# Smokestacks and the Swamp*

*** PRELIMINARY AND INCOMPLETE ***

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**Abstract**

We examine how politicians' party affiliations causally impact the industrial pollution decisions of firms in their areas. Using a regression discontinuity design involving election outcomes in close U.S. congressional races, we show that plants pollute more per unit of production when they are represented by a closely-elected Republican than by a closely-elected Democrat. We also find evidence of reallocation: firms shift pollution away from areas newly represented by a Democrat. Pollution-related illnesses spike around plants in areas represented by Republicans, suggesting that firms' pass-through of ideological differences across politicians can have real consequences for local communities.

**Keywords**: Political ideology, industrial pollution, reallocation, health outcomes.

**JEL classifications**: G32, G38, I15, L51, Q58.

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# 1 Introduction

Political polarization has increased significantly in the United States over the past four decades (Boxell, Gentzkow, and Shapriro, 2021). During this time, voters have become more polarized across a range of topics including taxes, spending, social issues, immigration, national security, and the environment (Pew Research Center, 2017). As a result, politicians and political parties have also become more polarized (Yang, Abrams, Kernell, and Motter, 2020), as evidenced by the emergence of highly polarized and influential Congressional groups such as the House Freedom Caucus and the Squad.

While the rise in voter polarization has been well documented in the literature, there is currently limited evidence on how the increased ideological polarization of politicians affects economic outcomes. More generally, little is currently known about the causal effects of politicians' partisan ideologies on economic outcomes. The main challenge is empirical: it is difficult to separate the economic effects caused by politicians' (partisan) ideologies from the effects caused by factors such as shifting voter preferences or changes in local or national economies.[1] To identify the causal effect of politicians' ideologies on economic outcomes, one would need a setting in which the ideology of the politician representing a district was effectively determined by a coin flip, holding fixed factors such as the district's demographics, voting preferences, and economic growth prospects.

In this paper, we examine whether the ideological beliefs of U.S. House members—as captured by their political party affiliations—affect firms' pollution decisions.[2] To generate plausibly exogenous variation in the ideological beliefs of politicians, we use the outcomes of close House elections, which by definition represent "coin flips" that cannot be reliably predicted prior to Election Day. We then examine whether firms' pollution levels within a given district are sensitive to the political party of the closely-elected representative. We focus on firms because firms represent a significant source

[1]Identifying the effects of politicians' ideologies on firm outcomes is also difficult because federal legislation generally affects all firms at the same time, most bills introduced by individual legislators never become law, and passed legislation generally reflects bicameral input from across the political spectrum. Using speeches or other forms of political voice to measure politicians' ideological impact on firms is also complicated by the lack of a measurable connection or time frame between the speech and firms' actions. Finally, measuring firms' responses to politicians' ideological beliefs is challenging because this information is difficult to disentangle from firm-level financial statements and requires detailed information about the firm's business decisions.

[2]Alesina (1988), Lee, Moretti, and Butler (2004), and List and Sturm (2006) (among many others) show that parties can select different policies in equilibrium for a variety of reasons. Here, we refer to such policy differences as candidates' or parties "ideologies."

of economic activity within districts, and because granular data is more readily available for firms than for households. We focus on pollution outcomes because the U.S. Environmental Protection Agency (EPA) requires most firms (public and private) that release toxic emissions to report detailed, facility-level pollution and production data across a wide range of emissions categories as part of their compliance with federal pollution regulations such as the Clean Air Act and Clean Water Act.[3]

An important feature of our setting is that, given the high degree of polarization across political parties on issues related to the environment, a close win by a Republican representative may lead to a significantly different environmental posture within the district than a close win by a Democrat, even if voters' underlying preferences regarding environmental issues remain constant. Figure 1 plots the median annual environmental voting scores (from 0-100) for House Democrats and Republicans as computed by the League of Conservation Voters (LCV) from 1991 to 2020. Not only is there a 60-point divide between the median Democrat and median Republican's environmental voting records, but this divide has grown noticeably over the past 20 years, and there has been a corresponding decline over time in the dispersion of beliefs within each party. As a result, there is virtually no overlap in environmental voting scores across Democrats and Republicans over the past twenty years. Overall, Figure 1 suggests that closely-elected Democrats are likely to be unconditionally more supportive of reduced emissions and strengthened environmental oversight than closely-elected Republicans. This assumption is consistent with Di Giuli and Kostovetsky (2014), who argue that Democrats place more emphasis on environmental protection than Republicans.

To quantify the effects of politicians' ideological beliefs on firms' pollution decisions, we use a regression discontinuity design (RDD or RD design) that compares pre-election and post-election emissions across facilities in districts where a Democratic candidate just won or just lost their elections. The running variable in these regressions is the winning candidate's margin of victory. The key identifying assumption in these regressions is that the winning candidate was elected for reasons that are at least partly due to chance. This assumption seems reasonable; for example, many of the margins of victory in our sample involve only tens or hundreds of votes, and similar assump-

[3]Violations of these acts can be very costly; for example, Alpha Natural Resources was required to pay a $27.5 million fine and set aside $200 million for environmental remediation in 2014 for violations of the Clean Water Act. Hence, industrial firms are generally very sensitive to changes in the oversight posture of state and federal regulators.

tions have been used elsewhere in many different contexts (see, e.g., Lee, Moretti, and Butler, 2004; Cuñat, Giné, and Guadalupe, 2012; Do, Lee, Nguyen, and Nguyen, 2012; Akey, 2015; Cuñat, Giné, and Guadalupe, 2020).

Our primary hypothesis is that, all else equal, elected Democrats are stronger supporters of environmental regulation and will be more likely to pay attention to the monitoring and enforcement of existing federal environmental laws within their districts.[4] As a result, when a Democrat is elected, state and federal regulators may either implicitly or explicitly face incentives to strengthen their oversight of the toxic emissions produced by facilities located in the politician's district. Hence, we argue that the monitoring and enforcement of existing federal industrial pollution regulations will be stronger in districts represented by Democrats than Republicans.

How should firms respond to a revised regulatory posture that increases the monitoring and enforcement of industrial pollution laws? The answer depends on firms' objectives and existing pollution behavior. A firm that is already operating at or below its permitted emissions levels would not need to make any changes as a result of increased monitoring and enforcement. However, a firm that is currently operating above its permitted emissions levels would need to compare the expected costs and benefits of increased pollution abatement versus the expected costs and benefits of continuing to over-pollute but exposing the business to fines and other enforcement actions.[5] Hence, this is largely an empirical question: it is plausible that firms could maintain the status quo, reduce pollution levels, or maintain high pollution levels and accept higher enforcement probabilities as the result of a strengthened regulatory posture.

We present four main results. First, our regression discontinuity tests provide strong evidence that winning candidates' political party affiliations affect subsequent emissions in their districts. At the threshold, we find that emissions at the same facility increase by approximately 20% when the facility is represented by a closely-elected Republican relative to a closely-elected Democrat. This result is robust to our selection of bandwidth and estimation approaches following the existing RD

[4]This assumption mirrors that of Di Giuli and Kostovetsky (2014), who state that "[t]he Democratic Party platform places more emphasis on CSR-related issues such as environmental protection [and others]."

[5]This analysis assumes that firms subscribe to Friedman (1970)'s belief that firms' sole objective should be to maximize shareholder value. Firms that care about maximizing shareholder welfare rather than shareholder value (Hart and Zingales, 2017), or firms with different objective functions altogether, might respond in different ways.

literature (Calonico, Cattaneo, and Titiunik, 2014; Cattaneo, Idrobo, and Titiunik, 2019). In contrast, we find no increases in plant production at the RD threshold. Hence, following Buntaine, Greenstone, He, Liu, Wang, and Zhang (2021), we find evidence that firms effectively "turn up" their pollution abatement filters when a closely-elected Democrat takes office, thereby leading to lower emissions despite similar production levels. Using data from Compustat, we confirm that these actions are costly: firm-level COGS increases by approximately 4% when the share of facilities represented by a closely-elected Democrat goes from zero to one.

Our baseline result survives a battery of robustness tests. We do not find any discontinuities related to local economic conditions such as GDP growth, unemployment, or credit growth, and we present evidence using the Yale Climate Opinion Maps that there are no discontinuities related to district voters' views about the environment. A McCrary (2008) test confirms that there is no manipulation of the assignment variable. Following Lowes and Montero (2020), we also perform a residualized RD test based on the residuals from a first-stage regression including Congressional district and state $\times$ chemical $\times$ year fixed effects and obtain similar results. We similarly obtain discontinuities for districts represented by governors of both parties, though magnitudes are larger for Democratic governors. We find results that go in opposite directions for seats that flip from Democrat to Republican and Republican to Democrat, respectively. We also exploit *within-party* variation in environmental ideology and show that our results are stronger for more ideological candidates within both parties. Placebo tests and further standard error restrictions confirm the overall robustness of our results. Collectively, we find strong evidence that politicians' ideologies affect the industrial pollution decisions of firms.

Second, we present evidence that firms reallocate pollution between their various facilities based on the party affiliation of the politicians representing each facility in Congress. We first present the results of OLS regressions with firm $\times$ chemical $\times$ time fixed effects. We find that, within the same firm-chemical-year triad, pollution at the facility-chemical-year level declines following a Democratic election victory. We then augment these tests with Bertrand and Mullainathan (2003)-style tests where we examine how a facility's pollution depends on the political party representation of the firm's other facilities. We find that a win by a local Republican is associated with relatively larger increases in pollution when a firm's other plants are represented by Democrats, supporting reallocation. These findings suggest that firms manage their environmental footprints as rigorously as they manage other parts of their production footprints.

Third, we find that the pass-through of political ideologies through firms' pollution decisions appears to have a significant impact on the health of local communities. We perform a median split on the number of plants per Zip code per year and then examine whether illness-by-Zip code-by-year measures of total patient count and total payments in high-plant versus low-plant Zip codes vary based on whether the local representative is a Democrat or Republican. We specifically examine respiratory illnesses (illnesses with a CMS Major Diagnostic Category code of 4), since these illnesses are more likely to be caused by exposure to emissions (see Hoek, Krishnan, Beelen, Peters, Ostro, Brunekreef, and Kaufman, 2013 for a review).

We find that the incidence of respiratory illnesses increases by 7–8% after a district switches from Democrat to Republican in areas with a high numbers of plants. Payments for respiratory-related hospital visits also increase by 7–13% in high-plant areas within districts represented by a Republican versus a Democrat. In contrast, we find no differences in health outcomes in areas with fewer-than-median plants when a district switches from Democrat to Republican. We also find evidence that the Bertrand and Mullainathan (2003)-style reallocation of pollution lead to an effective reallocation of health costs across districts containing different facilities of the same firm. These results provide evidence that increases in plant-level emissions in Republican areas are causing adverse health consequences for the residents of communities located adjacent to the plants.

Finally, we examine the mechanisms through which politicians' beliefs may affect firms' pollution decisions. We hypothesize that Democratic representatives (and their staffs) pay more attention to the monitoring and enforcement of environmental regulations relative to Republican representatives. Existing research has shown that politicians often have broad leeway over the monitoring and enforcement of federal laws within their own districts, and that politicians can intervene with regulators in ways that affect the business decisions of constituent firms (see, e.g., Fisman and Wang, 2015; Mehta, Srinivasan, and Zhao, 2020; Mehta and Zhao, 2020; Akey, Heimer, and Lewellen, 2021). Consistent with this literature, we hypothesize that, given the stark partisan divide over issues related to environmental regulation, firms may be subject to different environmental monitoring and enforcement regimes based on the political party of their U.S. representative, and that firms may respond by increasing or reducing their pollution as a result of changes to the monitoring and enforcement environment.

Consistent with our hypothesis, we find that inspection propensities are higher and enforcement actions are more common at facilities represented by closely-elected Democrats, even though pollution at these facilities is lower, on average, than otherwise-identical facilities represented by closely-elected Republicans. The magnitude of the increase in inspection propensity is large; conditional on receiving at least one EPA inspection, inspections increase by approximately 20% after a Democrat wins a close election. We also find results along the extensive margin: firms are approximately 7% more likely to be inspected for the first time after a Democratic win.

In addition to increased inspection frequencies, enforcement actions also rise following close-election wins by Democratic candidates. However, the increase in enforcement actions consists primarily of informal enforcement actions such as cease-and-desist letters that carry no pecuniary penalties. We find that such informal enforcement actions rise by 46%. In contrast, while formal enforcement actions also rise, once we condition on the increase in inspections, we find economically small changes in formal enforcement actions and monetary fines. These results provide evidence – albeit speculative – that firms are essentially over-polluting under Republican representatives annd that, given the potential costs (both in fines and in reputational losses) associated with formal enforcement actions, firms decide to reduce pollution under Democratic representatives to a level that does not trigger an increase in formal enforcement actions.

Our empirical setting allows us to rule out a number of competing explanations. For example, the literature on political power has shown that powerful politicians can intervene to help constituent firms. However, while our results are (unsurprisingly) stronger for more powerful politicians, we only find results for *highly ideological* (powerful) politicians, suggesting that, while political power is an amplification mechanism in our setting, it is ideology rather than power that is driving our main results. Another concern is that our results might reflect a firm's own political ideologies rather than the ideologies of the politician representing the firm. However, there is no reason to think that a firm's own political ideology would change as the result of a narrow election win by a single politician. A third concern is that our health results may be picking up other partisan changes that happen to affect high-plant areas more than low-plant areas. However, we run a similar test evaluating a selection of ailments that are unlikely to be caused by industrial pollution and find no evidence that these ailments systematically increased in high-plant areas of Congressional districts represented by Republicans. While other observable and unobservable factors could still contribute to our findings, we believe that the most likely explanation for our findings, given the evidence available, stems from differences in politicians' ideologies.

Our paper contributes to a number of areas of the literature within finance and environmental economics. First, our paper contributes to the growing literature on firms' environmental policies and practices. Among other topics, the existing literature has shown that financial constraints (Cohn and Deryugina, 2018; Bartram, Hou, and Kim, 2019), limited liability (Akey and Appel, 2021), environmental activism by institutional holders (Akey and Appel, 2019; Naaraayanan, Sachdeva, and Sharma, 2020), the listing status of firms (Shive and Forster, 2020), and supplier networks (Schiller, 2018) can have a significant impact on firms' environmental policies and emissions. We add to this literature by suggesting that politicians – and in particular, the ideological beliefs of an individual facility's U.S. Representative – can also affect firms' environmental policies, emissions, and the health of surrounding communities. In this context, our paper adds to Ben-David, Jang, Kleimeier, and Viehs (2018), who highlight the role national climate policy plays in affecting multinationals' pollution decisions, and to the broader environmental economics literature on the relationship between political ideologies and firm pollution (see, e.g., Helland and Whitford, 2003; Neumayer, 2003; Fredriksson, Neumayer, Damania, and Gates, 2005). In addition, by showing that political ideology explicitly affects environmental inspection and enforcement, our paper contributes to the large economics literature on the enforcement of environmental regulations (see, e.g., Greenstone, 2002; Greenstone, List, and Syverson, 2012; Walker, 2013; He, Wang, and Zhang, 2020; Buntaine, Greenstone, He, Liu, Wang, and Zhang, 2021).

Our paper also contributes to the literature on the political economy of regulatory enforcement. Researchers have shown that political power can shape usury laws and regulation (Benmelech and

Moskowitz, 2010), banking regulation and enforcement (Dinç, 2005; Akey et al., 2021), and the enforcement of regulations affecting firms (Fisman and Wang, 2015; Mehta, Srinivasan, and Zhao, 2020; Mehta and Zhao, 2020). In the context of environmental pollution, Heitz, Wang, and Wang (2020) highlight the role of political connections as a significant factor affecting EPA enforcement decisions. We contribute to this literature by showing that political ideology can also affect environmental regulators' inspection and enforcement decisions, and by showing how this effect impacts the health of local surrounding communities. More generally, our paper contributes to the literature on the political economy of pollution (see, e.g., Konisky and Woods, 2010; Monogan III, Konisky, and Woods, 2017; Lipscomb and Mobarak, 2017) and on the real effects of political parties (see, e.g., Alesina, 1988; List and Sturm, 2006; Ferreira and Gyourko, 2009).

