
envworry drnkwater	Worry: Pollution of Drinking Water	A great deal (-1), A fair amount (-2), Only a little (-3), Not at all (-4)
gw serious	View of Seriousness of Global Warming	Generally exagerrated (1), Generally correct (2), Generally underestimated (3)
gw cause	Main Cause of Global Warming	Effects of pollution from human activities (-1), Natural changes in environment (-2)
gw hurricane	Global Warming Contribution to Strengthened Hurricanes	Major cause (-1), minor cause (-2), not a cause (-3)
employ	Current employment status	Employed full-time or employed part-time (1), Unemployed but looking for work (0)
worry unemploy	Worry: unemployment	A great deal (-1), A fair amount (-2), Only a little (-3), Not at all (-4)
income	Household income	Less than $10K(1)$,10-$20K(2)$,20-$30K(3)$,...,250k-$499k(10)$,500K and over (11)
conservative	Conservative political ideology dummy variable	1/0
moderate	Moderate political ideology dummy variable	1/0
liberal	Liberal political ideology dummy variable	1/0
high school	High school education or less education level dummy variable	1/0
some col	Some college education level dummy variable	1/0
col grad	College graduate only education level dummy variable	1/0
post grad	Post-graduate education level dummy variable	1/0
white	Non-hispanic white race dummy variable	1/0
black	Non-hispanic black race dummy variable	1/0
hispanic	Hispanic race dummy variable	1/0
asian	Asian race dummy variable	1/0
other race	Other race dummy variable	1/0
male	Male gender dummy variable	1/0
female	Female gender dummy variable	1/0
other_race	Other race dummy variable	1/0
male	Male gender dummy variable	1/0
female	Female gender dummy variable	1/0

	(1) worry air	(2) worry water
Weighted regression	0.267***	0.236***
	(0.0372)	(0.0352)
Ordered probit	0.400***	0.401***
	(0.0533)	(0.0398)
Savings, debt controls	0.186	-0.00608
	(0.129)	(0.110)
Local employment growth controls	0.275***	0.244***
	(0.0368)	(0.0275)

Table A3: Robustness checks. Table lists coefficients on the minority dummy variable. All controls from the main specification in Table 2 are included. Row 1 weights each response by its Gallup-provided weight factor, row 2 uses an ordered probit, row 3 controls for respondents' self-reported savings and debt, and row 4 controls for employment growth in respondents' counties. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.