Voting with your senses? The impact of local environmental conditions on preferences for environmental regulation

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Abstract: Research has identified the characteristics of demographic groups that favor environmental regulation. However, little is known about the role that local environmental conditions have on preferences for environmental regulation. Using census block group data on voting outcomes, political ideology, and demographic and economic characteristics, we estimate the impact of proximity to toxic facilities and local air quality conditions on the share of pro-environmental votes on California's 2010 Proposition 23, which aimed to suspend the California's Global Warming Act of 2006. We find that the share of pro-environmental votes is 0.71 percentage points higher in census block groups that have a toxic facility nearby and one percentage point higher in areas with poor air quality. If registered voters in close proximity to these facilities are able to influence environmental policies with their voting behavior, interested parties can target these areas to increase voter turnout and gain support for environmental legislation.

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Introduction

Economists have shown a great deal of interest in understanding individual attitudes toward environmental regulation and green consumption. One outcome of such research is that concern for the environment is positively associated with education, income, and ideology (Deacon & Shapiro 1975; Elliot et al. 1995; Fishel 1975; Selden and Song 1995; Kahn 2002). One explanation is that people with higher income and higher education have solved their basic material needs and thus are free to focus on the more aesthetic aspect of their existence. This assumes that concern for environmental quality is a type of luxury and can only be consumed after the more basic material needs such as food, shelter, and economic security are met (McFadden & Leonard 1992). However, this approach does not take into account the role of experience with pollution on preference for environmental regulation.

Indeed higher income groups tend to live in the most desirable residential places while the poor and minorities live in the least desirable places, such as those close to industry, commerce, and freeways. It has been argued that those who experience more pleasant residential conditions and recreational environments are more concerned about the deterioration of their physical environment. Conversely, it is also possible that those located near polluting facilities, may be more sensitive to environmental concerns because of their firsthand experience with environmental pollution. However, the literature so far has not tested the impact of local environmental conditions on preferences for environmental regulation. In this paper, we ask how experience with environmental pollution influences votes on legislation for environmental regulations.

We use a novel dataset to study the impact of local environmental conditions on demand for environmental regulation in California. California has been a leader in carbon regulation and has put into place several pieces of legislation to reduce carbon emissions. Most notably is California's AB 32 that requires California to reduce greenhouse gas emissions to 1990 levels by the year 2020. This bill was put to the test in 2010 when California voters were faced with Proposition 23, which aimed to suspend AB 32. We use observed voting outcomes on Proposition 23 to study the determinants of support for environmental regulation in California. This data is combined with census block group level demographic, economic, locational, and political ideology characteristics to test whether people living in areas that are closer to toxic

facilities or have poor air quality are more likely to support environmental regulation by voting against Proposition 23. Our results indicate that voters who stand to benefit the most from environmental regulation are more likely to support regulation.

Using data from 23,039 block groups in California, we find that voters near toxic facilities are more likely to support environmental regulation compared to voters that are further away. Controlling for household, location, employment characteristics and political ideology, our results show that the share of pro-environmental votes is 0.71 percentage points higher in block groups with a toxic facility. Our results show that voters in areas with poor air quality are also more likely to support environmental regulation. The share of pro-environmental votes is one percentage point higher in these areas. Similar to Holian & Kahn (2015), Kahn (2002), and Wu & Cutter (2011), we also find that areas that are densely populated, with larger shares of minorities, low-income, educated, and liberal voters are more likely to support environmental regulation. Lastly, we find that political ideology is a strong predictor of preferences for environmental regulation. This result contrasts what is found in Kahn & Matsuaka (1997) and Peltzman (1984).

Literature Review

Previous work on preferences for environmental regulation has focused on three main areas. First, much work has investigated how the demographic and economic characteristics of a population influence voting patterns on environmental propositions. Much of this literature builds on the framework of Deacon & Shapiro (1975) and estimates demand for environmental regulation using aggregated data on binding voting referenda. Examples of recent work in this area include Holian & Kahn (2015), Kahn (2002), and Wu & Cutter (2011). A consistent theme that emerges from this literature is that areas that are densely populated, with larger shares of minorities, low-income, educated, and liberal voters are more likely to support environmental regulation. While the most recent literature has found a strong liberal voter effect, early research

in this area found that economic factors, not political ideology, were better predictors of preferences for environmental regulation (Kahn & Matsuaka 1997; Peltzman 1984).[1]

A second area of research estimates the influence of constituent interests on the voting patterns of their constituents. The League of Conservation Voters ranks each member of congress based on their voting position on a variety of environmental bills. As part of a broader study, Kahn (2002) uses state-level data to explain variation in these scores. When state fixed effects are added, he finds that representatives of states with higher incomes, more educated, and more minority voters have higher environmental scores. Representatives of states where environmental regulation would be more costly have lower scores.

Cragg et al. (2013) studies voting outcomes on the 2009 congressional vote on the American Clean Energy and Security Act to determine the impact of constituent interest on the voting outcomes of their representatives. Using data from the League of Conservation voters and Voteview, they find that representatives from richer liberal districts with low carbon footprints are more likely to vote for environmental regulation. Representative from districts where industrial emissions represent a larger share of greenhouse gas emissions are more likely to oppose environmental regulation. This results supports early work suggesting that the price of legislation, in this case costs to the representatives' constituents, is an important factor in voting behavior (Peltzman 1984).