Finally, our paper is related to the literature on the partisan polarization of economic agents. For example, a growing literature has shown that firms' political ideologies affect corporate policies such as investment (Hutton, Jiang, and Kumar, 2014; Fos, Kempf, and Tsoutsoura, 2021) and corporate social responsibility (Di Giuli and Kostovetsky, 2014). In particular, Di Giuli and Kostovetsky (2014) show that firms run by Democrats or located in Democrat-leaning states invest more heavily in corporate social responsibility (CSR) measures. Other studies have examined the economic effects of having partisan employees (see, e.g., Kempf and Tsoutsoura, 2021; Fos, Kempf, and Tsoutsoura, 2021). However, less is known about how *politicians'* ideologies affect firms, which is the focus of this study.

# 2 Data

## 2.1 EPA Emissions and Compliance Data

Our main data source for emissions is the Toxics Release Inventory (TRI) database produced by the U.S. Environmental Protection Agency (EPA). Most U.S. facilities that release toxic chemicals into the air, water, or certain land repositories are required to report their annual emissions releases to the EPA. The TRI database contains emissions data for approximately 770 chemicals spanning 33 categories. Facilities (plants) are required to report the annual number of pounds released for each chemical covered by the TRI program, as well as other information including plant coordinates and information about the plant's owners. The database is organized at the facility-chemical-year level. We also obtain plant production data from the EPA's Pollution Production (P2) database, which is a companion database to TRI. The P2 database includes information about a plant's production ratio, which measures the annual percentage change in the quantity of output for each production process that contributes to the plant's emissions. While TRI and P2 data is self-reported, there are strong incentives to report truthfully and the EPA conducts regular audits to verify data integrity, leading to a high degree of confidence in data quality (see, e.g., Greenstone, 2003; Akey and Appel, 2019, 2021).

We also obtain federal environmental compliance data from the EPA's Enforcement and Compliance History Online (ECHO) data set. To determine whether a plant is in compliance with applicable federal laws, EPA staff and state regulators conduct regular inspections that involve interviews, records reviews, and plant visits. Violations discovered by regulators can lead to either formal or informal enforcement actions. The ECHO data set contains information on whether a given enforcement action is formal or informal, the agency that initiated the action, and any penalties imposed on the facility.[6] Informal enforcement activities generally include warning letters or Notices of Violation, while formal enforcement activities may result in Administrative Compliance Orders (or state equivalent actions) and judicial referrals to the State Attorney General or to the Department of Justice. Most of the inspections and enforcement actions in our sample are related to the Clean Air Act (CAA) program and the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act (CWA) program.

## 2.2 District and Elections Data

To construct our main data set, we merge the TRI and ECHO data with Congressional boundary definitions from Lewis, DeVine, Pitcher, and Martis (2013) and Congressional district election results from the MIT Election Data + Science Lab. We then construct an indicator variable, *Democrat Win*, that equals one if a plant is located in a district that was won by a Democratic Party candidate in its

[6]ECHO is a collection of data sets covering compliance activities for various programs including the Clean Air Act (CAA), the National Pollutant Elimination Discharge System (NPDES), NPDES Biosolids, and the Integrated Compliance Information System for Federal Civil Enforcement Case Data (ICIS FE&C). We combine all of the data sets available in ECHO to construct our final data set.

most recent election, and equals zero otherwise.

### 2.3 Health Data

Our main source of data for health-related variables is the Center for Medicare and Medicaid Services (CMS), which is part of the U.S. Department of Health and Human Services. CMS provides a data set containing quantity and average price (payment) data related to many common medical procedures performed at more than 4,000 inpatient hospitals starting from 2011. We obtain this data for 622 Diagnosis Related Groups (DRGs), which we aggregate at the Major Diagnostic Category (MDC) level. There are 25 mutually-exclusive MDCs in the CMS taxonomy, with each MDC covering a broad diagnostic area such as the eyes, the respiratory system, the digestive system, or the skin.

Consistent with the literature on pollution and local health outcomes (see, e.g., Schwartz, 1996 and Hoek, Krishnan, Beelen, Peters, Ostro, Brunekreef, and Kaufman, 2013), our tests focus on MDC 4, which captures issues with the respiratory system. We also construct data for a "placebo" group of MDCs (18–22) which covers illnesses such as infectious diseases and mental health issues that are unlikely to be caused by pollution from local plants. Some tests also utilize health outcome and payments data spanning all MDC codes in the CMS data set.

To create our main data set, we merge our CMS data set with our emissions, compliance, and Congressional district data set at the Zip code level. To ensure that we accurately map health outcomes to Congressional districts, we drop all Zip codes spanning two or more Congressional districts. Since most Zip codes do not contain a hospital and most people travel outside of their Zip code to receive hospital care, we aggregate all health and plant data at the three-digit Zip code-district level. This level of aggregation corresponds roughly to a small metropolitan area or county, though large and mid-sized metropolitan areas often have multiple three-digit Zip codes.

### 2.4 Other Data Sources

We also use data from a number of other sources. We obtain political ideology scores from VoteView and the League of Conservation Voters, data on public environmental opinion from Yale Climate Opinion Maps, and data on state and federal environmental budgets from the Environmental Council of the States (ECOS). Data on campaign contributions to Congressional candidates are sourced from the Federal Election Commission. We also obtain data on cost of goods sold from Compustat, which we hand-match with the TRI data based on the name of the firm.

### 2.5 Summary Statistics

Table 1 reports summary statistics for our main variables on emissions, compliance, elections, and health. Our sample consists of 37,369 distinct plants during the period 1991-2016. Emission variables are defined at the plant-chemical-year level, while compliance-related variables are defined at the plant-year level. The average facility in our sample releases 30,846 pounds per chemical per year, experiences 0.8 inspections per year, and is subject to 0.15 enforcement actions per year, including both formal and informal actions. The average percentage margin of victory for Democratic Congressional candidates is approximately -1.5%, indicating that the average plant is located in a district with a slight Republican tilt. Table 1 also shows that there are on average 54 respiratory-related hospital visits per Zip3-district-year costing around $485,000 in total.

## 3 Empirical Framework

Identifying the causal effect of politicians' ideologies on firm outcomes is challenging for a number of reasons. First, it is difficult to measure a politician's ideology. Second, it is difficult to find settings in which politicians' ideologies can be directly traced to measurable firm outcomes. Third, politicians are not elected randomly, and there are many potential omitted variables (both within and outside of districts) that could be associated with both a politician's election victory and firm outcomes in the politician's district. Fourth, firm decisions could themselves affect the politician's ideology or election results (reverse causality). Finally, attributes of a politician other than ideology (for example, seniority) may directly affect firm outcomes as well.

To overcome these challenges, our main tests combine a regression discontinuity (RD) design around close elections with detailed plant-chemical-time level microdata on firms' pollution and production decisions. Close-election RD designs are common in the political economy literature (see, e.g., Ferreira and Gyourko, 2009; Akey, 2015) because elections (and particularly two-party elections) are well-suited for RD tests: there is a clear vote share at which point a candidate is declared the winner, and treatment – particularly right around the threshold – often depends on plausibly exogenous factors such as the weather, traffic, or other relatively minor factors that can affect voter turnout at the margins.

Our main tests use a candidate's political party as a proxy for their ideology regarding the environment. As shown in Figure 1 using LCV scores, the amount of interparty variation in attitudes towards the environment is orders of magnitude larger than the amount of intraparty variation. Simply put, Democrats and Republicans on average have dramatically different views about the environment, and this is reflected in their voting records, especially in recent years. We also examine intraparty variation to help confirm that our results are capturing political ideology and not some other factor that is specific to the two political parties themselves.

To implement our close-election RD design, we define $\Delta voteshare$ as the difference in the vote share of the Democratic candidate minus the vote share of the Republican candidate. We are interested in whether there is a discontinuity in pollution when $\Delta voteshare = 0$. To examine this question, we first estimate the local linear RD equation:

$$Y_{ic(jd)t} = \beta_1 \text{Democrat Win}_{dt} + \theta f(\text{Win Margin}_{dt}) + \delta \text{Democrat Win}_{dt} \times f(\text{Win Margin}_{dt}) + \mu_c + \epsilon_{ict} \ , \quad (1)$$

where the main dependent variable is (log) pollution of chemical $c$ at establishment $i$ owned by firm $j$ in Congressional district $d$ at time $t$, Democrat $\text{Win}_{dt}$ is an indicator for a Democrat winning the most recent election, $f(\text{Win Margin}_{dt})$ are polynomials of different order of the variable Win $\text{Margin}_{dt}$, and $\mu_c$ is a chemical fixed effect. Importantly, Democrat $\text{Win}_{dt} \times f(\text{Win Margin}_{dt})$ allows the estimation of $\beta_1$ to be identified when the win margin is equal to zero. In line with Akey (2015), we restrict the sample to elections with an absolute vote margin less than 5%.

We also follow the recent RD literature and estimate non-parametric RD tests that compute an optimal bandwidth for the test as part of the RD procedure itself (see, e.g., Calonico, Cattaneo, and Titiunik, 2014; Lowes and Montero, 2020). The specification for these tests is:

$$Y_{ic(jd)t} = \beta_1 \text{Democrat Win}_{dt} + \theta g(\text{Win Margin}_{dt}) + \epsilon_{ict} \ , \quad (2)$$

where $g(\text{Win Margin}_{dt})$ is now the RD polynomial. Our baseline specification is a local polynomial of order one in the vote margin estimated separately on each side of the zero margin cutoff. We use a triangular weighting kernel and calculate the optimal bandwidth by using the MSE-minimizing procedure suggested by Cattaneo, Idrobo, and Titiunik (2019). We also estimate the regression specifications with different polynomials and kernel definitions.

In some cases, it is not possible to use RD estimation techniques due to the data structure or the specific hypothesis being tested. In those cases, we estimate panel regressions of the form:

$$Y_{ic(jd)t} = \beta_1 \text{Democrat Win}_{dt} + \beta_{FE} + \epsilon_{ict} \ , \tag{3}$$

where, thanks to the granularity of our data, we are able to employ a variety of (often stringent) fixed effects including year fixed effects, establishment fixed effects, establishment × chemical fixed effects, district fixed effects, district × chemical × year fixed effects, firm × chemical × year fixed effects, state × year fixed effects, and state × year × chemical fixed effects, depending on the test. The multidimensional nature of these fixed effects allows us to isolate very specific sources of variation, such as (for example) variation in pollution for a given chemical across plants owned by the same firm at the same point in time.

# 4 Results

## 4.1 Main Result: Pollution

We use a regression discontinuity design to examine the effects of district political affiliation on plant-level emissions in a close-election setting. As described in Section 3, identification in this setting relies on quasi-random assignment of a plant's district to different political parties. In other words, we compare the emissions of plants located in districts where Democrats win an election by a very small margin, and plants located in districts where Democrats lose an election by a very small margin.

Figure 2 presents our main regression discontinuity result. We first rank districts-year observations in our sample by their Democrat win margin in the most recent electoral college election.[7] We

[7]For example, a 100% (-100%) Democrat win margin implies that the district was won by Democrats (Republicans)

restrict the sample to a narrow ±5% Democrat win margin window, and we construct 18 equally-spaced bins on either side of the zero win margin cutoff. In Figure 2, we report the average log-emissions in each Democrat win margin bin, as well as the fitted values and 95% confidence intervals of a local polynomial regression on each side of the cutoff. Figure 2 shows an economically and statistically significant drop in emissions for plants located in districts that are won by closely-elected Democrats. This drop in emissions is roughly constant away from the zero win cutoff, suggesting that our result is not driven by outlying observations just above or below the zero cutoff.

In Table 2, we formally test the visual evidence presented in Figure 2. In Columns (1)-(3), we again focus on a narrow 5% window around the zero margin cutoff, and regress the natural logarithm of plant-level emissions on a dummy equal to one if the district where the plant is located was won by a Democrat in its most recent election and equal to zero otherwise (Column (1)), as well as on an interaction term between this indicator and the Democrat win margin (Columns (2) and (3)). These local OLS specifications confirm the visual evidence from Figure 2. Plants located in districts that are just-won by Democrats have on average 21.3% to 39.7% higher emissions than plants located in districts that are just-won by Republicans—the election of a Democrat representative causes firms to reduce pollution by up to 39.7% under our RDD identifying assumptions.

Our local linear regressions in Table 2 face the well-known trade-off between sample bandwidth size around the zero win margin cutoff and bias in the estimates of the RD coefficients. Intuitively, one would like to give relatively more weight to observations around the cutoff without sacrificing estimate precision. In the remainder of the table, we report the results of a non-parametric RD estimation procedure aimed at resolving this trade-off. This procedure allows the econometrician to specify a weighting method for each observation in the sample (i.e., a kernel) and a (possibly non-linear) functional form for the relationship between the outcome variable and the running variable on each side of the cutoff. The procedure jointly estimates the RD parameter of interest, its optimal bias-corrected standard error, and the optimal sample bandwidth around the zero cutoff (Calonico et al. (2014)).

In Columns (4)-(7), we report the results of this non-parametric local polynomial RD estimation,

with a 100% margin, and a 1% Democrat win margin implies that the district was won by Democrats with a 1% margin.

where we experiment with different polynomial functional forms (i.e., linear and quadratic) and with different kernel weighting methods (i.e., triangular and Epanechnikov). Our results are robust to different polynomial and kernel combinations, and highlight a quantitatively-similar effect to those documented in the first three columns: Democrat wins in a district are systematically associated with an average 35% reduction in plant-level emissions.

The magnitudes documented in Table 2 are large. The 35.5% reduction in emissions implied by our non-parametric specification (4) entails a reduction in firm-level emissions of approximately 10 thousand pounds relative to the unconditional sample mean of 30,846 pounds per plant-chemical, and approximately 130 pounds relative to the unconditional median of 369 pounds per plant-chemical. These results are quantitatively similar when focus only on the 5% close election sample. In this sample, the mean level of emissions is 30,675 pounds, and the median level of emissions is 455 pounds. Overall, the results of Figure 2 and Table 2 provide strong empirical evidence that district-level affiliation to the Democratic Party is associated with economically large reductions in toxic emissions.

## 4.2 Robustness

### 4.2.1 Covariate Balance

One concern with our results in Table 2 is that other factors such as local economic activity might correlate with both close election victories and firms' subsequent pollution decisions. However, Figure 3 confirms that there are no discontinuities related to district-level GDP growth, the district-level unemployment rate, or district-level credit growth around the 50% voting threshold.[8] Hence, districts in our close-election sample seem similar along observable economic dimensions.[9]

We also provide evidence that districts on both sides of the cutoff share similar views about the environment. Figure A1 uses data from the Yale Climate Opinion Maps project for 2020 to show that residents of districts just won by Democrats in the 2018 share similar views about the environment as

[8] We measure credit growth using the (log) number of mortgage originations from HMDA and the number of consumer and small-business loan originations made under the Community Reinvestment Act.

[9] In Appendix Table A4, we also confirm that the results in Table 2 hold after excluding power plants (NAICS two-digit code of 22) from our sample. Since power plant "production" is largely determined by economic activity in the region, this test provides additional evidence that differences in economic activity across districts are unlikely to be responsible for our findings.

residents of districts just lost by Democrats in 2018. While this test represents a single cross-section, the results support the idea that there are no significant pre-existing differences in environmental viewpoints between districts just won or just lost by Democrats. Figure A2 also shows that the elections in our sample are spread out across 48 of the 50 states and show very little correlation across regions.[10]

#### 4.2.2 Residualized RD

To further rule out the possibility that our results could be driven by a confounding factor, we follow Lowes and Montero (2020) and perform an RD analysis on a residualized version of our main emissions variable after removing most variation that could plausibly be driven by confounding factors. We first regress emissions on Congressional district fixed effects as well as a state $\times$ chemical $\times$ year fixed effect. We then perform our baseline RD tests on this residualized outcome variable. This test helps to rule out confounding stories that rely on variation across districts, variation at the state-time level, or variation at the chemical-time level.[11]

Table A1 shows that our main results survive this stringent robustness test. In all columns except column (1) (a simple difference in means), we still find economically and statistically significant reductions in pollution when a close Democrat is elected. While magnitudes are lower than in Table 2, they are still quite sizable; for example, we find pollution reductions of approximately 4% and 7% in columns (4) and (6), which use non-parametric specifications with a triangular kernel. These tests suggest that even after removing most of the variation in pollution across geography, chemicals, and time, politicians' ideologies still have significant effects on firms' emission decisions.

