

Making Policy About Distributive Justice: The Environmental Justice Movement's Impact on Agency Rulemaking

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Abstract

Political movements shape policy agendas, often reframing policy debates in distributive justice terms. To examine how this affects policymaking, I assess the aggregate impact of environmental justice advocacy on U.S. federal policy from 1993 to 2020 using a new dataset of 13,179 draft and final rule pairs from 40 agencies and 42 million public comments on these rules. I find that when groups raise distributive justice concerns, final rules more often change to address these concerns. Supporting theories about how institutions shape receptivity to issue frames, agencies with processes for addressing environmental justice are more responsive. The scale of mobilization also matters; when larger coalitions raise environmental justice concerns, policy texts are more likely to change. However, within the movement, some organizations are more successful than others. These findings suggest that who makes distributive justice claims, their alignment with institutional biases, and levels of public pressure all systematically affect policymaking.

Keywords: Pressure groups, agency rulemaking, environmental justice, agenda democracy, issue framing, policy change

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1 Introduction

Political movements like the civil rights movement and the environmental movement have played a critical role in shaping policy agendas and advancing landmark statutes. Likewise, a lack of movement pressure is a leading explanation for the failure of policy efforts to address issues like climate change (Skocpol, 2013). Yet, the effects of movements on policy are difficult to measure and rarely assessed systematically across institutions and over time. This is especially true for policymaking in the bureaucracy, where most U.S. law is now made. Leading models of bureaucratic policymaking seem to have no role for movement organizations and pressure campaigns. As a result, quantitative scholarship has largely overlooked organized public pressure as a potential force in shaping administrative policy agendas and outcomes for the thousands of policies that U.S. government agencies make every year.

This paper develops and tests theories about how organizations channeling movement demands and mobilizing public pressure may shape policymaking. While substantive policy change is often the ultimate aim, shaping how issues are framed can be decisive (Woody, 2015). For example, marginalized groups or their allies must often get policymakers to see issues in distributive justice terms before their policy demands are perceived as relevant. To do so, groups often mobilize public attention and support for distributive justice claims. However, the organizations mobilizing around distributive justice rhetoric vary in their relationships with the people they claim to represent. This paper focuses on these two tactics: efforts to re-frame policy in distributive justice terms and efforts to mobilize large coalitions to demonstrate quantitative relevance. I investigate who is using these tactics and assess their impact on both policy discourse and substantive policy changes.

To examine how groups shape policy agendas through distributive justice claims-making, I assess the impact of thousands of campaigns linked to the environmental justice movement across 13,179 policy processes in 40 U.S. federal agencies from 1993 to 2020. The environmental justice movement offers a broad but tractable scope for analysis and highlights the distributive politics of agency rulemaking. Environmental justice (EJ) concerns focus on unequal access to healthy environments and protection from harms caused by things like pollution and climate change (Bullard, 1993). The EJ issue frame emerged in local campaigns against toxic waste sites and farmworker exposure to pesticides (Čermakapek, 1993) and began appearing in federal policy documents in the 1980s (GAO, 1983). Taylor (2012) describes a fusion of the American Indian Movement, Chicano movement, farmworker movement, civil rights movement, and union organizing:

People of color [raised] social justice concerns such as self-determination, sovereignty,

human rights, social inequality, loss of land base, limited access to natural resources, and disproportionate impacts of environmental hazards and linked them with traditional working-class environmental concerns such as worker rights and worker health and safety to develop an environmental justice agenda. (p. 1)

Like other movements, the environmental justice movement illustrates how groups attempt to use a particular way of framing policy issues (in this case, a particular phrase) as a vehicle to advance a policy agenda. By asserting issue frames, movement advocates shape the facts, narratives, and interests deemed worthy of consideration (Woodly, 2015). Because the phrase is closely linked to movement advocacy and evokes certain ideas and policy demands, systematic data on how policy documents address (or fail to address) environmental justice allow empirical tests of theories about when government officials will respond to claims raised by activists.

This paper looks across hundreds of campaigns with similar demands to assess the aggregate effects of a broader movement. By a “movement,” I mean a set of efforts advancing similar ideas, issue frames, and claims across policy venues and over time. Tracing ideas like environmental justice through policy processes reveals the mechanisms by which movements succeed or fail to influence policy. If draft policies do not mention EJ concerns, but advocacy groups raise EJ concerns and policymakers then address those claims in the final policy, this may be evidence that public pressure matters. Likewise, when draft policies *do* address EJ, if groups comment on it and then policymakers change how the final policy addresses EJ, this may be evidence that public pressure matters.

I assess the impact of the EJ movement on several policy-related outcomes. Quantitative text analysis of all rules published by 40 agencies from 1993 to 2020 shows that policy texts were more likely to change when groups raised distributive justice claims and mobilized more people, even under administrations explicitly hostile to their cause. When public comments raise EJ concerns, these concerns are more likely to be addressed in policy documents. The number of comments mobilized (both overall and by EJ advocates specifically) is positively correlated with agencies adding language addressing EJ to policies where the draft policy did not mention EJ. Sections of policies that did address EJ are also more likely to change when comments raise EJ concerns. Agencies that most frequently address EJ are also most responsive to comments raising EJ concerns. This finding supports theories of policy receptivity related to the priming power of issue frames (Entman, 2007) —agencies house policymakers most familiar with the EJ frame and thus likely to have institutional and cognitive processes primed to be most receptive to EJ concerns.