This literature has relied on aggregated voting data and household-level surveys. For example, Holian & Kahn use both aggregated voting data and to study demand for environmental regulation and to see if stated preferences for environmental regulation can predict actual voting behavior. Fischel (1979) conducted phone surveys of 359 voters in New Hampshire to better understand the determinates of a binding referendum that would have allowed a pulp mill to be located within a town's borders. In our study, we follow the previous literature and use census block level data on voting outcomes, demographic, economic, and

[1] Dunlap & McCright (2008) provide evidence that Democrats and Republicans have very different views on climate change. Views on a variety of topics such as media coverage on climate change, and whether or not climate change is exacerbated by humans are discussed. In every scenario, they find that Republicans are less likely to acknowledge the existence and seriousness of climate change.

locational characteristics to estimate the impact of local environmental conditions on demand for environmental regulation.

The third body of work that relates to our study touches on the topic of environmental justice. Arora & Cason (1999) use zip code level demographics to explain toxic releases reported in the Environmental Protection Agency's Toxic Release Inventory. Releases are correlated with demographic and economic characteristics, but more interestingly, releases are correlated with variables that indicate local residents are more likely to engage in the political process.

Shadbegian & Grey (2009) study the influence of demographic and economic characteristics on regulatory inspections and enforcement for 1,616 manufacturing plants in the United States. They find that demographic and economic characteristics are largely insignificant in determining regulatory activity. Not surprisingly, they also find that manufacturing plants in more politically active and liberal areas do face more regulatory actions. However, there is not research to date about how proximity to polluting facilities influence votes for environmental regulation.

This paper adds to the growing body of literature on the demand for environmental regulation by using a novel dataset that combines census block group voting and demographic data with measures of local environmental quality. While previous work has used demographic and economic characteristics to estimate demand for environmental regulation, we ask a slightly different but very important question. Holding constant the demographic, economic, location, and political ideology of an area, do local environmental conditions impact support for environmental regulation? Our primary hypothesis is that voters that live in areas where environmental conditions are poor will better understand the benefits of environmental regulation and will be more likely to support environmental regulation.

Background on Legislation

On September 27, 2006 Governor Arnold Schwarzenegger signed into law the California Global Warming Solutions Act of 2006, commonly referred to as AB 32. This law requires the California Air Resources Board (CARB) to reduce greenhouse gas emissions to 1990 levels by the year 2020. This is equivalent to a 15% reduction in emissions expected under a "business as usual" scenario. While AB 32 did not specify what actions would be taken to achieve this goal,

the law did require the CARB to develop a scoping plan to detail their strategy for meeting their goals. At the forefront of CARB's efforts to meet these goals is the California Cap-and-Trade Program that will put a firm limit on emissions. CARB estimates that under the cap-and-trade program there will be a reduction of 147 million metric tons of carbon dioxide equivalent by 2020 compared to the "business-as-usual" estimates.[2]

On November 2, 2010, voters in California voted on Proposition 23, that, if passed, would have suspended the implementation of AB 32 until unemployment drops to 5.5% or less for four consecutive quarters. Since unemployment in California has not dropped below 5.5% since July 2007,[3] it is clear that this proposition would have been detrimental to the goals of AB32. Supporters of Proposition 23 claimed that suspending AB32 could result in increased economic activity leading to increased revenues as well as lower energy costs. However, this proposition was defeated with 61.6% of voters in California opposing it and CARB has continued to pursue its goals set in AB32. We use voting outcomes on Proposition 23 to measure how local environmental conditions influence support for environmental regulation in California.

Because we are interested in how local environmental conditions influence support for environmental regulation, we also use a non-environmental proposition, Proposition 19, to confirm that our results are not due to a spurious correlation between local environmental conditions and preferences for environmental regulation. Proposition 19 would have legalized marijuana under California law and would have allowed local governments to regulate and tax the commercial production, distribution, and sale of marijuana. After controlling for demographic characteristics and political ideology, we expect no statistically significant correlation between local environmental conditions and voting behavior on Proposition 19. If confirmed, this provides additional evidence that a voter's local environmental conditions do influence their preferences for environmental regulations.

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[2] For this and other information about CARB's plans to reduce emissions, see http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf.

[3] Historical unemployment data can be found at the Bureau of Labor Statistics Local Area Unemployment Statistics website. http://www.bls.gov/lau/.

Data

We estimate the impact local environmental conditions on preferences for environmental regulation on voting behavior in California using data from several different sources. First, data describing voter registration and voting outcomes were collected from the University of California Berkeley's Statewide Database.[4] These data include the number of registered voters by party and the number of yes and no votes for Propositions 19 and 23. This dataset was used to estimate the percentage of voters that support each proposition as well as the percentage of liberal voters in each Census block group. In what follows, liberal refers to voters that are registered Democrat, Green, Peace and Freedom, or Natural Law party members.

Next, demographic data were collected from the 2006-2010 American Community Survey 5-year estimates. The set of demographic variables describe the income, education, race, age, housing, and occupations for each census block group in the sample. Each block group's centroid was calculated using the Census's TIGER/Line shapefiles and was used to estimate the distance to the nearest micro/metropolitan area.

Data describing our primary variables of interest were collected from the Toxic Release Inventory (TRI) of the Environmental Protections Agency (EPA). First, the TRI.NET data tool was used to query a vast amount of data on facility-level toxic releases throughout the United States. Data were collected on each TRI facility in California for the year 2010. This data included each firm's name, latitude and longitude, and a summary of on- and off-site toxic releases. The latitude and longitude information was used to map each facility into a census block group as well as distance from each block group centroid to the nearest TRI facility.