[10] For example, the seven states with the largest number of close elections per Congressional district in our sample are Connecticut, Kansas, Maine, Nebraska, Nevada, New Hampshire, and Washington. These states have vastly different economic, social, and demographic profiles. During our sample period, there were no close elections in Mississippi or Vermont.

[11] For example, these tests rule out the possibility that our pollution effects can be explained by (1) state-level economic conditions, (2) the governor or state agencies, (3) variation in plant makeup across districts, or (4) state-level supply or demand shocks.

### 4.2.3 Governors and State Regulatory Agencies

We also examine whether politicians' impact on pollution differs depending on the political party of their governor. Since most EPA laws are enforced by states, and since state governors generally appoint the heads of the agencies responsible for the enforcement of environmental regulation, it is natural to think that the magnitudes of our effect might depend on the political party of the governor.[12] In addition, splitting the sample by the party of the governor allows us to determine whether we observe effects for governors of both parties, or whether the effect is exclusively concentrated among Democratic governors.

Figure 5 and Table A3 show that our main results hold regardless of the political party of the governor. For example, in column (7) of Table A3, the effect is large and highly statistically significant for both Democratic and Republican governors. However, the figure and table also show that the effect is quantitatively larger for Democratic governors. This is most apparent in Figure 5, where the blue line represents the effect of close election victories by Democrats in states represented by Democratic governors, and the red line represents the same test but in states represented by Republican governors. The figure shows that the size of the discontinuity is much larger for the blue line than the red line, confirming that pollution reductions following close Democratic Congressional victories are stronger in states with Democratic governors.

### 4.2.4 McCrary Test

Another concern is that the distribution of election margins may not be continuous at the 50% threshold, suggesting that the assignment variable could potentially be manipulated. Figure A3 presents the results of a McCrary (2008) density test. The figure shows that the distribution of the assignment variable is smooth across the threshold, confirming that it is unlikely that the assignment variable (election outcomes) was systematically manipulated.

[12] In particular, we hypothesize that the effects would be larger when a Democrat is governor, since a Democratic governor will be more likely to appoint agency heads who care about the enforcement of environmental regulations, and since agencies under a Democratic governor might be more receptive to input and requests from members of Congress that relate to the enforcement of environmental regulations.

#### 4.2.5 Additional Robustness

We also report the results of two additional robustness tests. First, in Appendix Table A6 we show that our local OLS specification in Table 2 produces statistically-similar results when we cluster our standard errors at the facility level or using 97 distinct vote bins around the zero vote margin (Lee and Card (2008)).[13] Second, we present the results of two placebo tests in Figures 7a and 7b that show that our results are not spuriously caused by sample selection or other issues.

### 4.3 Firm Production and Abatement

We now dig deeper into the pollution and production decisions made by firms following the close election of a Democratic representative. Table 2 shows that plant-level emissions decline following the close election of a Democratic representative. There are two main ways that firms can reduce pollution at a plant. First, the firm can simply reduce production at the plant. This would keep the number of units of pollution per unit of production constant, but would lead to lower overall pollution. In that case, our results would be driven by reduced production, not reduced pollution. Second, the firm could "turn up" the plant's pollution abatement devices so that each unit of production emits fewer pollutants. For example, Buntaine, Greenstone, He, Liu, Wang, and Zhang (2021) use detailed device-level electricity data in China to show that firms often turn abatement devices up (which is costly) or down (less costly) in order to control pollution without affecting production. Thus, if firms "turn up" abatement devices following the close election of Democrats without changing production, we would also expect the firm's costs to increase.

To better undersatnd the link between firm pollution and production decisions, we utilize the EPA's data on production, which is available at the facility-chemical-year level, to examine whether pollution *per unit of production* also falls after a plant is represented by a closely-elected Democrat. Since output is only available as an annual growth rate, we follow Akey and Appel (2019) and Akey and Appel (2021) and construct a contemporaneous measure of plant emissions relative to production

[13] The Lee and Card (2008) clustering is motivated by the presence of small mass points in the distribution of the outcome variable around the zero win margin cutoff.

for each plant-chemical-year as

$$\log\left(\text{Cumulative Emissions/Production}\right)_{ijt} = \log\left(\prod_{\tau=2}^{t} \frac{1}{\text{Prod. Growth}_{ij\tau}} \times \frac{\text{Emissions}_{ij\tau}}{\text{Emissions}_{ij\tau-1}}\right), \\ = \log\left(\frac{\text{Emissions}_{ijt}}{\text{Production}_{ijt}}\right) - K_{ij}, \quad (4)$$

where $\text{Emissions}_{ijt}$ are the emissions of chemical $j$ by plant $i$ in year $t$, $\text{Prod. Growth}_{ijt}$ is the ratio of year $t$'s output and year $t-1$'s output associated with the production of chemical $j$ in plant $i$ (directly available from the EPA data), and $K_{ij}$ is a plant-chemical constant.

In Table 3, we show that plant emissions in blue districts decrease even relative to production. In the first column of the table, we show that emissions decrease by around 10.2% relative to production when the district where the plant is located is just-won by a Democrat. In Column (2), we confirm that this result holds economically and statistically using a non-parametric specification and a flexible RD bandwidth choice. In Appendix Table A5, we also document no effects on plant-level production when a district is just-won by a Democrat politician.[14] Hence, while plant-level emissions clearly decrease following a close Democratic election, production at the same factories does not decrease.

How can pollution go up or down if production remains unchanged? Buntaine, Greenstone, He, Liu, Wang, and Zhang (2021) show that firms can "turn up" their abatement devices in order to control pollution without affecting production. While similar data is not available for the plants in our sample, the abatement technologies available to the firms in our sample are similar to (if not superior to) the technologies available at the facilities in China. Hence, it seems reasonable to think that many establishments in our sample can also turn their pollution control devices up or down to change pollution levels without affecting production quantities.

If this hypothesis is true, then the higher cost of "turning up" the abatement devices should be reflected in the firm's cost of goods sold (COGS). To examine this possibility, we hand-match the firm names in the TRI dataset with firm names from Compustat. The TRI dataset contains public and

[14] Similar to (4), we compute cumulative plant-level production related to chemical $j$ as

$$\log\left(\text{Cumulative Production}\right)_{ijt} = \log\left(\prod_{\tau=2}^{t} \text{Prod. Growth}_{ij\tau}\right) = \log\left(\text{Production}_{ijt}\right) - K'_{ij}, \quad (5)$$

with $K'_{jt}$ another plant-chemical-specific constant.

private firms of all sizes, many of which do not appear in the Compustat dataset. Nonetheless, we are able to match a substantial fraction of the TRI firm names to Compustat.

We then examine whether firms' COGS rise if they are represented by a closely-elected Democrat versus a closely-elected Republican. To do so, we aggregate our data to the firm-time level for each chemical (there is no way to aggregate data across chemicals while accounting for the relative weight and toxicity of different chemicals). To capture the firm's exposure to political ideology, we construct a variable, *Democrat Share*, that equals the fraction of a firm's total plants operating in a Democratic district for a given chemical at a given point in time. We also construct a weighted version of *Democrat Share* that assigns higher weights to plants producing more of a given chemical. We then assess whether a firm's COGS increases when more of its plants are represented by Democrats. Our tests also include the equivalent of firm and time fixed effects – in our setting, these are firm $\times$ chemical and chemical $\times$ year fixed effects. If firms are increasing their use of costly abatement technologies as in Buntaine, Greenstone, He, Liu, Wang, and Zhang (2021), we would expect firms' COGS to increase when firm pollution falls.

Table 7 presents the results of these tests. Columns (1) and (2) confirm that our main pollution result continues to hold at the firm-chemical-time level using the *Democrat Share* and weighted *Democrat Share* measures. Columns (3) and (4) examine COGS. When more of a firm's plants are represented by Democrats (and hence, when firm pollution per unit of production falls), we indeed find that the firm's COGS is higher. The magnitudes are large: raising the Democrat share from zero to one would cause the firm's COGS to rise by approximately 4%. This finding suggests that reducing pollution has real costs for the firm, and potentially for the firm's shareholders.

### 4.4 Reallocation

Given the results in Table 7, a natural question is whether firms with plants in multiple Congressional districts reallocate pollution to other plants that are represented by Republicans (or more moderate Democrats) following the close election of a Democrat. All else equal, a firm that has plants located in areas represented by a Democrat and a Republican should prefer for pollution to occur at the Republican plants, since there will be less stringent oversight (and hence, less costly abatement will be needed) at these plants.

To test this hypothesis, we examine the within-firm-time allocation of pollution across the different plants owned by the firm. For these tests, we switch to a sample containing data from all elections (not just close elections), as this provides us with the ability to add varying degrees of fixed effects that are not possible in the RD setting. We begin in Table 5, we regress the natural logarithm of plant-chemical-level emissions on an indicator equal to one if the district politician is a Democrat and equal to zero otherwise, and on different combinations of fixed effects. Columns (1) and (2) confirm that our main RD results in Table 2 hold within a much wider sample as well.

We next examine within-firm-time changes in emissions. In these tests, we are examining how emissions evolve after elections when plants of the same firm are located in districts served by different political parties at the same point in time. Columns (3) and (4) show that, in any given year, a firm produces 2%-2.6% lower emissions of the same chemical in facilities located in districts represented by Democrats relative to facilities located in districts represented by Republicans. In Column (5), we show that this within-firm result is economically and statistically robust when we control for differences in the relationship between emissions and victory margins for Democrat and Republican representatives (which is a close approximation to an RD test).

To assess whether firms are reallocating pollution between facilities, we follow Giroud and Mueller (2019) and construct a measure of the extent to which the firm's other plants are represented by Democrats. We construct a firm-facility-chemical-year variable, *Other Facilities' Democrat Share*, that represents the fraction of all facilities owned by the firm (excluding the focal facility) that are located in districts represented by Democrats. This is similar to the empirical strategy used by Bertrand and Mullainathan (2003), but where we use an average of other plants' representation by Democrats instead of isolating shocks to the firm's headquarters location. We also construct an indicator variable, *High Democrat Share*, that equals one when the *Other Facilities' Democrat Share* variable exceeds the median level, and equals zero otherwise. Finally, we include a variable, *Local Democrat*, that is analogous to the *Democrat Win* variable from Table 5.

The results are reported in Table 6. Columns (1)–(2) report results for the *Other Facilities' Democrat Share* variable, while columns (4)–(6) report results for the *High Democrat Share* variable. Columns

(1) and (3) include chemical × year and facility × chemical fixed effects, while columns (2) and (4) include facility × chemical and district × chemical × year fixed effects (which absorb the *Local Democrat* variable). Columns (1) and (3) show that, while pollution falls when a facility is represented by a local Democrat, this effect is smaller when the firm's other facilities are located in districts represented by Democrats. Columns (2) and (4) show that, even after completely absorbing time-varying factors at the local district level (including the local representative), pollution is higher at the local facility by as much as 3–6% when the firm's *other* facilities are represented by Democrats.

Figure 8 depicts these results visually. The figure plots pollution at a plant located in a given district as a function of the share of other facilities owned by the same firm in other Congressional districts that are represented by Democrats. Figure 8 shows that pollution in a given district is a monotonically increasing function of the degree to which the same firms' other plants are represented by Democrats.

Finally, while reallocation tests are complicated to execute in an RD design, we perform an RD test as similar as possible in spirit to the tests in Table 6. Specifically, we examine pollution differences across facilities after first sorting facilities on the fraction of other facilities belonging to the same company that are represented by Democrats. To ease interpretation, the running variable in these tests is the Republican win margin. Figure 9 shows that shows that pollution increases in Republican districts when there is a relatively larger share of Democratic politicians governing the districts of other plants belonging to the same firm. This provides yet another piece of evidence supporting the idea that firms reallocate pollution across plants due to the ideology of the politicians representing each plant.

### 4.5 Real Effects on Public Health

We now examine whether differences in emissions induced by politicians' differing environmental ideologies have real effects on local health outcomes in politicians' districts. To do so, we merge the Zip code-level CMS panel of health outcomes with our data on emissions and elections. We then compare how health outcomes change when districts are represented by closely-elected Democrats versus closely-elected Republicans.

To directly link our tests to pollution-related health outcomes (as opposed to general health policies for which different parties may have different preferences), we study how, within the same district and year, health outcomes change in Zip codes with high pollution exposure (i.e., a relatively high number of plants), and in Zip codes with low pollution exposure (i..e, a relatively low number of plants) when Democrats win the district. As described in Section 2, we focus only on health outcomes related to respiratory diseases (CMS Major Diagnostic Category 4), since these health outcomes are more sensitive to emissions. We also conduct a placebo test using diseases that are less likely to be caused by pollution exposure (CMS MDC categories 18 to 21), such as health problems related to infectious diseases, mental health, and drug issues).[15]

In Panel A of Table 10, we study the effect of a Democrat win on respiratory health outcomes. As in the previous tables, the Democrat Win indicator is a district-level indicator equal to one if the district was won by a Democrat in the most recent election and zero otherwise, and the indicator for a high number of plants is equal to one if the Zip code-level number of plants in a given year is above the sample median in that year and zero otherwise. As a result, the interaction between the Democrat win indicator and the high number of plants indicator captures the incremental change in respiratory health outcomes in emission-sensitive (versus less-sensitive) areas when a district is won by a Democrat (versus a Republican).

In the first three columns of Table 10, our dependent variable is the number of clinical discharges related to respiratory diseases at the three-digit Zip code (Zip3) level. The columns show two key findings. First, areas with a high number of plants have 18.8%–32.5% more respiratory-related discharges than areas with a low number of plants, even within a given district and year. Hence, high-emissions areas are generally associated with higher levels of respiratory illness, regardless of the political party of the area's U.S. representative. However, columns (1)–(3) also show that this baseline effect decreases by up to one-third when the district is won by a Democrat. In specification (3), where we exploit cross-sectional variation between Zip codes located in the same district in the same year, we find that areas with a high number of plants have 18.8% more discharges when the district representative is a Republican, but only 12.2%more discharges when the district representative is a

[15]In Appendix Table A9, we also show that our results hold in the full CMS sample.

Democrat, relative to areas with a low number of plants.[16]

In Columns (4)-(6) of Panel A, we repeat the same experiment using Zip3-district-year payments for respiratory-related discharges as our outcome variable. The results of these tests confirm that the negative health effects of pollution are lower in areas that are pollution-sensitive when the area is represented by a Democrat. For example, areas with a high number of plants have 18.9% higher respiratory-related payments when the district is red, but only 11.6% higher payments when the district is blue.

In Panel B of Table 10, we conduct a placebo test using health outcomes that are less likely to be directly related to pollution, such as mental health issues and infectious diseases. This test helps to alleviate concerns that health outcomes broadly improve in areas represented by Democrats for reasons other than decreased pollution. If this were true, we would expect improvements in health outcomes across many categories of illnesses, and not only for respiratory diseases. However, Panel B shows that there are no incremental effects on our placebo health outcomes in pollution-sensitive areas when the district politician is a Democrat. These results suggest that our main findings in Panel A are indeed related to the politically-motivated changes in local pollution documented by our main tests.

#### 4.5.1 Reallocation

We also examine whether there is, in effect, a reallocation of public health costs that mirrors firms' reallocation of pollution across plants (Table 6). As in Table 6, for each firm-plant-time triad, we compute the fraction of the firm's *other* plants that are represented by Democrats at that point in time. Since health outcomes are measured at the Zip3 level, we then compute the average of this fraction across all plants within a given Zip3 area. We then assess whether respiratory illnesses in a given area are higher in cases where the plants in that area are owned by firms whose *other* plants are in areas represented by Democrats.

The results are shown in Figure 12. Indeed, the figure shows that adverse respiratory health effects are stronger in Zip3 areas where plants are owned by firms whose other plants are primarily

[16] As described in Section 2, a single Zip3 area can span multiple Congressional districts, which allows us to identify Zip-district fixed effects.

represented by Democrats. As a placebo test, we also examine whether adverse health effects for non-respiratory diseases also increase in these areas. The answer is no, as shown in Figure A5: if anything, non-respiratory illnesses drop in these areas on a relative basis.

### 4.5.2 Mechanism: Increased Regulatory Oversight

We now show that environmental inspections and (informal) enforcement actions increase when a Democratic representative just wins a district election. Intuitively, if overpolluting is costly because of fines, penalties, and other regulatory enforcement actions, then firms will optimally choose not to overpollute. However, if firms know that regulators will not enforce existing laws (and thus, will not issue fines or take other actions), then there is little incentive *not* to overpollute. Hence, if Democratic representatives are associated with greater regulatory monitoring and enforcement, firm pollution should fall after a Democrat is elected provided that the cost of complying with the regulation is lower than the expected pecuniary and non-pecuniary penalties from overpolluting.

We begin by studying the effect of marginal Democratic district wins on EPA-related inspections at the plant-year level. In the interest of space, we keep only two specifications from Table 2: a local linear regression in the $\pm 5\%$ win margin window, and a non-parametric RD estimate using a linear polynomial, a triangular kernel, and the optimal sample bandwidth selection method of Calonico et al. (2014). Our results are robust to alternative specifications.

In the first two columns of Table 8, we focus on the intensive margin. We show that, depending on the specification, marginal district wins by Democrats are systematically associated with a 17.7% to 21.4% increase in inspections for plants that are already subject to inspections (i.e., plants with non-zero annual inspections). Figure 10 displays this pattern graphically. To put the magnitudes in perspective, conditional on receiving at least one inspection, the average plant in our sample receives 2.44 inspections per year. A 20% increase in inspections—as implied by our estimates when a Democrat wins—leads to an extra 0.49 annual inspections relative to the mean.

In the last two columns of Table 8, we focus on the extensive margin. We show that district wins by Democrats lead to a 2.2% increase in the likelihood of getting at least one inspection. Again, this number is large, corresponding to a 6.7% increase relative to the unconditional probability of 32.64%

of receiving at least one inspection for the average plant in our sample. Overall, the results of Table 8 provide strong evidence that Democrat district affiliation results in more EPA inspections, suggesting that Democrat representatives may induce environmental agencies to monitor firms' emissions more closely.

Does increased monitoring also result in stricter enforcement when a district is won by Democrats? In the absence of frictions, it is not clear that realized enforcement actions should change significantly: firms should optimally reduce pollution once the expected cost of overpolluting goes up. Hence, the expected effects of increased monitoring on realized enforcement penalties are unclear. Nonetheless, in the presence of frictions such as asymmetric information about inspection thoroughness, it seems reasonable to think that, even as firms are reducing pollution, there may still be a greater number of enforcement actions per inspection due to inspectors writing up firms for minor infractions that would not have been penalized under Republican representatives.

In Table 9, we study enforcement actions and pecuniary penalties at the plant-year level. In Panel A, we start from the intensive margin of enforcement. Columns (1) and (2) show that the probability of an enforcement action (either formal or informal) increases by around 6.4% when the district where the plant is located is just-won by a Democrat. Figure 11 presents this pattern graphically. Again, this estimated effect implies a large increase in enforcement actions, given that the unconditional probability of an enforcement following an inspection is equal to 21.98%. In other words, Democrat wins increase the probability of an enforcement by 29.11% following an inspection.

Importantly, in Columns (3)-(6) of Panel A, we show that the main effects from Columns (1) and (2) mainly comes from an increase in *informal* enforcement (e.g., cease and desist letters) as opposed to formal enforcement (e.g., civil legal actions). Marginal Democrat wins are associated with a 7.7% increase in the probability of an informal enforcement action (an increase of 47.65% relative to the unconditional probability of 16.16% of an informal enforcement after an inspection), and only with a 2.7% increase in the probability of a formal action (an increase of 24.59% relative to the unconditional probability of 10.98% of a formal enforcement after an inspection). Consistent with these estimates, in the last two columns of Panel A we also confirm that the probability of a monetary penalty increases by around 2.2% when a Democrat just wins a local district election.

In Panel B of Table 9, we confirm that our enforcement results also hold on the intensive margin—enforcement actions per inspection increase by around 0.05 (a 27% increase relative to the sample mean) and informal enforcement actions per inspection increase by around 0.055 (a 52% increase relative to the sample mean) when a Democrat representative just-wins the district. On the other hand, formal enforcement actions per inspection and penalties per inspection do not experience statistically significant changes when a Democrat gains control of the local district.

The EPA delegates most of the enforcement of federal environmental protection laws to state regulatory agencies.[17] Consistent with the idea that state regulators are the primary agencies responsible for enforcing EPA regulations, Table A8 shows that our results on inspections and enforcements are mostly driven by state (as opposed to federal) regulators, though the main results hold for federal regulators as well. This suggests that, to the extent that politicians are actually interfering with regulatory agencies, such political interference appears to mostly happen at the *state* rather than the *federal* level in our sample.

If Democratic representatives are causally affecting the number of inspections carried out by state regulators, we would also expect the budgets of state agencies responsible for enforcing federal environmental laws to be an increasing fraction of the number of districts represented by Democrats (regardless of which party holds the governor's seat). Consistent with this conjecture, Figure A4 uses data from the Environmental Council of States to show that both a state's total environmental agency budget and the component of the environmental budget funded by the Federal government are increasing in the fraction of districts represented by Democrats. While this test is only suggestive, it supports the idea that Democratic representatives are playing an important role in the enforcement of environmental regulations within their home states.

[17]Generally speaking, if a state has more stringent environmental protection laws than the federal EPA laws, then the EPA usually delegates inspection and enforcement authority to the state.

## 4.6 Additional Robustness

### 4.6.1 Within-party Variation

Our main hypothesis is that the ideology of politicians causes them to take actions to affect pollution in their home districts. By sorting politicians into groups based on their political party, our main tests implicitly assume that a politician's political party (i.e. Democrat or Republican) is an unbiased proxy for the personal ideology of the politician. Figure 1 provides evidence supporting this assumption: the figure shows that the amount of inter-party variation in LCV scores is many times larger than the amount of intra-party variation in representatives' environmental voting records. Nonetheless, it is important to verify more systematically that politicians' actions are driven by their ideological views about the environment and not by some other factor that systematically differs between Democrats and Republicans.

To do so, we exploit *within-party* ideological differences to see if, for example, firms pollute less in districts just won by Democrats with strongly pro-environment voting records relative to firms in other districts just won by Democrats with weaker environmental voting records. This test allows us to confirm that it is the ideology of the politician, rather than the politician's party, that is causing the changes in observed pollution levels at constituent firms.

We measure ideology in two ways. First, we obtain Member Ideology scores for each representative from the VoteView database. These scores are calculated based on politicians' voting records using the DW-NOMINATE methodology. Second, we utilize the same annual LCV environmental scorecards that we used to construct Figure 1. LCV reports a score ranging from 0 to 100 for each representative based on their voting record on environment-related bills, with 100 representing a perfect pro-environment voting record.

The results of this test are reported in Figure 6. The figure shows that the reductions in firm pollution are much stronger in districts just won by "deep blue" (more pro-environment) Democrats than in districts just won by "light blue" Democrats. This result provides further evidence that the reductions in pollution documented in Table 2 are caused by differences in political ideology between Democrats and Republicans rather than other factors that happen to be correlated with political party membership.

#### 4.6.2 Seat Pickups

If partisan ideology is a key driver of politicians' influence over emissions in their district, we would also expect to see strong effects on emissions when a district switches from being represented by a Democrat to being represented by a Republican (and vice versa; often known as a "pickup" for the winning party). To test this hypothesis, we start with all facilities that were represented by Republicans in the year prior to an election. We then break up these facilities into those that were represented by a Democrat after the election, and those that were represented by a Republican.

Table A2 confirms that seat pickups are associated with strong effects on local firms' pollution. Columns (1) and (2) show that, after a district moves from Republican to Democratic representation, relative emissions at facilities in that district decline by approximately 6%. Columns (3) and (4) show that, after a district moves from Democratic to Republican representation, relative emissions at facilities in that district rise by approximately 3%. Figures 4a and 4b display these patterns graphically. Collectively, these findings support the idea that partisan ideological differences are at least partially responsible for the stark changes in emissions in red versus blue districts during our sample period.

#### 4.6.3 Political Power

All else equal, greater political power should translate into a greater ability to influence regulators. Hence, we might expect our results to be stronger for powerful politicians such as the chair or ranking member of House committees. In addition, all else equal, politicians with stronger ideological views should have a higher probability of influencing regulators. Thus, we might expect our results to be strongest for the *interaction* of politicians' ideologies and political power.

To examine this hypothesis, we perform a triple-difference analysis that interacts our main *Democrat Win* variable with a committee chair dummy variable and another dummy variable related to a politician's ideology. We construct a dummy variable that equals one if a member is a committee chair, and takes the value of zero. We also construct a second variable that captures the strength of House members' political ideologies. This variable takes the value of one if a politician has a strong ideology (ideology score in the top quartile of the distribution) in either direction and takes the value of zero otherwise. We then interact these variables with each other and with our main *Democrat Win* variable.

The results are presented in Table 4. We find three results. First, there is still a reduction in pollution in districts represented by non-committee-chair, less-ideological Democrats. Second, this result is not stronger (and is if anything weaker) for districts represented by less-ideological *committee chairs*, suggesting that political power alone is not a major contributing factor to our results. Third, and most importantly, in columns (3)–(5), we find very strong effects coming from *ideological* Democratic committee chairs – the loading of -0.249 for the *Low Id. Score* $\times$ *Democrat Win* $\times$ *Committee Chair* variable in column (5) is more than 10 times larger than the loading on the main effect in the same column. This suggests that powerful committee chairs *with strong ideologies* may be most adept at influencing state environmental regulators and/or influencing pollution decisions at firms in the districts they represent. This reinforces the central point that our main results appear to be capturing the effect of *political ideology* on regulatory and firm outcomes.

## 5 Conclusion

We exploit detailed, plant-level data to causally examine how politicians' party affiliations affect the industrial pollution decisions of firms in their areas. Using a regression discontinuity design involving election outcomes in close U.S. congressional races, we find that plants pollute more per unit of production when they are represented by a closely-elected Republican than by a closely-elected Democrat. We also find evidence of reallocation: firms shift pollution away from areas newly represented by a Democrat. Pollution-related illnesses spike around plants in areas represented by Republicans, suggesting that firms' pass-through of ideological differences across politicians can have real consequences for local communities.

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**Figure 1**

**Environmental Polarization Over Time**

This figure plots the median annual League of Conservation Voters (LCV) scores of Democrats and Republicans in the U.S. House of Representatives from 1991 to 2020. The LCV computes scores based on politicians' voting records on legislation related to the environment. The data was retrieved from the LCV website.

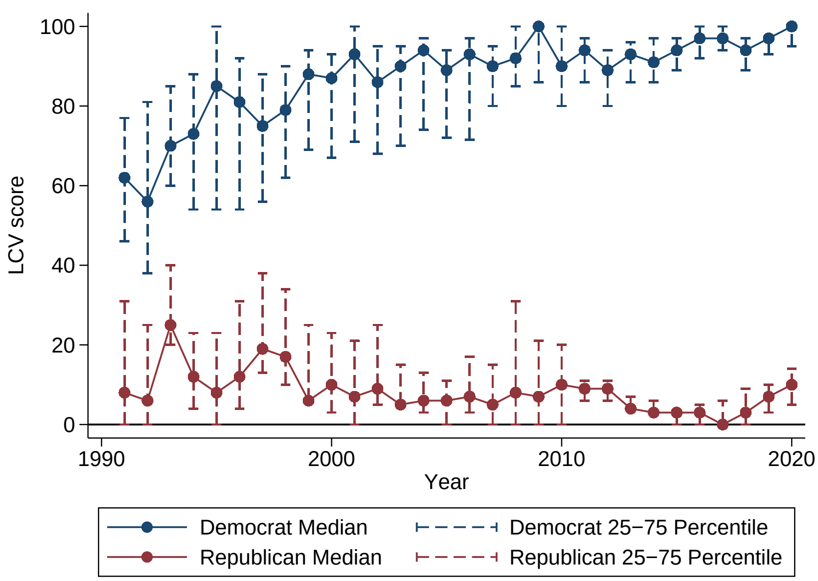


**Figure 2**

**RD using Close Elections: Emissions**

The figure shows the natural log of facility-chemical-level toxic emissions in the two years following Congressional elections as a function of the vote share margin of a Democratic candidate in a congressional district. Vote share margin is the percentage by which a candidate won (lost) the election. The sample uses elections won or lost by a margin of 5% or less.

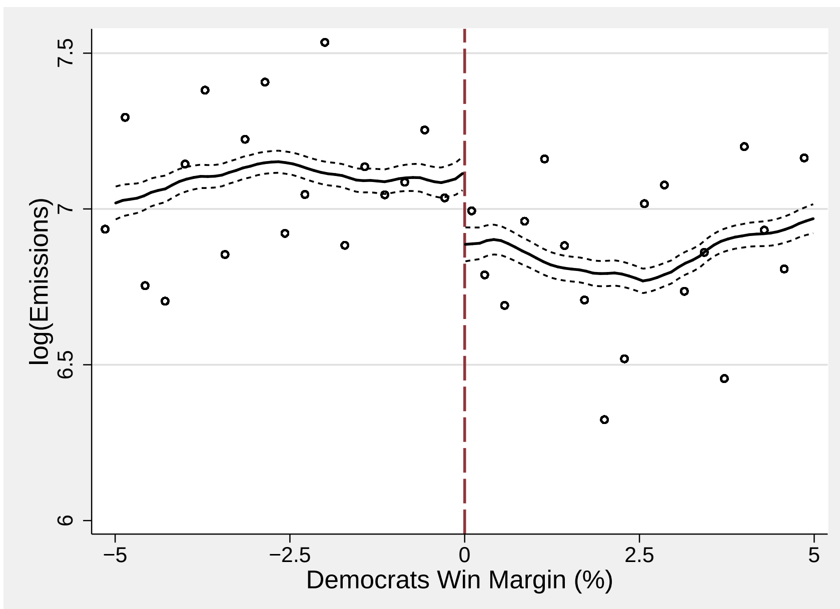
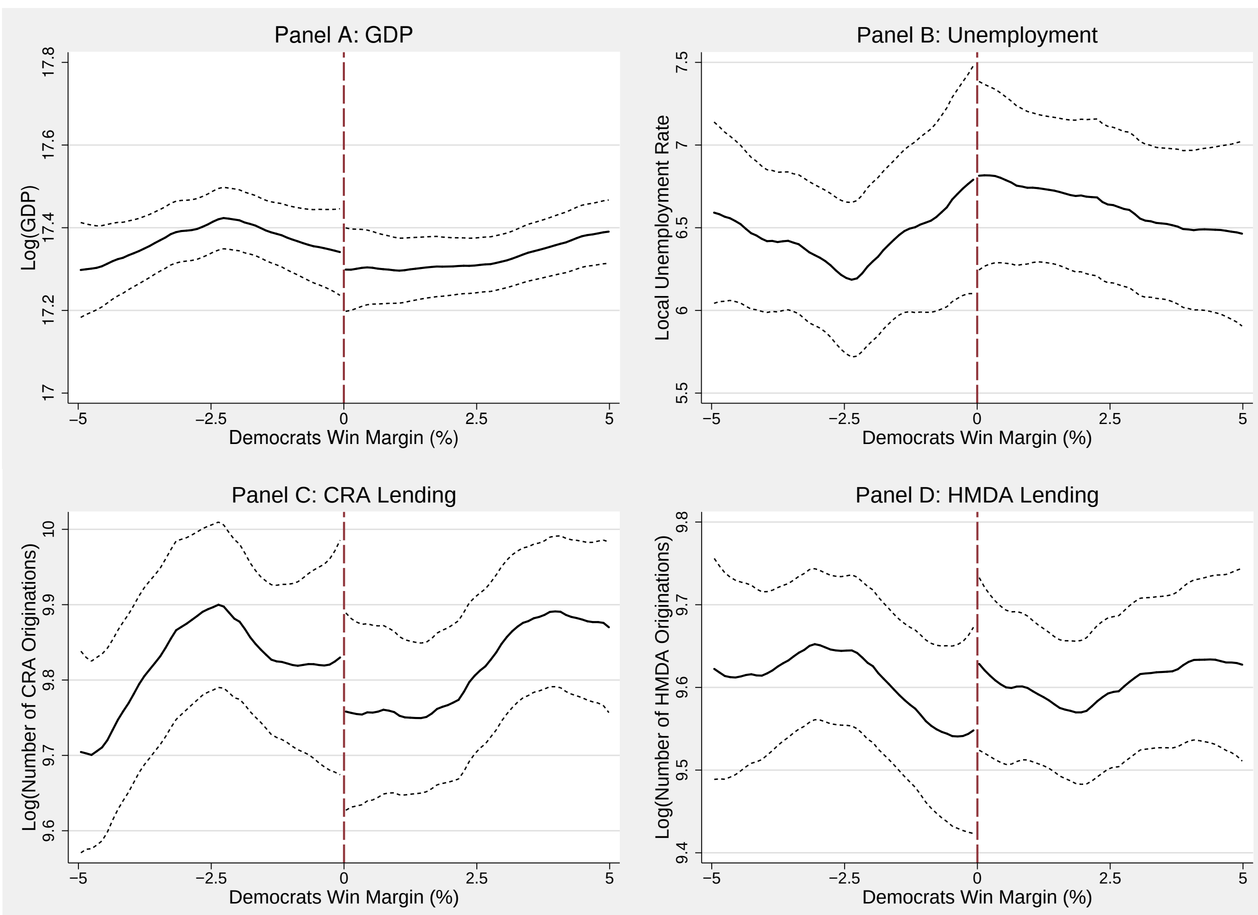