In addition, data about air pollution was also collected from the EPA's Air Data website that provided monitor level air pollution data. Daily PM 2.5 data was extracted and was merged to census block groups using the block group's centroid and the latitude and longitude of each monitor.[5] For each day in 2010, monitor-level air quality data for PM 2.5 was collected and summarized to determine whether the air quality index (AQI) for PM 2.5 exceeded 100. This is

[4] This data can be found at http://statewidedatabase.org.

[5] The average block group is seven miles from the nearest monitor.

the level at which the EPA has determined air quality conditions are unhealthy for sensitive groups.[6]

Summary statistics are shown in Table 1. Both Propositions 19 and 23 failed to gain a majority of the votes with the average block group voting 53% and 63% against the propositions, respectively. The average block group has a population with 47% being identified as liberal.[7] The average block group's centroid is just over three miles from the nearest TRI facility; however, there is a significant amount of variation in distance across California. The nearest centroid is 0.01 miles away and the farthest is just over 100 miles. Of the 23,039 block groups in the sample 691 (3%) have a TRI facility within their boundaries. Additionally, 26% of block groups experienced air quality levels that the EPA has determined to be unhealthy for sensitive groups. It is in these areas that we expect to find stronger support for environmental regulation. The average block group has a population with 30% having a bachelor's degrees or higher, 35% Hispanic, and 32% aged between 18-34 years old. The average block group is approximately 21 miles from the nearest micro/metropolitan statistical area and has a population density of just over 9,000 people per square mile. Service and sales and office jobs make up 18% and 25% of the sample, respectively.

Empirical Model

A simple correlation between the location of toxic facilities and support for environmental regulation can been seen in Figure 1 and it appears that support for regulation is positively correlated with the location of toxic facilities. While this figure is useful to visualize the relationship we seek to estimate, it fails to hold constant demographic and economic characteristics or political ideology of the voters. We formally estimate the impact of local environmental conditions on the voting decisions of California residents using the following specification:

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[6] Air quality data was gathered from the Environmental Protection Agency's Air Data website (http://aqsdr1.epa.gov/aqsweb/aqstmp/airdata/download_files.html).

[7] While this number appears to be smaller than expected, the average block group has 20% of voters that declined to state their party when registering to vote. It is likely that some of these voters would vote in a way similar to those we have identified as liberal.

$$\%\, Vote\ No_{ij} = \beta_i TRI_j + \alpha_i x_j + \gamma_i v_j + \delta_i z_j + \epsilon_{ij}. \quad (1)$$

The dependent variable measures the percentage of census block group j that voted no on Proposition i. The share of no votes are used since a no vote on Proposition 23 is the "pro-environmental" vote indicating support for environmental regulations. A no vote for Proposition 19 indicates opposition to legalizing marijuana related activities.

TRI_j is a vector that describes each census block group's proximity to a TRI facility. This variable is measured two ways. First, a dummy variable is included that indicates whether or not a TRI facility lies within block group j. Since the median block group in the sample has an area of approximately 0.21 square miles, it is highly likely that these facilities are visible to the voters in that area. Second, a vector of distance variables is included that measures distance to the nearest TRI facility. We use quarter mile distance dummy variables to allow distance to the nearest TRI facility to have a non-linear impact on voting behavior. In the final specification, we replace TRI_j with a dummy variable equal to one if the air quality index for PM 2.5 has exceeded 100.

We also follow closely the empirical specification of Holian and Kahn (2015) and include a vector of demographics, x_j, and a measure of each census block group's political ideology, v_j. Since voters that work in a nearby TRI facility may be less likely to vote for environmental regulation if they fear that increased regulation may impact their future employment, we also include block group level employment characteristics, z_j. County fixed effects are included in each specification and standard errors are clustered at the county level.

The data and empirical model described above will be used to test the hypothesis that support for environmental regulation will be higher in areas where local environmental conditions are poor. Since the dependent variable measures support for Proposition 23, we expect that $\beta_{Prop\ 23} > 0$ and $\beta_{AQI>100} > 0$. We expect to find no statistically significant correlation between local environmental conditions and voting on Proposition 19.

Results

Results from the primary empirical specification shown above in equation (1) are presented in Table 2. It is important to note that a no vote on Proposition 23 is a pro-

environmental vote - *positive coefficients* indicate *stronger support for environmental regulation* and negative coefficients indicate less support. The results show that block groups in California that have a TRI facility within their boundaries are more likely to support environmental regulation compared to block groups without a TRI facility. The percentage of no votes on Proposition 23 in block groups with a TRI facility is 1.3 percentage points higher than those without. This result is consistent with our hypotheses that areas in which the benefits of environmental regulation are more salient will be more likely to support environmental regulation. Without controlling for political ideology in Column 1, the influence of demographic characteristics on preferences for environmental regulation is consistent with previous literature (Holian & Kahn 2015; Kahn 2002; Wu & Cutter 2011). Areas with a higher percentage of educated households, black residents, older residents, and densely populated areas are more likely to support environmental regulation. Areas with higher percentages of high income, Asian, and owner-occupied households, and areas further from a city center are less likely to support environmental regulation.[8]

Our results are robust to the inclusion of a variable representing the share of liberal voters in each block group (column 2). After controlling for political ideology, the percentage of pro-environmental votes is only 0.71 percentage points higher in block groups containing a TRI facility but still significant at the 1% level. A one standard deviation increase in the percentage of liberals in a block group increase the percentage of pro-environmental votes by 9.03 percentage points. This result also shows that proximity to a TRI facility is correlated with political ideology - the impact of a TRI facility on voting outcomes is 44% smaller after controlling for ideology. The strong impact of political ideology is in contrast to earlier work on preferences for environmental regulation (Kahn & Matsuaka 1997; Peltzman 1984).