**Figure 3**

**Covariate Balance Tests**

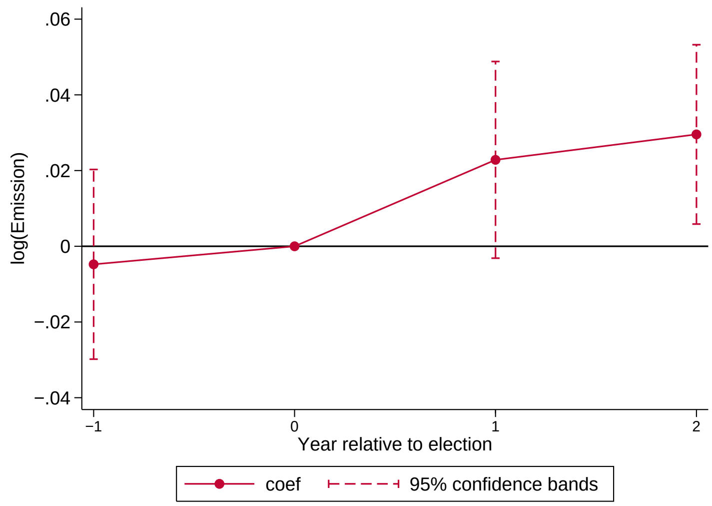
The figures show the results of covariate balance tests in the close elections. Panels A to D respectively report the natural logarithm of district-level GDP, the unemployment rate, the natural logarithm of the number of CRA originations and the natural logarithm of the number of HMDA originations in the two years following Congressional elections as functions of the vote share margin of a Democratic candidate in a congressional district. Democrat win margin is the percentage by which a Democrat candidate won or lost the election. The sample uses elections won or lost by a margin of 5% or less.



## Figure 4

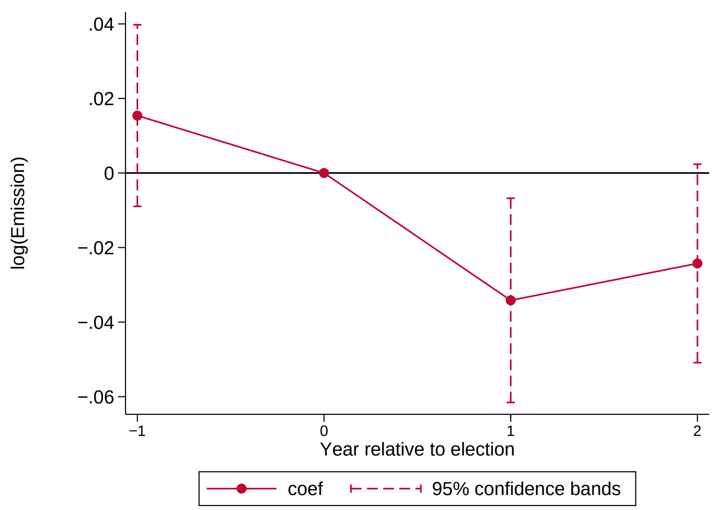
## Examining "Switchers"

The figure shows the difference in the natural log of emissions for facilities located in areas that switch from a Democratic to a Republican representative, and vice versa. Emission differences are normalized to equal zero in the year of the (November) election. The first figure takes all facilities represented by Democrats and then examines emissions based on whether the *next* representative is a Democrat or Republican. The second figure takes all facilities represented by Republicans and then examines emissions based on whether the *next* representative is a Democrat or Republican.




**(a)**

Switch from Democrat to Republican




**(b)**

Switch from Republican to Democrat

**Figure 5**

**Emissions RD based on Governor's Political Party**

The figure splits the sample of close elections by the political party of the governor in the congressional districts' states. As in previous figure, the figure shows the natural log of facility-chemical-level toxic emissions in the two years following Congressional elections as a function of the vote share margin of a Democratic candidate in a congressional district. The red line indicates states with a Republican governor and the blue line indicates states with a Democratic governor. Vote share margin is the percentage by which a candidate won (lost) the election. The sample uses elections won or lost by a margin of 5% or less.

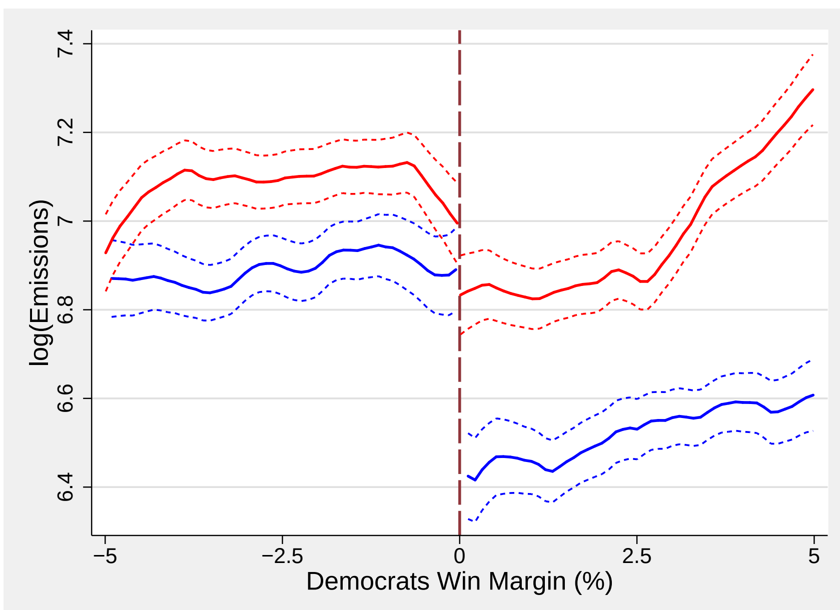
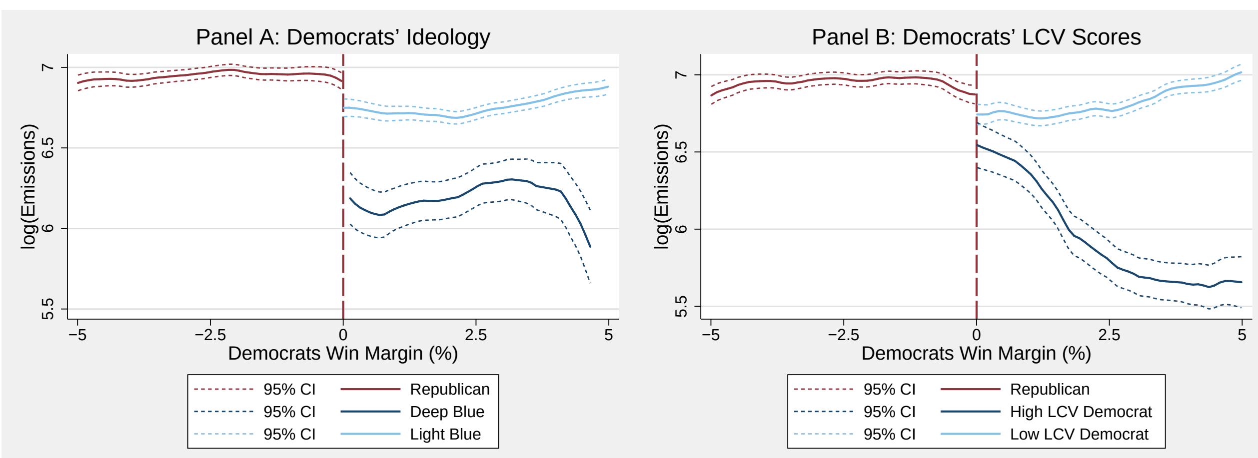


**Figure 6**

**The Effects of Ideology**

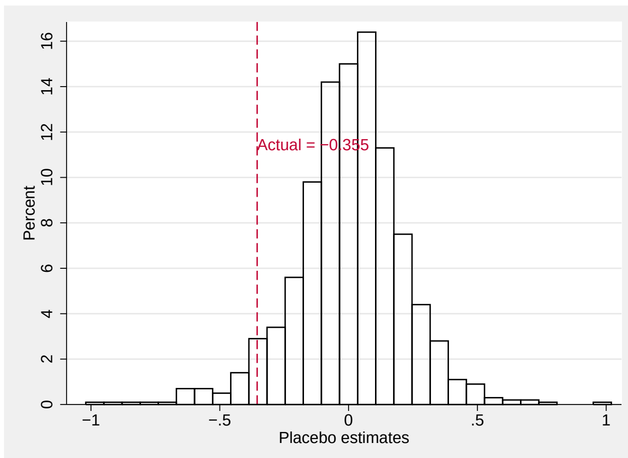
In this figure, we split the sample of close elections based on Democrats' ideology using two measures of ideological variation: ideology scores from the VoteView database of voting records, and environmental scorecards from the League of Conservation Voters (LCV). As in Figure 2, the figure plots the natural logarithm of toxic emissions at the facility-chemical-year level in the two years following Congressional elections as a function of the vote share margin of a Democratic candidate in the congressional district. In Panel A, our measure of ideology is the politician's ideology score from VoteView (updated annually). The deep blue line represents marginal wins by Democrats in the 25th percentile of the Democrat ideology distribution, while the light blue line represents marginal Democrat wins by all other Democrats. In Panel B, our measure of ideology is the politician's annual LCV score. The deep blue line represents marginal wins by Democrats in the 75th percentile of the Democrat LCV score distribution, while the light blue line represents marginal Democrat wins by all other Democrats. The LCV scores come from the LCV website. Democrat win margin is the percentage by which a Democrat candidate won or lost the election. The sample uses elections won or lost by a margin of 5% or less.



## Figure 7

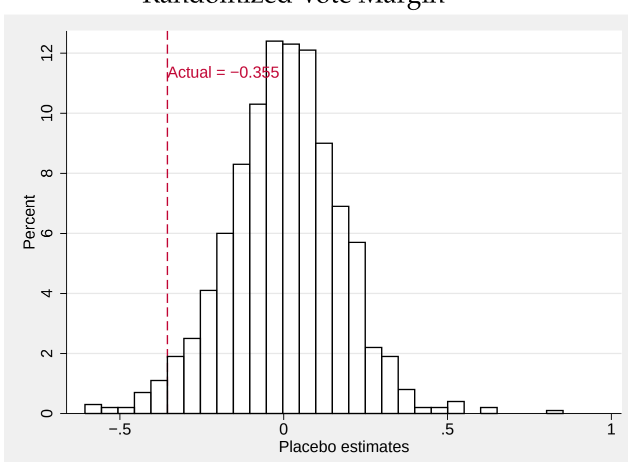
## Placebo Tests

Both figures show placebo tests for the nonparametric specifications in Table 2. The first figure shows the distribution of coefficients from 10,000 specifications where the margin of victory was randomly assigned and all other data was left unchanged. The second figure shows the distribution of coefficients from 10,000 specifications where the politician's political party was randomly assigned and all other data was left unchanged. In both figures, our actual coefficient from Table 2 is plotted for comparison.




**(a)**

Randomized Vote Margin




**(b)**

Randomized Political Party

**Figure 8**

**Reallocation of Toxic Emission**

This figure plots the relationship between pollution and share of Democrat politicians governing the districts of other plants belonging to the same firm. We remove any time-invariant chemical fixed effects from the pollution levels of a facility and plot a bin scatter, with 25 bins. We sort the share of democrats into 25 bins and take the average of the share and pollution in each of this bins.

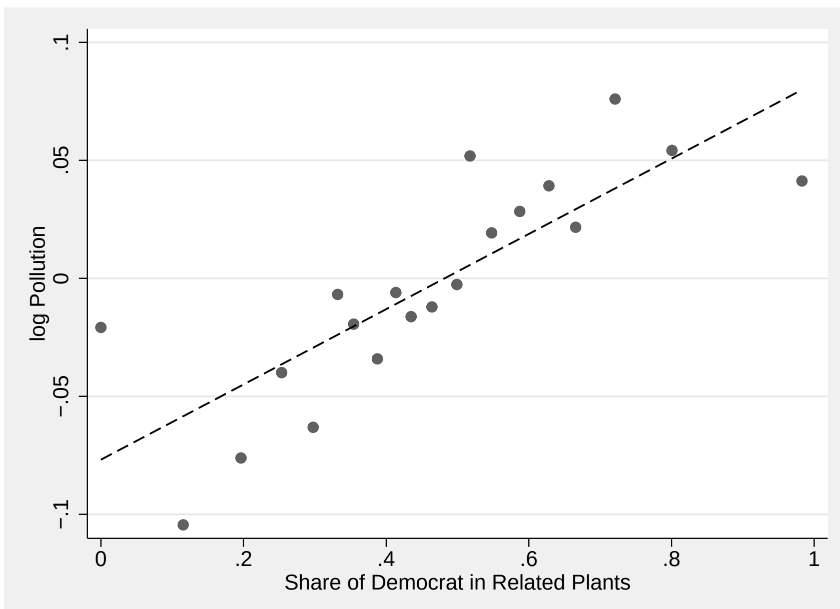


**Figure 9**

**Reallocation of Toxic Emission**

This figure shows that pollution increases in Republican districts when there is a relatively larger share of Democratic politicians governing the districts of other plants belonging to the same firm.