As a robustness check, the impact of a nearby TRI facility on voting outcomes for a non-environmental proposition were also estimated. The results from this robustness test are shown in columns 3 and 4 of Table 2. As expected, no statistically significant correlation is found between voting outcomes on Proposition 19 and having a TRI facility nearby. This result provides further

[8] Following Wu & Cutter (2011), we estimated additional specifications that included a quadratic in income. Support for environmental regulation remained to be lower for high-income block groups and the impact of TRI facilities on voting outcomes remained robust.

reassurance that the estimates in Columns 1 and 2 in Table 2 are driven by the presence of a nearby TRI facility and not unobserved variables that are correlated with the location of TRI facilities.

The results in Table 2 show that support for environmental regulation is higher in block groups that have a TRI facility than those without. The results presented in Figure 2 go a step further and allow proximity to a TRI facility to have a non-linear impact on voting decisions. If the presence of a nearby TRI facility makes the benefits of environmental regulation more salient to voters, it is reasonable to expect that areas nearest to a facility will show stronger support for regulation than those slightly further away. The results in Figure 2 support this hypothesis. Using one-quarter mile distance dummy variables, the results in Figure 2 show that support for environmental regulation is highest in block groups that are almost adjacent to a nearby TRI facility and that support drops as distance to a TRI facility increases.[9] The percentage of pro-environmental votes is 1.46 percentage points higher in block groups that are within zero to one-quarter miles from the nearest TRI facility compared to block groups that are more than three miles away. This effect falls to 0.61 percentage points higher for block groups that are 2.5 to 2.75 miles away from the nearest TRI facility. While not shown in Figure 2, the same specification was estimate for votes on Proposition 19. After controlling for block group characteristics and political ideology, none of the twelve distance dummy variables, independently or jointly, are significantly correlated with voting outcomes on Proposition 19.[10] Again, these results provide additional evidence that differences in voting outcomes are being driven by the presence of nearby TRI facilities.

In our final specifications we estimate regressions similar to those presented above but include a dummy variable indicating whether or not the air quality index (AQI) in a given block group has reached 100. This is the level at which the EPA states that air quality conditions are unhealthy for sensitive populations. Much like those that are in close proximity to a TRI facility, we argue that the benefits of environmental regulation are more salient to those in areas with poor air quality and that these areas will show stronger support for environmental regulation. The results are presented in Table 3. After controlling for block group population characteristics and

[9] The coefficients that are displayed in Figure 2 are provided in appendix Table A1 in Column 2. The base category is a block group that is more than 3 miles from the nearest TRI facility.
[10] These coefficients are provided in Table A1, Column 4. The P-value on the test of joint significance is 0.15.

political ideology, block groups that are in areas with poor air quality do show stronger support for environmental regulation than block groups with better air quality. The percentage of pro-environmental votes is about one percentage point higher in areas where the AQI has exceeded 100. Once again, the local environmental conditions are not correlated with voting outcomes on Proposition 19.

This result provides additional evidence that voters' local environmental conditions do influence preferences for environmental regulation. It is also worth noting that the impact of poor air quality on the share of pro-environmental votes is stronger (0.267 percentage points) than the impact of a TRI facility. There are two reasons why this result is sensible. First, the presence of a nearby TRI facility will make the benefits of environmental regulation more tangible to voters. However, these facilities may also provide additional benefits for the community that bias the impact of these facilities downwards. Poor air quality can be a result of the local TRI facilities but also traffic conditions, weather patterns, and other unobservable determinants that are not captured through a dummy variable indicating the presence of one of these facilities. Lastly, air pollution is in the official title of Proposition 23 so it is very likely that voters see a more direct link between air quality conditions and the outcome of Proposition 23 than the presence of a TRI facility.

Discussion and Conclusion

In this paper, we have attempted to answer the following question: do local environmental conditions influence support for environmental regulations? After controlling for demographic, occupation, location, and political ideology, our results show that local environmental conditions do influence support for environmental regulations. We combined voting data on California's Proposition 23 with data from the EPA's TRI database and Air Data and found that support for environmental regulation is higher near TRI facilities and in areas with poor air quality. Pro-environmental votes on Proposition 23 were 0.71 and one percentage points higher in areas near a TRI facility or with poor air quality, respectively.

Depro et al. (2015) show that minorities and low-income households locate in areas with higher levels of pollution not because they do not value environmental quality, but because they are willing to trade-off less to get it. Our research suggests that while a household may not reveal

preferences for environmental quality by locating in less-polluted areas, households in polluted areas demonstrate their desire for environmental quality through the voting process. There are several reasons that might support these findings. First, there might be a difference between preferences for environmental quality and preference for environmental regulation. That is to say, preferences for environmental quality can be exerted through location decisions, purchase decisions and voting decisions. It is indeed possible to choose to locate in a polluted area and still vote for environmental regulation, to clean up such an area. Second, those located near toxic facilities may have first-hand experience with pollution and might expect regulation to improve not only their quality of life but also the value of their home.