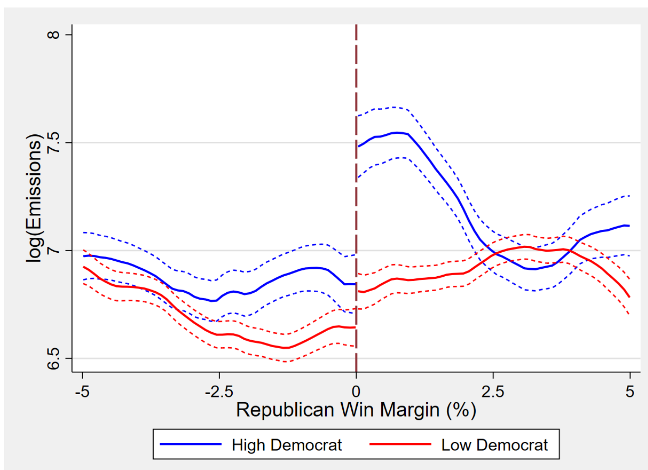


**Figure 10**

**RD using Close Elections: Inspections**

The figure shows the natural log of facility inspections in the two years following Congressional elections as a function of the vote share margin of a Democratic candidate in a congressional district. Vote share margin is the percentage by which a candidate won (lost) the election. The sample uses elections won or lost by a margin of 5% or less.

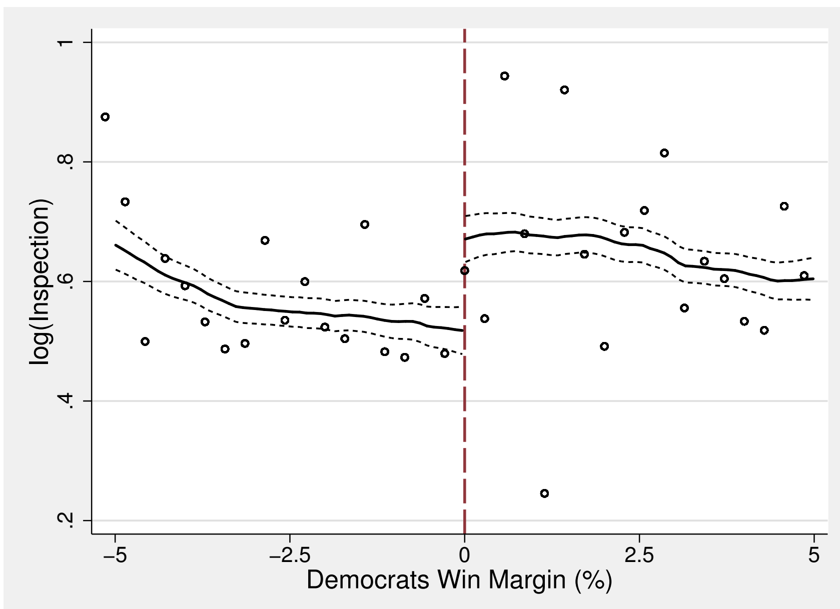


**Figure 11**

**RD using Close Elections: Enforcement**

The figure shows an indicator variable for facility-level enforcement actions in the two years following Congressional elections as a function of the vote share margin of a Democratic candidate in a congressional district. Vote share margin is the percentage by which a candidate won (lost) the election. The sample uses elections won or lost by a margin of 5% or less.

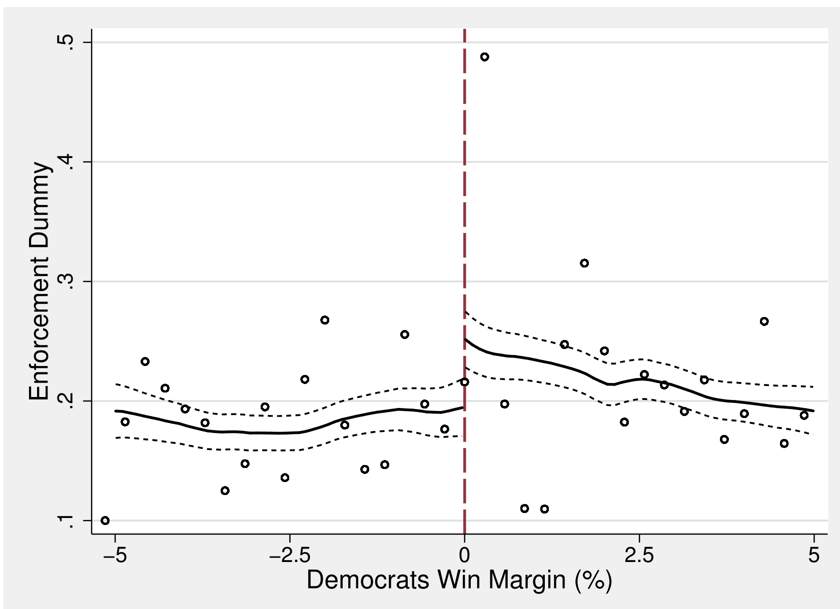


**Figure 12**

**BM Tests: Respiratory Diseases**

This figure plots the relationship between respiratory disease and the share of Democratic politicians governing the districts of other plants belonging to the firms having establishments in a Zip code. We plot a bin scatter, with 25 bins. We sort the share of Democrats into 25 bins and take the average of the share and respiratory disease in each of these bins. Panel A includes the zip codes that contains a greater than the median number of establishments. Panel B includes less than median number of establishments.

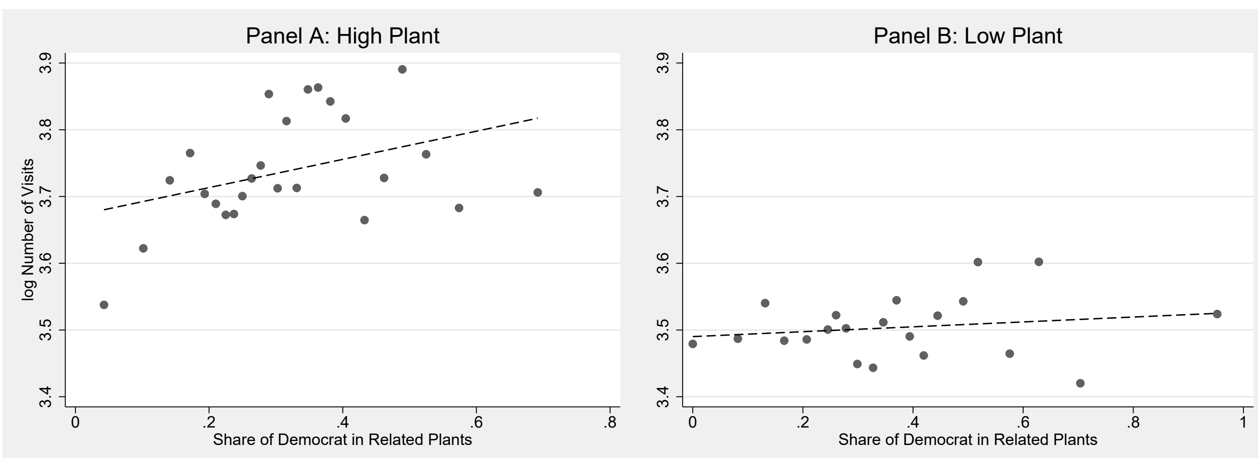


**Table 1**

**Summary Statistics**

This table presents summary statistics for the main variables in the paper. Emission is annual toxic chemical releases at facility-chemical-year level over the period 1991-2016, available on U.S. Environmental Protection Agency's website. Compliance data including inspection, enforcement and penalty are from EPA's Enforcement and Compliance History Online (ECHO) dataset. Congressional election data are from MIT Election Data and Science Lab. Health data including number of discharges and total payment for respiratory disease or non-pollution related disease are from Centers for Medicare & Medicaid Services (CMS). All the data is publicly-available.

| | Mean | SD | p10 | p50 | p90 | Facilities | Observations |
|---|---|---|---|---|---|---|---|
| Emissions | 30845.79 | 177340.99 | 0.00 | 369.00 | 43486.00 | 37,369 | 1,784,978 |
| Inspections | 0.80 | 1.67 | 0.00 | 0.00 | 2.00 | 37,332 | 438,271 |
| Enforcement | 0.15 | 0.53 | 0.00 | 0.00 | 0.00 | 37,332 | 438,271 |
| Formal Enforcement | 0.06 | 0.30 | 0.00 | 0.00 | 0.00 | 37,332 | 438,271 |
| Informal Enforcement | 0.09 | 0.35 | 0.00 | 0.00 | 0.00 | 37,332 | 438,271 |
| Penalty | 277.99 | 1890.06 | 0.00 | 0.00 | 0.00 | 37,332 | 438,271 |
| Democrats Win Margin | -1.47 | 36.80 | -44.16 | -5.17 | 47.48 | 37,369 | 1,674,577 |
| Discharges (Respiratory) | 54.45 | 58.33 | 13.00 | 34.00 | 121.00 | . | 60,352 |
| Total Payment (Respiratory) | 484797.62 | 536745.54 | 96069.00 | 302581.50 | 1097060.88 | . | 60,352 |
| Discharges (Placebo) | 82.25 | 138.20 | 12.00 | 32.00 | 205.00 | . | 28,282 |
| Total Payment (Placebo) | 1064948.34 | 1761292.47 | 87198.00 | 433993.00 | 2711063.00 | . | 28,282 |

**Table 2**

**Representatives' Political Ideologies and Toxic Emissions**

In this table, we study the effect of marginal district wins by Democratic Party candidates on emissions by local plants. In Column (1), we regress the natural logarithm of plant-level emissions on a dummy equal to one if the district where the plant is located was won by a democrat in its most recent election, and equal to zero otherwise. In Columns (2)-(3), we augment this specification with a linear interaction term between the dummy and democrat margin votes in a local OLS regression framework. In Columns (4)-(7), we use non-parametric local polynomial RD estimators (Calonico, Cattaneo, and Titiunik, 2014), experimenting with linear and quadratic polynomials and triangular and Epanechnikov kernels. In Columns (1)-(3), we report standard errors clustered at the district-year level. In Columns (4)-(7), we report robust bias-corrected standard errors as in Calonico, Cattaneo, and Titiunik (2014). The sample contains all district elections during the period 1991-2016. In Columns (1)-(3), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

| | Dep. Variable: log(Emissions) | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Democrat Win | -0.213** | -0.397** | -0.305*** | -0.355*** | -0.349*** | -0.353*** | -0.355*** |
| | (0.08) | (0.16) | (0.12) | (0.03) | (0.03) | (0.04) | (0.04) |
| Method | Local OLS | Local OLS | Local OLS | NP | NP | NP | NP |
| Polynomial | Zero | Linear | Linear | Linear | Linear | Quadratic | Quadratic |
| Kernel | – | – | – | Tri. | Epa. | Tri. | Epa. |
| Chemical FE | No | No | Yes | – | – | – | – |
| Observations | 94,140 | 94,140 | 94,111 | 1,329,508 | 1,329,508 | 1,329,508 | 1,329,508 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table 3**

**Emissions and Plant Production**

In this table, we study the effect of marginal district wins by Democratic Party candidates on plant toxic emission per production. The dependent variable is the natural logarithm of cumulative emissions per production which is the cumulative product of emissions per production at plant-chemical level. In column (1), we regress on a dummy equal to one if the district where the plant is located is marginally won by a democrat together with a linear interaction term between the dummy and democrat margin votes. In columns (2), we use non-parametric local polynomial RD estimators (Calonico, Cattaneo, and Titiunik, 2014) with linear polynomials and triangular kernels. We report standard errors clustered in 1% equally-spaced bins for local linear OLS regressions and robust bias-corrected standard errors as in Calonico, Cattaneo, and Titiunik (2014) for non-parametric regressions. The sample contains all district elections during the period 1991-2016. In Columns (1), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

| | log(Cumulative Emissions/Production) | |
|---|---|---|
| | (1) | (2) |
| Democrat Win | -0.103* | -0.077*** |
| | (0.06) | (0.02) |
| Method | Local OLS | NP |
| Polynomial | Linear | Linear |
| Kernel | – | Tri. |
| Chemical FE | Yes | – |
| Observations | 84,307 | 1,178,054 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table 4**

**Affiliation, Power, and Ideology**

This table uses OLS regressions to examine the relationship between plant toxic emissions and politicians' party affiliation, power, and ideology. The dependent variable is the natural logarithm of emissions at plant-chemical-year level. Democrat Win is an indicator equal to one if a candidate from the Democratic party wins the election of the district in which the plant is located, and equal to zero otherwise. Committee Chair is an indicator equal to one if a candidate holds the chair of a committee in Congress, and equal to zero otherwise. Ideological is an indicator equal to one if a candidate has an ideology score lower than the 25th percentile of the ideology distribution within Democrat party or higher than 75th percentile of the distribution within Republican party, and equal to zero otherwise. Standard errors are clustered at the district-year level. The sample period is 1991-2016.

| | Dep. Variable: log(Emissions) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Democrat Win | -0.047** | -0.035** | -0.026** | -0.020* | -0.020* |
| | (0.02) | (0.02) | (0.01) | (0.01) | (0.01) |
| Democrat × Chair | 0.047 | -0.002 | 0.039 | 0.017 | 0.016 |
| | (0.05) | (0.05) | (0.04) | (0.04) | (0.04) |
| Ideological × Democrat × Chair | 0.032 | -0.006 | -0.143** | -0.168** | -0.222*** |
| | (0.09) | (0.11) | (0.07) | (0.07) | (0.07) |
| Lower Order Terms | Yes | Yes | Yes | Yes | Yes |
| Census District FE | Yes | No | No | No | No |
| Year FE | Yes | No | No | No | No |
| Firm × Chemical × Year FE | No | Yes | Yes | Yes | Yes |
| Census District × Chemical FE | No | Yes | No | No | No |
| Facility × Chemical FE | No | No | Yes | Yes | Yes |
| State × Year FE | No | No | No | Yes | No |
| State × Year × Chemical FE | No | No | No | No | Yes |
| Observations | 1,300,744 | 770,151 | 761,731 | 761,731 | 718,698 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table 5**

**Political Ideology and Within-firm Emissions**

This table uses OLS regressions to examine the relationship between plant toxic emissions and political affiliations. The dependent variable is the natural logarithm of emissions at the plant-chemical-year level. Democrat Win is an indicator that takes the value of one if a candidate from the Democratic party wins the election in the district where the plant is located. Standard errors are clustered at the district-year level. The sample period is 1991-2016.

| | Dep. Variable: log(Emissions) | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Democrat Win | -0.059*** | -0.042*** | -0.020** | -0.018* | -0.020* |
| | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) |
| Census District FE | Yes | No | No | No | No |
| Year FE | Yes | No | No | No | No |
| Firm × Chemical × Year FE | No | Yes | Yes | Yes | Yes |
| Census District × Chemical FE | No | Yes | No | No | No |
| Facility × Chemical FE | No | No | Yes | Yes | Yes |
| State × Year FE | No | No | No | Yes | No |
| State × Year × Chemical FE | No | No | No | No | Yes |
| Observations | 1,329,508 | 790,904 | 782,632 | 782,632 | 739,229 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table 6**

**Reallocation of Toxic Emissions**

This table presents the result of regressing toxic emission on the share of Democratic politicians governing the districts of other plants belonging to the same firm. The sample period is 1991-2016.

| | log(Pollution)<br>(1) | log(Pollution)<br>(2) | log(Pollution)<br>(3) | log(Pollution)<br>(4) |
|---|---|---|---|---|
| Other Facilities' Democrat Share | 0.028** | 0.063*** | | |
| | (0.013) | (0.015) | | |
| Local Democrat | -0.018* | | -0.017* | |
| | (0.011) | | (0.010) | |
| High Democrat Share | | | 0.015** | 0.027*** |
| | | | (0.007) | (0.008) |
| Chemical × Year | Yes | No | Yes | No |
| Facility × Chemical | Yes | Yes | Yes | Yes |
| District × Chemical × Year | No | Yes | No | Yes |
| Adj.-$R^2$ | 0.890 | 0.922 | 0.890 | 0.922 |
| Obs. | 1,128,556 | 897,686 | 1,128,556 | 897,686 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table 7**

**Firm-Level Pollution and Cost of Good Sold**

In this table, we study the effects of firm exposure to political ideology, its pollution behavior, and its production costs. The unit of observation is a firm-chemical-year. To obtain firm-level cost of good sold (COGS), we manually match each firm name in the EPA data with a corresponding firm name in Compustat. The variable Democrat share in Columns (1) and (3) is the fraction of a firm's total plants operating in a Democrat district. In Columns (2) and (4), we weigh each plant-chemical-year observation by its total emission levels, such that plant-chemical observations associated with higher emissions receive more weights. Standard errors are clustered at the district-year level. The sample period is 1991-2016.

| | log(Emissions) | | log(COGS) | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Democrat Share | -0.040* | | 0.048*** | |
| | (0.02) | | (0.01) | |
| Emissions-Weighted Democrat Share | | -0.062*** | | 0.037*** |
| | | (0.02) | | (0.01) |
| Chemical-Year FE | Yes | Yes | Yes | Yes |
| Firm Chemical FE | Yes | Yes | Yes | Yes |
| Observations | 189,858 | 189,858 | 189,313 | 189,313 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table 8**

**Inspections**

In this table, we study the effect of marginal district wins by Democratic Party candidates on inspections by the EPA. The dependent variable in columns (1)-(2) is the natural logarithm of inspections for plants in a year. The dependent variable in columns (3)-(4) is an indicator variable that takes the value of one if a plant gets EPA inspection and zero otherwise. In columns (1) and (3), we regress inspection on a dummy equal to one if the district where the plant is located is marginally won by a democrat together with a linear interaction term between the dummy and democrat margin votes. In Columns (2) and (4), we use non-parametric local polynomial RD estimators (Calonico, Cattaneo, and Titiunik, 2014) with linear polynomials and triangular kernels. We report standard errors clustered in 1% equally-spaced bins for local linear OLS regressions and robust bias-corrected standard errors as in Calonico, Cattaneo, and Titiunik (2014) for non-parametric regressions. The sample contains all district elections during the period 1991-2016. In Columns (1) and (3), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

| | log(Inspections) | | Inspection Dummy | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Democrat Win | 0.214*** | 0.177*** | 0.029 | 0.022*** |
| | (0.07) | (0.02) | (0.03) | (0.01) |
| Method | Local OLS | NP | Local OLS | NP |
| Polynomial | Linear | Linear | Linear | Linear |
| Kernel | – | Tri. | – | Tri. |
| Observations | 9,418 | 132,987 | 30,773 | 414,341 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

## Table 9

## Enforcement

In this table, we study the effect of marginal district wins by Democratic Party candidates on enforcement and penalty by EPA. The dependent variables in panel A are indicator variables that takes the value of one if a plant gets EPA enforcement, informal enforcement, formal enforcement or penalty and zero otherwise. The dependent variables in panel B are enforcement, informal enforcement, formal enforcement or penalty conditional on inspection. In columns (1), (3), (5), and (7) of both panels, we regress on a dummy equal to one if the district where the plant is located is marginally won by a democrat together with a linear interaction term between the dummy and democrat margin votes. In columns (2), (4), (6), and (8) of both panels, we use non-parametric local polynomial RD estimators (Calonico, Cattaneo, and Titiunik, 2014) with linear polynomials and triangular kernels. We report standard errors clustered in 1% equally-spaced bins for local linear OLS regressions and robust bias-corrected standard errors as in Calonico, Cattaneo, and Titiunik (2014) for non-parametric regressions. The sample contains all district elections during the period 1991-2016. In Columns (1), (3), (5) and (7), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

**Panel A: Enforcement Dummies**

| | Enforcement | | Informal Enf. | | Formal Enf. | | Penalty | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Democrat Win | 0.064* | 0.068*** | 0.080** | 0.077*** | 0.003 | 0.027*** | 0.005 | 0.022*** |
| | (0.03) | (0.01) | (0.03) | (0.01) | (0.02) | (0.01) | (0.01) | (0.01) |
| Method | Local OLS | NP | Local OLS | NP | Local OLS | NP | Local OLS | NP |
| Polynomial | Linear | Linear | Linear | Linear | Linear | Linear | Linear | Linear |
| Kernel | – | Tri. | – | Tri. | – | Tri. | – | Tri. |
| Observations | 9,419 | 132,989 | 9,419 | 132,989 | 9,419 | 132,989 | 9,419 | 132,989 |

**Panel B: Enforcement per Inspection**

| | $\frac{\text{Enforcement}}{\text{Inspections}}$ | | $\frac{\text{Informal Enf.}}{\text{Inspections}}$ | | $\frac{\text{Formal Enf.}}{\text{Inspections}}$ | | $\frac{\text{Penalties}}{\text{Inspections}}$ | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Democrat Win | 0.050 | 0.055*** | 0.058** | 0.055*** | -0.005 | 0.009* | -47.603 | 28.617 |
| | (0.04) | (0.01) | (0.03) | (0.01) | (0.02) | (0.00) | (61.21) | (23.84) |
| Method | Local OLS | NP | Local OLS | NP | Local OLS | NP | Local OLS | NP |
| Polynomial | Linear | Linear | Linear | Linear | Linear | Linear | Linear | Linear |
| Kernel | – | Tri. | – | Tri. | – | Tri. | – | Tri. |
| Observations | 9,419 | 132,989 | 9,419 | 132,989 | 9,419 | 132,989 | 9,419 | 132,989 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

## Table 10

### Real Effects: Local Health Outcomes

This table uses OLS regressions to examine the relationship between local health outcomes and political affiliations. The dependent variable is the natural logarithm of discharges and total payments for respiratory diseases in Panel A and pollution-unrelated diseases in Panel B. Democrat Win is an indicator that takes the value of one if a Democratic candidate wins the election of the district in which the plant is located. High Num. Plants is an indicator that takes the value of one if the number of plants in the area is above median. ZIP is the three-digit zip code. MDC is major diagnostic category code that divides all possible principal diagnoses into 25 mutually exclusive diagnosis areas. Standard errors are clustered at district-year level. The sample period is 2011-2016.

**Panel A: Respiratory Diseases**

| | log(Number of Discharges) | | | log(Total Payments) | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Democrat Win | 0.014 | 0.007 | | 0.101*** | 0.021 | |
| | (0.02) | (0.02) | | (0.02) | (0.02) | |
| High Num. Plants | 0.325*** | 0.288*** | 0.188*** | 0.350*** | 0.301*** | 0.189*** |
| | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) | (0.03) |
| Democrat Win × High Num. Plants | -0.082*** | -0.071** | -0.066** | -0.126*** | -0.075** | -0.073** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| ZIP FE | Yes | Yes | No | Yes | Yes | No |
| Census District FE | No | Yes | No | No | Yes | No |
| Year FE | Yes | Yes | No | Yes | Yes | No |
| District-Year FE | No | No | Yes | No | No | Yes |
| ZIP-District FE | No | No | Yes | No | No | Yes |
| R-Squared | 0.187 | 0.239 | 0.273 | 0.207 | 0.264 | 0.299 |
| Observations | 60,351 | 60,349 | 60,336 | 60,351 | 60,349 | 60,336 |

**Panel B: Placebo, Pollution-Unrelated Diseases**

| | log(Number of Discharges) | | | log(Total Payments) | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Democrat Win | 0.023 | -0.012 | | 0.131*** | -0.041 | |
| | (0.02) | (0.04) | | (0.03) | (0.04) | |
| High Num. Plants | 0.212*** | 0.149*** | 0.112*** | 0.259*** | 0.167*** | 0.124*** |
| | (0.02) | (0.03) | (0.03) | (0.03) | (0.03) | (0.04) |
| Democrat Win × High Num. Plants | 0.035 | 0.060* | 0.004 | -0.041 | 0.053 | 0.004 |
| | (0.03) | (0.04) | (0.05) | (0.04) | (0.04) | (0.05) |
| ZIP FE | Yes | Yes | No | Yes | Yes | No |
| Census District FE | No | Yes | No | No | Yes | No |
| Year FE | Yes | Yes | No | Yes | Yes | No |
| District-Year FE | No | No | Yes | No | No | Yes |
| ZIP-District FE | No | No | Yes | No | No | Yes |
| MDC FE | Yes | Yes | Yes | Yes | Yes | Yes |
| R-Squared | 0.216 | 0.249 | 0.275 | 0.431 | 0.469 | 0.493 |
| Observations | 28,276 | 28,273 | 28,227 | 28,276 | 28,273 | 28,227 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

## Appendix: For Online Publication

**Figure A1**

**Opinion on the Environment**

This figure reports congressional district residents' opinions about the environment in 2020 following Congressional elections in 2018 as a function of the vote share margin of the Democratic candidate in the election. The numbers on the vertical axis represent the percentage of local residents who think Congress should be doing more or much more to address environmental issues. The data is obtained from the Yale Climate Opinion Maps (YCOM) and is only available for 2020. Democrat win margin is the percentage by which a Democrat candidate won or lost the election. The sample uses elections won or lost by a margin of 5% or less.

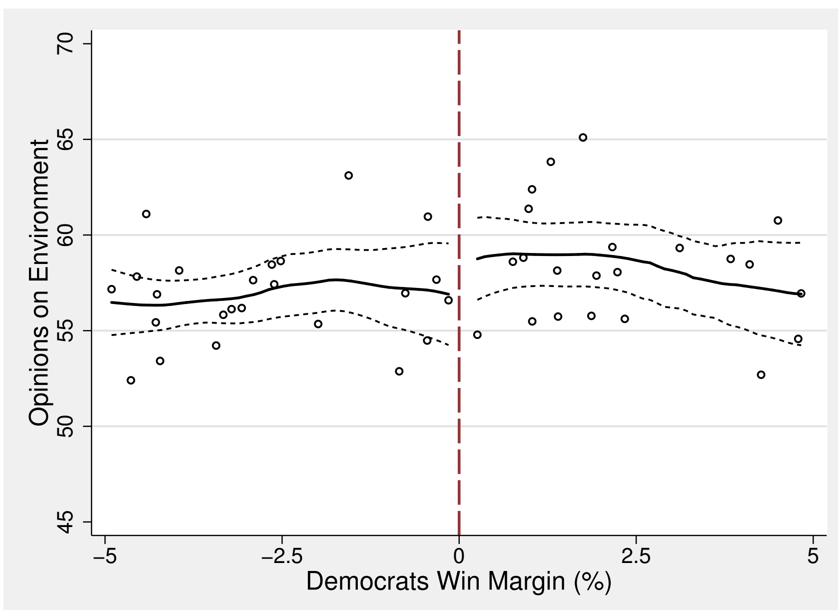


**Figure A2**

**Close Elections Around the US**

The figure plots the total number of close elections normalized by the number of districts in each US State from 1991 to 2016.

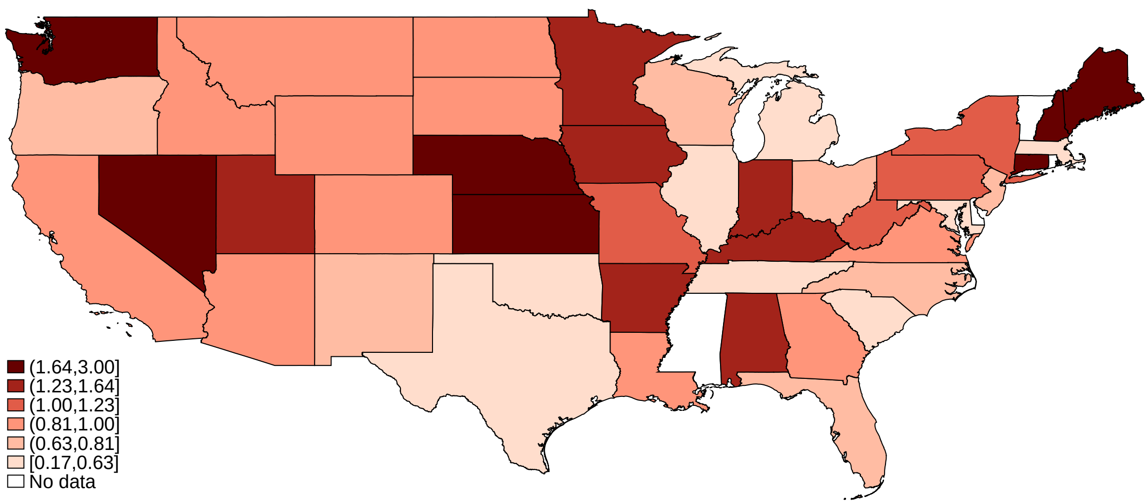


**Figure A3**

**McCrary Test**

The figures plots the results of a McCrary (2008) density test of the null hypothesis that the distribution of close election does not feature discontinuities around the zero Democrat margin vote cutoff. The sample includes the universe of US congressional elections from 1991 to 2016.

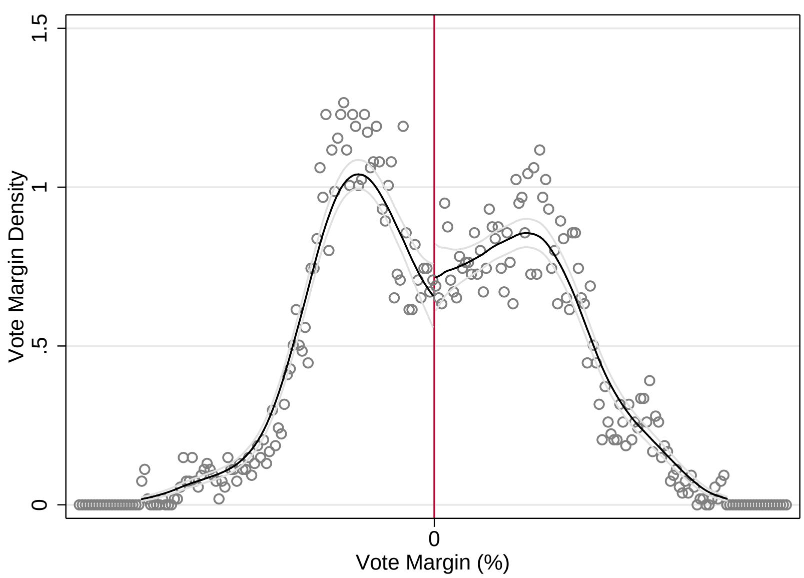


**Figure A4**

**State Environmental Agency Budgets**

This figure shows a positive correlation between the total and federal budgets of a State's environmental agency and the fraction of its district controlled by Democrats. The data on total budgets and total federal budgets comes from the Environmental Council of the States (ECOS) 2009-2011, 2012-2013, 2013-2015, and 2016-2019 Green Reports. The sample contains all US States with reported budgets during the period 2009-2019.