There is therefore reason for optimism about the future of the environmental justice movement and the mainstream environmental movement. Indeed, research in this area indicate that engaged citizens in polluted areas can have a significant impact on the fate of their environment. For example, research shows that Superfund sites in areas where voters are more engaged in the political process (voter turnout and collective action) were cleaned-up faster (Sigman, 2001), and were under more stringent cleanup standards (Viscusi & Hamilton 1999).

We estimated several additional specifications to ensure the robustness of our results. First, we included a set of one-quarter mile distance dummy variables to allow distance to a TRI facility to have a non-linear impact on voting outcomes. In this specification, block groups that were adjacent to a TRI facility show stronger support for environmental regulation than those that are slightly further away. Second, we re-estimated each specification using the percentage of no votes for a non-environmental proposition to ensure that our results were not spuriously correlated with voting outcomes on Proposition 23. In each specification, none of our measures of local environmental quality were correlated with votes to legalize marijuana in California. Each of these robustness tests provides evidence that voters are aware of local environmental conditions and that their environment does shape their preferences for environmental regulation.

This study is not without limitations. First, because of data constraints, all data had to be aggregated to the census block group. In the ideal study, we would collect data at the household or individual level so that a more precise set of demographic controls could be included. Second, we assumed that outreach efforts were uniform across all block groups in California. If information about the consequences of Proposition 23 was targeted more aggressively towards

areas with poor environmental conditions our results will be biased upwards. Lastly, because we only have votes on a single environmental proposition, we were limited to using a cross-sectional estimation strategy. Future work should measure changes in local environmental conditions and how these changes impact preferences for environmental regulation.

Our results support the hypothesis that local environmental conditions influence preferences for environmental regulations. This work complements recent work that has focused on the influence of community characteristics on voting outcomes of legislators (Cragg et al., 2013; Kahn, 2002) and the influence of household demographics on voting outcomes (Holian & Kahn, 2015; Kahn, 2002; Wu & Cutter, 2011). Our results have important implications for the future of environmental regulation. First, those interested in passing environmental regulations should place a stronger emphasis on areas where local environmental conditions are poor. Since propositions in California require the support of a simple majority of voters to pass, these areas could provide the marginal votes needed to pass environmental regulations, or in the case of Proposition 23, protect existing regulation. Second, firms and policy makers should not mistake a household's decision to locate in an area with poor environmental conditions as a signal of weak preferences for environmental quality and neglect to reach out to this group of voters. While they may have a lower willingness to pay to avoid pollution (Depro et al. 2015), households in areas with poor environmental conditions reveal their preferences for environmental quality by voting for the environment on binding referenda. These often-marginalized households could have a significant impact on the future of environmental regulation that affects households well beyond their local jurisdiction.

References

Arora, Sema, and Timothy N. Cason. (1999). "Do community characteristics influence environmental outcomes? Evidence from the toxic release inventory." Southern Economic Journal 65(4): 691-716.

Cragg, Michael I., Yuyu Zhou, Kevin Gurney, and Matthew E. Kahn. (2013). "Carbon geography: The political economy of congressional support for legislation intended to mitigate greenhouse gas production." Economic Inquiry 51(2): 1640-1650.

Deacon, Robert and Perry Shapiro. (1975). "Private preference for collective goods revealed through voting referenda." American Economic Review 65(5): 943-955.

Depro, Brooks, Christopher Timmins, and Maggie O'Neil. (2015). "White flight and coming to the nuisance: can residential mobility explain environmental injustice?" Journal of the Association of Environmental and Resource Economists 2(3): 439-468.

Dunlap, Riley E., and Araon M. McCright. (2008). "A widening gap: Republican and Democratic views on climate change." Environment: Science and Policy for Sustainable Development 50(5): 26-35.

Elliot, Euel, James L. Regens, and Barry J. Seldon. (1995). "Exploring variation in public support for environmental protection." Social Science Quarterly 76(1): 41–52.

Fischel, William A. (1978). "Determinants of voting on environmental quality: A study of a New Hampshire pulp mill referendum." Journal of Environmental Economics and Management 6(2): 107-118.

Holian, Matthew J., and Matthew E. Kahn. (2015). "Household demand for low carbon public policies: Evidence from California." Journal of the Association of Environmental and Resource Economists 2(2): 205-234.

Kahn, Matthew E. (2002). "Demographic change and the demand for environmental regulation." Journal of Policy Analysis and Management 21(1): 45-62.

Kahn, Matthew E., and John G. Matsusaka. (1997). "Demand for environmental goods: Evidence from voting patterns on California initiatives." Journal of Law and Economics 40(1): 137-173.

McFadden, Daniel L. and Gregory K. Leonard. (1992). "issues in the contingent valuation of environmental goods: Methodologies for data collection and analysis." In Contingent Valuation: A Critical Assessment. Cambridge Economics, Inc.

Peltzman, Sam. (1984). "Constituent interest and congressional voting." Journal of Law and Economics 27(1): 181-210.

Selden, Thomas M., and Daqing Song. (1995). "Neoclassical growth, the J curve for abatement, and the inverted U curve for pollution." Journal of Environmental Economics and Management 29(2): 162–168.