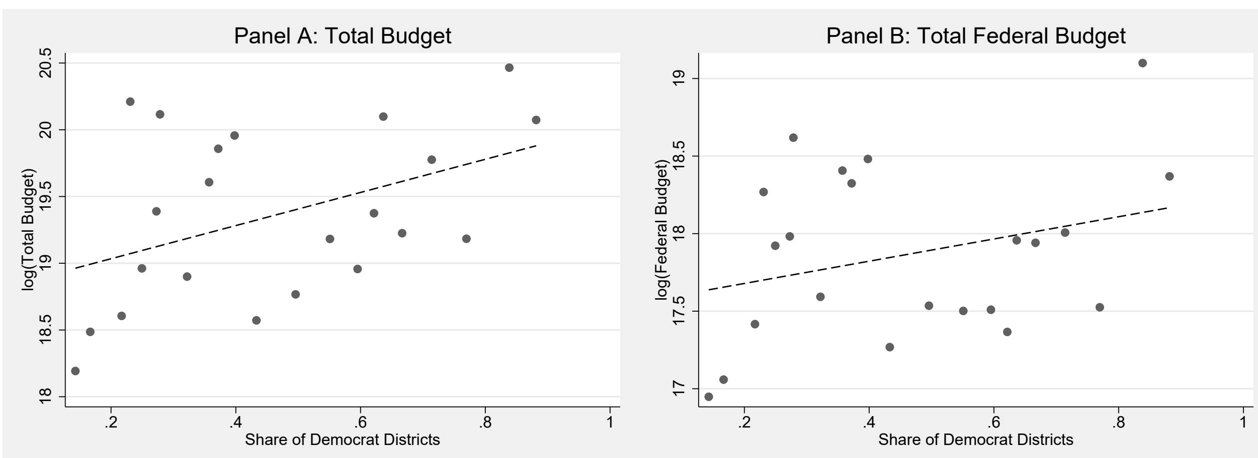


**Figure A5**

**BM Tests: Placebo on Non-Respiratory Diseases**

Header goes here

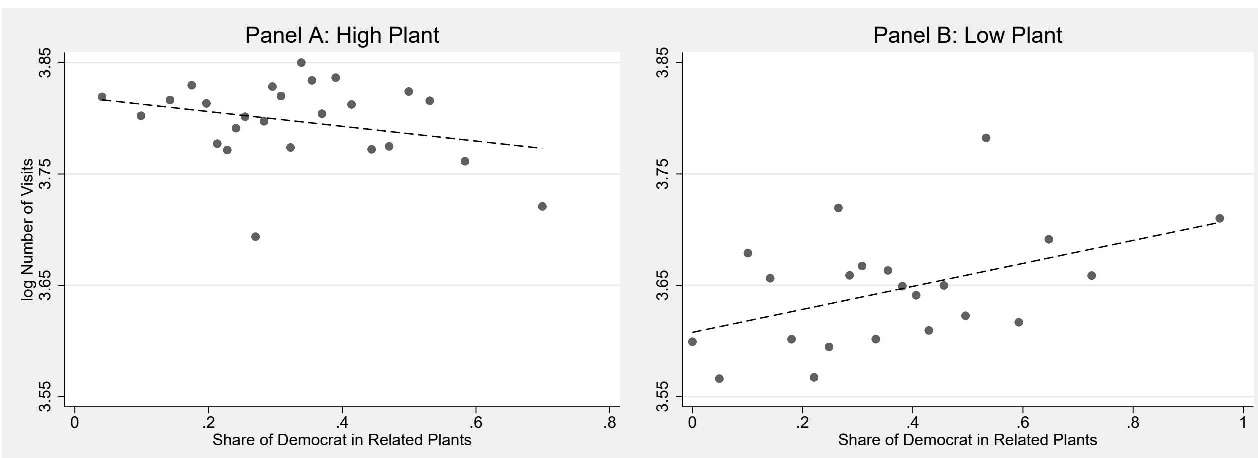


**Table A1**

**RD results: Residuals**

This table runs the same regressions as in Table 2, but using the residuals of log(Emissions) as dependent variable. The residuals of log(Emissions) in Column (1)-(2) are obtained from OLS regressions of log(Emissions) on state $\times$ year $\times$ chemical fixed effects. The residuals of log(Emissions) in Column (3)-(4) are obtained from OLS regressions of log(Emissions) on firm $\times$ year $\times$ chemical fixed effects.

| | Dep. Variable: log(Emissions) Residuals | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Democrat Win | -0.145** | -0.031* | -0.034 | -0.052*** |
| | (0.07) | (0.02) | (0.07) | (0.02) |
| Method | Local OLS | NP | Local OLS | NP |
| Polynomial | Linear | Linear | Linear | Linear |
| Kernel | – | Tri. | – | Tri. |
| Chemical FE | Yes | – | Yes | – |
| Observations | 90,555 | 1,281,479 | 57,320 | 811,995 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table A2**

**Emissions and Seat Pickups**

This table splits our (full) sample into four groups around election periods: (1) cases where a Democrat held the seat before and after the election, (2) cases where a Democrat held the seat before the election but a Republican held the seat after the election, (3) cases where a Republican held the seat before and after the election, and (4) cases where a Republican held the seat before the election and a Democrat held the seat after the election. The first two columns compare groups (1) and (2), while the second compare groups (3) and (4). The dependent variable is log(emissions), as in Table 2.

| | log(Emissions): R-D Switchers | | log(Emissions): D-R Switchers | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Switchers × Post Election | -0.059*** | | 0.029*** | |
| | (0.01) | | (0.01) | |
| Switchers × Election Year -1 | | 0.008 | | -0.005 |
| | | (0.01) | | (0.01) |
| Switchers × Election Year +1 | | -0.061*** | | 0.023* |
| | | (0.01) | | (0.01) |
| Switchers × Election Year +2 | | -0.049*** | | 0.030** |
| | | (0.01) | | (0.01) |
| Low-Order Terms | Yes | Yes | Yes | Yes |
| District × Election Year FE | Yes | Yes | Yes | Yes |
| Facility × Chemical FE | Yes | Yes | Yes | Yes |
| Observations | 1,516,595 | 1,516,595 | 1,407,224 | 1,407,224 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table A3**

**RD Split on Governors' Political Parties**

This table runs the same regressions as in Table 2, but splits the sample between close elections in states represented by Democrats versus Republicans. The governor political affiliation data is obtained from Congressional Quarterly (CQ) Press U.S. Political Stats.

**Panel A: Democratic Governors**

| | Dep. Variable: log(Emissions) | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Democrat Win | -0.353*** | -0.438* | -0.341* | -0.406*** | -0.471*** | -0.348*** | -0.370*** |
| | (0.13) | (0.26) | (0.19) | (0.05) | (0.04) | (0.07) | (0.08) |
| Method | Local OLS | Local OLS | Local OLS | NP | NP | NP | NP |
| Polynomial | Zero | Linear | Linear | Linear | Linear | Quadratic | Quadratic |
| Kernel | – | – | – | Tri. | Epa. | Tri. | Epa. |
| Chemical FE | No | No | Yes | – | – | – | – |
| Observations | 45,446 | 45,446 | 45,404 | 551,241 | 551,241 | 551,241 | 551,241 |

**Panel B: Republican Governors**

| | Dep. Variable: log(Emissions) | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Democrat Win | -0.089 | -0.389** | -0.302** | -0.325*** | -0.342*** | -0.308*** | -0.291*** |
| | (0.11) | (0.19) | (0.14) | (0.05) | (0.05) | (0.05) | (0.05) |
| Method | Local OLS | Local OLS | Local OLS | NP | NP | NP | NP |
| Polynomial | Zero | Linear | Linear | Linear | Linear | Quadratic | Quadratic |
| Kernel | – | – | – | Tri. | Epa. | Tri. | Epa. |
| Chemical FE | No | No | Yes | – | – | – | – |
| Observations | 48,694 | 48,694 | 48,666 | 778,267 | 778,267 | 778,267 | 778,267 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table A4**

**Robustness: Excluding Power Plants**

This table runs the same regressions as in Table 2, but using a sample that excluding power plants in the data. Power plants are defined by their NAICS code (22; Utilities industry).

| | Dep. Variable: log(Emissions) | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Democrat Win | -0.203** | -0.271* | -0.160 | -0.308*** | -0.319*** | -0.348*** | -0.289*** |
| | (0.09) | (0.16) | (0.11) | (0.03) | (0.04) | (0.03) | (0.04) |
| Method | Local OLS | Local OLS | Local OLS | NP | NP | NP | NP |
| Polynomial | Zero | Linear | Linear | Linear | Linear | Quadratic | Quadratic |
| Kernel | – | – | – | Tri. | Epa. | Tri. | Epa. |
| Chemical FE | No | No | Yes | – | – | – | – |
| Observations | 87,245 | 87,245 | 87,214 | 1,237,932 | 1,237,932 | 1,237,932 | 1,237,932 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table A5**

**Cumulative Plant Production**

In this table, we study the effect of marginal district wins by Democratic Party candidates on plant production. The dependent variables is the natural logarithm of cumulative production which is the cumulative product of production ratio at plant-chemical level. Production ratio is the ratio of the quantity of output using a specific chemical in any given year relative to the quantity of output in the previous year. In column (1), we regress on a dummy equal to one if the district where the plant is located is marginally won by a democrat together with a linear interaction term between the dummy and democrat margin votes. In columns (2), we use non-parametric local polynomial RD estimators (Calonico et al. (2014)) with linear polynomials and triangular kernels. We report standard errors clustered in 1% equally-spaced bins for local linear OLS regressions and robust bias-corrected standard errors as in Calonico et al. (2014) for non-parametric regressions. The sample contains all district elections during the period 1991-2016. In Columns (1), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

| | log(Cumulative Production) | |
|---|---|---|
| | (1) | (2) |
| Democrat Win | 0.022 | 0.007 |
| | (0.02) | (0.01) |
| Method | Local OLS | NP |
| Polynomial | Linear | Linear |
| Kernel | – | Tri. |
| Chemical FE | 46,618 | 630,875 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table A6**

**Robustness: OLS Standard Error Clustering**

In this table, we conduct additional robustness on the OLS results from Table 2 with additional clustering at facility level or in 1% equally-spaced bins. In Column (1) and (4), we regress the natural logarithm of plant-level emissions on a dummy equal to one if the district where the plant is located was won by a democrat in its most recent election, and equal to zero otherwise. In Columns (2)-(3) and (5)-(6), we augment the specification with a linear interaction term between the dummy and democrat margin votes in a local OLS regression framework. The sample contains district elections with an absolute vote margin of less than 5% during the period 1991-2016.

| | Dep. Variable: log(Emissions) | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Democrat Win | -0.213*** | -0.397*** | -0.305*** | -0.213* | -0.397* | -0.305* |
| | (0.06) | (0.12) | (0.11) | (0.12) | (0.23) | (0.17) |
| Method | Local OLS | Local OLS | Local OLS | Local OLS | Local OLS | Local OLS |
| Polynomial | Zero | Linear | Linear | Zero | Linear | Linear |
| Chemical FE | No | No | Yes | No | No | Yes |
| SE Clustering | Facility | Facility | Facility | L-C Bins | L-C Bins | L-C Bins |
| Observations | 94,140 | 94,140 | 94,111 | 94,140 | 94,140 | 94,111 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

## Table A7

## Firm-Level Tests

This table uses OLS regressions to examine the relationship between firm-level toxic emissions and political affiliations. The dependent variable is the natural logarithm of emissions at firm-chemical-year level. Democrat Win Ratio is the ratio of plants that located in districts where democratic party candidates win the election over the total number of plants within the firm. Democrat Win Dummy is an indicator that takes the value of one if any plant of the firm is located in a district where candidate from democratic party wins the election. The Linear Interaction term is the product between district margin votes and the Democrat Win indicator. Standard errors are clustered at district-year level. The sample period is 1991-2016.

| | log(Emissions) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Democrat Win Ratio | 0.028 | 0.026 | 0.014 | 0.016 | | | | |
| | (0.04) | (0.03) | (0.03) | (0.03) | | | | |
| Democrat Win Dummy | | | | | 0.015 | 0.023 | 0.004 | 0.014 |
| | | | | | (0.03) | (0.03) | (0.03) | (0.02) |
| Firm FE | Yes | No | Yes | No | Yes | No | Yes | No |
| Chemical FE | Yes | No | No | No | Yes | No | No | No |
| Year FE | Yes | Yes | No | No | Yes | Yes | No | No |
| State FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Chemical × Year FE | No | No | Yes | Yes | No | No | Yes | Yes |
| Firm × Chemical FE | No | Yes | No | Yes | No | Yes | No | Yes |
| Facility Number FE | No | No | No | No | Yes | Yes | Yes | Yes |
| Observations | 769,168 | 756,218 | 767,251 | 754,210 | 769,146 | 756,196 | 767,229 | 754,188 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table A8**

**State and Federal Regulators**

In this table, we study the effect of marginal district wins by Democratic Party candidates on inspections and enforcements led by state or federal regulators. The dependent variable in columns (1)-(2) is the natural logarithm of inspections for plants in a year. The dependent variable in columns (3)-(4) is an indicator variable that takes the value of one if a plant gets EPA inspection and zero otherwise. The dependent variable in columns (5)-(6) is an indicator variable that takes the value of one if a plant gets EPA enforcement and zero otherwise. The dependent variable in columns (7)-(8) is the enforcement action conditional on inspections. In columns (1), (3), (5), and (7) of both panel, we regress on a dummy equal to one if the district where the plant is located is marginally won by a democrat together with a linear interaction term between the dummy and democrat margin votes. In columns (2), (4), (6), and (8) of both panel, we use non-parametric local polynomial RD estimators (Calonico et al. (2014)) with linear polynomials and triangular kernels. We report standard errors clustered in 1% equally-spaced bins for local linear OLS regressions and robust bias-corrected standard errors as in Calonico et al. (2014) for non-parametric regressions. The sample contains all district elections during the period 1991-2016. In Columns (1), (3), (5) and (7), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

**Panel A: State Regulators**

| | log(Inspections) | | Insp. Dummy | | Enf. Dummy | | $\frac{\text{Enforcement}}{\text{Inspections}}$ | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Democrat Win | 0.071* | 0.058*** | 0.030 | 0.021*** | 0.084** | 0.077*** | 0.063** | 0.058*** |
| | (0.04) | (0.01) | (0.03) | (0.01) | (0.03) | (0.01) | (0.03) | (0.01) |
| Method | Local OLS | NP | Local OLS | NP | Local OLS | NP | Local OLS | NP |
| Polynomial | Linear | Linear | Linear | Linear | Linear | Linear | Linear | Linear |
| Kernel | – | Tri. | – | Tri. | – | Tri. | – | Tri. |
| Observations | 30,773 | 414,341 | 30,773 | 414,341 | 9,418 | 132,987 | 9,418 | 132,987 |

**Panel B: Federal Regulators**

| | log(Inspections) | | Insp. Dummy | | Enf. Dummy | | $\frac{\text{Enforcement}}{\text{Inspections}}$ | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Democrat Win | 0.008 | 0.007*** | 0.011 | 0.010*** | -0.014 | -0.007 | -0.010 | -0.005 |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.00) |
| Method | Local OLS | NP | Local OLS | NP | Local OLS | NP | Local OLS | NP |
| Polynomial | Linear | Linear | Linear | Linear | Linear | Linear | Linear | Linear |
| Kernel | – | Tri. | – | Tri. | – | Tri. | – | Tri. |
| Observations | 30,773 | 414,341 | 30,773 | 414,341 | 9,418 | 132,987 | 9,418 | 132,987 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

**Table A9**

**CMS Inpatient Data, Full Sample**

This table uses OLS regressions to examine the relationship between local health outcomes and political affiliations. The dependent variable is the natural logarithm of discharges and total payments for all types of procedures. Democrat Win is an indicator that takes the value of one if candidate from democratic party wins the election of the district in which the plant is located. High Num. Plants is an indicator that takes the value of one if the number of plants in the area is above median. ZIP is the three-digit zip code. MDC is major diagnostic category code that dividing all possible pricipal diagnoses into 25 mutually exclusive diagnosis areas. Standard errors are clustered at district-year level. The sample period is 2011-2016.

| | log(Number of Discharges) | | | log(Total Payments) | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Democrat Win | 0.021 | -0.007 | | 0.113*** | -0.000 | |
| | (0.02) | (0.02) | | (0.02) | (0.02) | |
| High Num. Plants | 0.215*** | 0.183*** | 0.121*** | 0.240*** | 0.202*** | 0.127*** |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Democrat Win × High Num. Plants | -0.039* | -0.036* | -0.043* | -0.084*** | -0.044* | -0.041* |
| | (0.02) | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) |
| ZIP FE | Yes | Yes | No | Yes | Yes | No |
| Census District FE | No | Yes | No | No | Yes | No |
| Year FE | Yes | Yes | No | Yes | Yes | No |
| District-Year FE | No | No | Yes | No | No | Yes |
| ZIP-District FE | No | No | Yes | No | No | Yes |
| MDC FE | Yes | Yes | Yes | Yes | Yes | Yes |
| R-Squared | 0.174 | 0.208 | 0.226 | 0.267 | 0.306 | 0.323 |
| Observations | 369,610 | 369,609 | 369,606 | 369,610 | 369,609 | 369,606 |

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.