Shadbegian, Ronald J., and Wayne B. Gray. (2009). "Spatial patterns in regulatory enforcement: Local tests of environmental justice." Working Paper # 09-02. National Center for Environmental Economics.

Sigman, Hilary. (2001) "The pace of progress at superfund sites: Policy goals and interest group influence." Journal of Law and Economics 44(1):315-343.

Wu, Xiaoyu, and Bowman Cutter. (2011). "Who votes for public environmental goods in California? Evidence from a spatial analysis of voting for environmental ballot measures." Ecological Economics 70(3): 554-563.

Tables and Figures

Table 1: Summary Statistics

Variable	Mean	S.D.	Min	Max
% No Votes on Prop 19	53.42	10.35	12.2	86.96
% No Votes on Prop 23	62.84	11.98	16.67	100
% Democrat, Green, Peace and Freedom, or Natural Law	47.22	13.83	8.29	88.40
Miles to Nearest TRI Facility	3.31	5.09	.01	101.44
TRI Facility in Block Group	.03	.18	0	1
PM 2.5 AQI>100	.26	.44	0	1
Average Household Income	82.57	45.67	9.73	68.26
% Bachelor's Degree or Higher	29.61	21.45	0	100
% Black	6.03	11.56	0	100
% Asian	12.19	15.84	0	100
% Other	18.71	15.95	0	95.51
% Hispanic	34.51	28.04	0	100
% 18-34 Years Old	31.7	14.21	0	100
% 65 Years or Older	15.69	10.69	0	100
% Owner Occupied	59.07	27.49	0	100
ln(1+Miles to CBSA)	2.91	.64	0	4.62
ln(1+Population Density)	8.41	1.64	.08	12.33
% Service	17.56	10.88	0	100
% Sales and Office	25.15	9.80	0	100
% Natural Resources, Construction, and Maintenance	10.34	9.72	0	83.2
% Production, Transportation, and Material Moving	11.27	9.72	0	75.09

Notes: Data represent 23,039 census block groups in California.

Table 2: Impact of TRI Facilities on Voting Outcomes

VARIABLES	% No Votes on Prop 23	% No Votes on Prop 23	% No Votes on Prop 19	% No Votes on Prop 19
Has a TRI Facility	1.254***	0.706***	-0.137	0.236
	(0.337)	(0.149)	(0.282)	(0.263)
ln(Average Income)	-4.573***	-0.940*	4.891***	2.412***
	(1.414)	(0.481)	(1.272)	(0.710)
% Bachelor's Degree or Higher	0.236***	0.147***	-0.155***	-0.0937***
	(0.0205)	(0.0124)	(0.0205)	(0.0135)
% Black	0.173***	-0.0953***	0.0163	0.200***
	(0.0188)	(0.00974)	(0.0331)	(0.0475)
% Asian	-0.0336**	-0.00965	0.225***	0.208***
	(0.0152)	(0.00888)	(0.0169)	(0.0138)
% Other	0.00515	0.000577	-0.00716	-0.00405
	(0.0108)	(0.00520)	(0.0110)	(0.00988)
% Hispanic	0.114***	-0.0379***	0.0874***	0.191***
	(0.00940)	(0.00696)	(0.00888)	(0.00981)
% 18-34 Years Old	0.0215	0.0173**	-0.0455***	-0.0426***
	(0.0133)	(0.00739)	(0.0157)	(0.0116)
% 65 Years or Older	0.0459**	0.0107**	0.133***	0.157***
	(0.0175)	(0.00484)	(0.0137)	(0.00701)
% Owner Occupied	-0.0329***	-0.0367***	0.0756***	0.0782***
	(0.00806)	(0.00312)	(0.00931)	(0.00593)
ln(1+Miles to CBSA)	-2.689**	-1.242**	1.315	0.327
	(1.105)	(0.583)	(1.059)	(0.909)
ln(1+Population Density)	1.552***	0.663***	-0.357**	0.249**
	(0.160)	(0.0790)	(0.162)	(0.112)
% Service	-0.0127	-0.000270	-0.0111	-0.0195*
	(0.00979)	(0.00755)	(0.0128)	(0.0113)
% Sales and Office	-0.0672***	-0.0250***	0.0735***	0.0447***
	(0.0105)	(0.00521)	(0.0154)	(0.0103)
% Natural Resources, Construction, and Maintenance	-0.0496***	-0.0622***	0.0661***	0.0747***
	(0.0186)	(0.0123)	(0.0143)	(0.0155)
% Production, Transportation, and Material Moving	0.00428	-0.0222*	0.0677**	0.0858***
	(0.0132)	(0.0123)	(0.0284)	(0.0302)
% Democrat, Green, Peace and Freedom, or Natural Law		0.653***		-0.446***
		(0.0143)		(0.0218)
Constant	77.38***	36.90***	13.41**	41.03***
	(4.772)	(2.176)	(5.545)	(4.044)
Observations	23,039	23,039	23,039	23,039
R-squared	0.721	0.876	0.569	0.665
Has a TRI Facility	1.254***	0.706***	-0.137	0.236

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Impact of Air Quality on Voting Behavior

VARIABLES	(1) % No Votes on Prop 23	(2) % No Votes on Prop 23	(3) % No Votes on Prop 19	(4) % No Votes on Prop 19
PM 2.5 AQI > 100	1.869	0.973***	-0.0286	0.587
	(1.280)	(0.362)	(0.759)	(0.599)
ln(Average Income)	-4.644***	-0.988**	4.893***	2.384***
	(1.404)	(0.482)	(1.260)	(0.709)
% Bachelor's Degree or Higher	0.233***	0.146***	-0.155***	-0.0946***
	(0.0235)	(0.0127)	(0.0209)	(0.0130)
% Black	0.169***	-0.0970***	0.0164	0.199***
	(0.0163)	(0.00924)	(0.0340)	(0.0477)
% Asian	-0.0320**	-0.00890	0.225***	0.209***
	(0.0142)	(0.00929)	(0.0168)	(0.0134)
% Other	0.00199	-0.00106	-0.00710	-0.00500
	(0.0117)	(0.00504)	(0.0115)	(0.00964)
% Hispanic	0.115***	-0.0372***	0.0873***	0.191***
	(0.00957)	(0.00721)	(0.00894)	(0.0101)
% 18-34 Years Old	0.0225*	0.0178**	-0.0456***	-0.0424***
	(0.0134)	(0.00748)	(0.0158)	(0.0116)
% 65 Years or Older	0.0455**	0.0105**	0.133***	0.157***
	(0.0179)	(0.00521)	(0.0137)	(0.00715)
% Owner Occupied	-0.0325***	-0.0365***	0.0756***	0.0784***
	(0.00770)	(0.00319)	(0.00917)	(0.00588)
ln(1+Miles to CBSA)	-2.384***	-1.087*	1.310	0.420
	(0.866)	(0.550)	(1.064)	(0.923)
ln(1+Population Density)	1.478***	0.625***	-0.352**	0.233**
	(0.151)	(0.0775)	(0.151)	(0.105)
% Service	-0.0117	0.000201	-0.0111	-0.0192*
	(0.0103)	(0.00732)	(0.0126)	(0.0114)
% Sales and Office	-0.0663***	-0.0246***	0.0735***	0.0449***
	(0.0102)	(0.00525)	(0.0151)	(0.0104)
% Natural Resources, Construction, and Maintenance	-0.0524***	-0.0636***	0.0662***	0.0740***
	(0.0185)	(0.0120)	(0.0146)	(0.0152)
% Production, Transportation, and Material Moving	0.00312	-0.0227*	0.0677**	0.0854***
	(0.0134)	(0.0118)	(0.0289)	(0.0304)
% Democrat, Green, Peace and Freedom, or Natural Law		0.652***		-0.447***
		(0.0142)		(0.0224)
Constant	76.17***	36.41***	13.39**	40.68***
	(5.636)	(2.282)	(5.908)	(4.146)
Observations	23,039	23,039	23,039	23,039
R-squared	0.723	0.877	0.569	0.665

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 1: Voting on Proposition 23 and Location of TRI Facilities in California

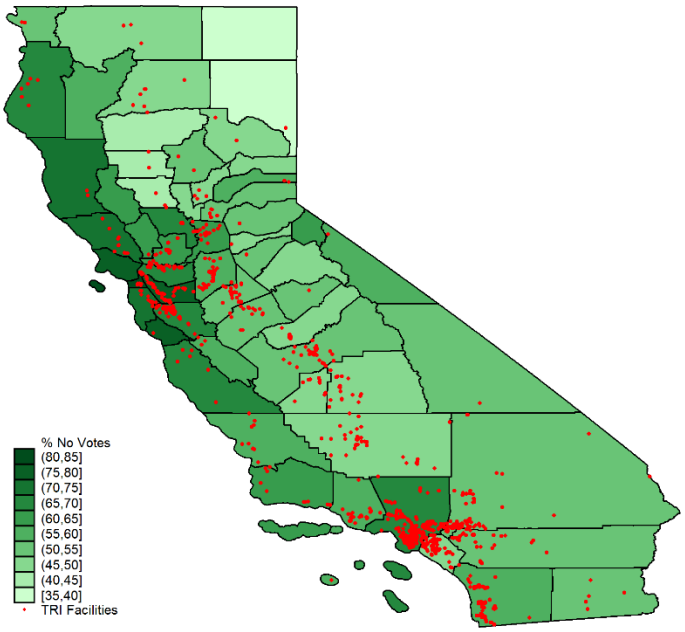
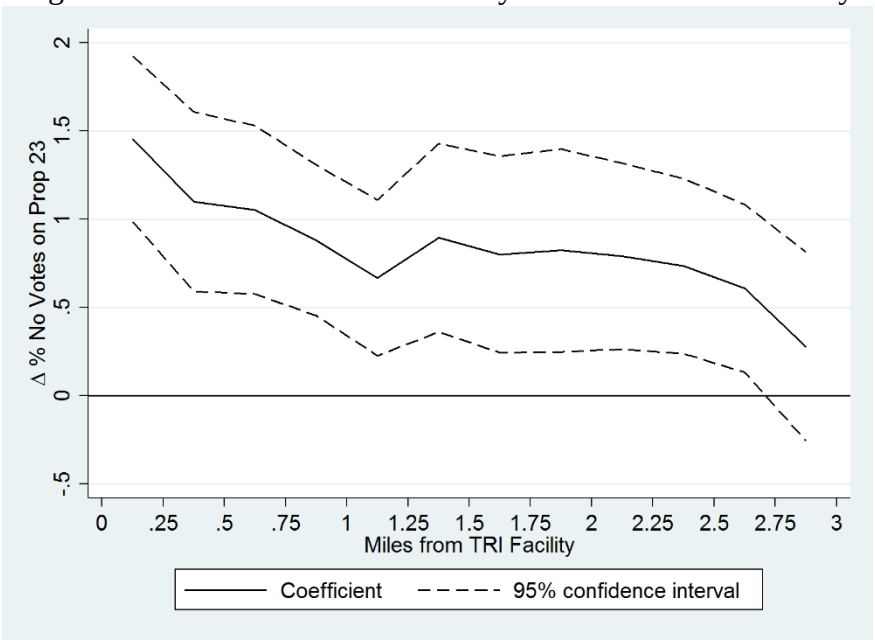


Figure 2: Pro-Environmental Votes by Distance to a TRI Facility



Notes: Block groups more than three miles from a TRI facility are the base category.

Appendix

Table A1: Effect of Distance to Nearest TRI Facility on Voting Behavior

VARIABLES	(1) % No Votes on Prop 23	(2) % No Votes on Prop 23	(3) % No Votes on Prop 19	(4) % No Votes on Prop 19
0 to .25 Miles	2.670***	1.456***	-0.892	-0.0639
	(0.663)	(0.234)	(0.723)	(0.690)
.25 to .5 Miles	2.127***	1.100***	-1.353*	-0.652
	(0.520)	(0.254)	(0.682)	(0.500)
.5 to .75 Miles	1.812***	1.054***	-1.157*	-0.640
	(0.550)	(0.238)	(0.664)	(0.518)
.75 to 1 Miles	1.747***	0.881***	-1.095	-0.504
	(0.535)	(0.213)	(0.716)	(0.462)
1 to 1.25 Miles	1.397***	0.669***	-0.997	-0.501
	(0.490)	(0.220)	(0.651)	(0.497)
1.25 to 1.5 Miles	1.350**	0.896***	-0.847	-0.538
	(0.549)	(0.267)	(0.682)	(0.421)
1.5 to 1.75 Miles	1.346**	0.801***	-0.866	-0.494
	(0.599)	(0.278)	(0.736)	(0.438)
1.75 to 2 Miles	1.397**	0.824***	-1.009	-0.618
	(0.597)	(0.287)	(0.731)	(0.450)
2 to 2.25 Miles	1.281**	0.791***	-0.787	-0.452
	(0.615)	(0.263)	(0.725)	(0.438)
2.25 to 2.5 Miles	1.114*	0.735***	-0.481	-0.223
	(0.593)	(0.248)	(0.633)	(0.377)
2.5 to 2.75 Miles	1.061**	0.609**	-0.376	-0.0676
	(0.470)	(0.237)	(0.641)	(0.431)
2.75 to 3 Miles	0.313	0.280	0.262	0.284
	(0.539)	(0.267)	(0.526)	(0.333)
ln(Average Income)	-4.467***	-0.897*	4.816***	2.380***
	(1.413)	(0.468)	(1.271)	(0.706)
% Bachelor's Degree or Higher	0.237***	0.148***	-0.156***	-0.0946***
	(0.0200)	(0.0123)	(0.0203)	(0.0133)
% Black	0.172***	-0.0955***	0.0173	0.200***
	(0.0184)	(0.00949)	(0.0333)	(0.0475)
% Asian	-0.0336**	-0.00988	0.225***	0.209***
	(0.0155)	(0.00821)	(0.0167)	(0.0133)
% Other	0.00433	0.000102	-0.00659	-0.00371
	(0.0105)	(0.00504)	(0.0108)	(0.00972)
% Hispanic	0.111***	-0.0389***	0.0898***	0.192***
	(0.00936)	(0.00683)	(0.00857)	(0.00949)
% 18-34 Years Old	0.0199	0.0165**	-0.0440***	-0.0417***
	(0.0126)	(0.00737)	(0.0155)	(0.0117)
% 65 Years or Older	0.0457***	0.0106**	0.133***	0.157***
	(0.0166)	(0.00459)	(0.0130)	(0.00685)
% Owner Occupied	-0.0336***	-0.0371***	0.0760***	0.0783***
	(0.00839)	(0.00310)	(0.00953)	(0.00599)

ln(1+Miles to CBSA)	-2.687**	-1.245**	1.321	0.337
	(1.132)	(0.599)	(1.054)	(0.901)
ln(1+Population Density)	1.413***	0.585***	-0.289**	0.276**
	(0.140)	(0.0729)	(0.143)	(0.107)
% Service	-0.00948	0.00141	-0.0136	-0.0210*
	(0.0101)	(0.00742)	(0.0119)	(0.0110)
% Sales and Office	-0.0665***	-0.0248***	0.0728***	0.0444***
	(0.0103)	(0.00500)	(0.0152)	(0.0103)
% Natural Resources, Construction, and Maintenance	-0.0455**	-0.0599***	0.0632***	0.0731***
	(0.0189)	(0.0123)	(0.0136)	(0.0148)
% Production, Transportation, and Material Moving	0.00154	-0.0234*	0.0697**	0.0867***
	(0.0128)	(0.0119)	(0.0280)	(0.0294)
% Democrat, Green, Peace and Freedom, or Natural Law		0.651***		-0.444***
		(0.0144)		(0.0212)
Constant	77.04***	36.87***	13.82**	41.22***
	(4.603)	(2.135)	(5.444)	(4.004)
Observations	23,039	23,039	23,039	23,039
R-squared	0.724	0.877	0.570	0.666

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1