Through a case study of mercury regulation, I show how discursive and framing effects can affect substantive policy outcomes. However, broader evidence from a large set of hand-

coded documents suggests that substantive policy change is rare. Across a hand-coded random sample of 182 rulemaking processes, I find that local EJ community groups and tribal governments are among the types of organizations least likely to have their substantive policy demands met. Substantive policy change is much more likely when public interest law organizations raise EJ concerns. The EJ movement has meaningfully shaped policy, but the nature of its effects depends on how advocacy groups with lawyers represent movement demands to policymakers.

Taken together, these findings suggest that public pressure can systematically re-frame policy debates. Demands to address distributive justice issues and the scale of pressure to address those demands are both associated with policymakers adopting distributive justice language. Changes in law, however, do not always flow from getting policymakers to engage with distributive justice claims. Instead, the capacity to mobilize large numbers of people and achieve policy goals lies primarily with large national advocacy organizations.

1.1 Movements and Policy Change

Social movement pressure is a major driver of policy change (McAdam, Tarrow and Tilly, 2001; Cress and Snow, 2000; Weldon, 2002, 2011). This is especially true for policies that redistribute wealth or other privileges. “From the very beginning, redistributive policies have been associated with social classes and social movements” (Lowi and Nicholson, 2015, p. 88). Institutions that redistribute power are generally established by policies advanced by social movements (Wilson, 1989). The organizational forms that mobilize and channel movement pressure—often called social movement organizations by those who study their organization and advocacy organizations or pressure groups by those who study their effects—are essential features of modern U.S. politics (Baumgartner and Leech, 1998) and lawmaking (Coglianese, 2001).

While movement emergence and development is better-studied than policy impact (see reviews by Meyer, 2004; Andrews and Edwards, 2004; McAdam, 2017), a growing body of scholarship is overcoming challenges in measuring movement pressure and convincingly linking it to policy change. Protests, petitions, and advocacy campaigns can be effective mechanisms for minority interests to communicate preferences to policymakers when electoral mechanisms fail to do so (Weldon, 2011; Carpenter, 2021). Policymakers learn and take informational cues from political behaviors like protests (Gillion, 2013; Gause, 2022; Wasow, 2020).

Beyond informing policymakers of public preferences, advocacy campaigns can change the scope of the policy agenda (Jones, Theriault and Whyman, 2019) and how policy issues are understood by policymakers (Thurston, 2018). Issue definition matters because the

mobilization or suppression of conflicts allocates power — “antagonist can rarely agree on what the issues are because power is involved in the definition” (Schattschneider, 1975). By (re)defining issues in policy debates, movement organizations move discourse “from the general public sphere into the political public sphere, where binding policy decisions are made” (Woody, 2015, p.21). Thus, to assess the success of campaigns, we must study “not merely whether they changed policy or laws in the short run, but whether they shifted agendas and discourse” (Carpenter, N.d.).

By aggregating people affected by policy and calling attention to disparate effects, movement organizations “raise the salience of issues, help citizens to see and articulate collective grievances, and mobilize across political venues for policy change.” (Thurston, 2018, p. 24). Carpenter (2021) finds similar potential for petitions to serve as a channel to raise “new claims” and influence policy beyond elections, presenting “another model of aggregation, where numerical minorities could still make a case of quantitative relevance” (p. 479). Numbers matter for protests, petitions, and advocacy campaigns—regardless of whether they represent a majority—because they affect which claims policymakers see as relevant and requiring their attention.¹

Despite well-developed theorizing and empirical work on certain policy issues (especially landmark policies like the Civil Rights Act (e.g., Gillion, 2013)), systematic evidence on the relationship between movement pressure and policy change faces methodological challenges. In addition to challenges with measuring advocacy and influence in consistent ways across policy fights, there are issues with case selection (Leech, 2010). If scholars focus on issues characterized by robust advocacy and recent or impending policy change—the influence of advocacy campaigns may be overstated. Conversely, the high-salience cases that scholars often select may be the cases where advocacy success is least likely (Lowery, 2013). In short, selecting on the dependent variable limits our understanding of the influence of advocacy campaigns. While large-scale and longitudinal studies have become more common (e.g., Hojnacki et al., 2012), systematic impact across the thousands of non-landmark policies that governments make every year is rarely the dependent variable.

In contrast, policy-focused environmental justice scholars tend to examine the effects of policies rather than the effects of activism on the policy process. For example, Bullock and van der Ven (2018) show that policies affect exposure to pollution, and Liang (2017) find that states with more lax immigration laws also have more lax monitoring of regulatory compliance in Latinx neighborhoods. Pellow (2016) dubs work documenting unequal outcomes the “first generation” of EJ scholarship, with a “second generation” developing critiques

¹Salience matters because the most common way for policy advocates to fail is that policymakers simply ignore them (Baumgartner, 2009).

and studies of EJ activism through the lens of critical theory, incorporating insights from critical race theory, feminist theory, and social movement scholarship and focusing more on movement dynamics than impact on policy.

The few empirical environmental justice studies that look at both the inputs and outputs of the policy process have thus far focused more on inequalities in geographies or enforcement than in the policymaking processes. Abel, Salazar and Robert (2015) find that poorer and less White states have more developed EJ policies. Konisky and Reenock (2017) find that regulatory enforcement is correlated with political mobilization around EJ issues. Particularly relevant to the present analysis, Lester, Allen and Hill (2001) find that activists repeatedly succeeded in legitimizing their claims and getting EJ concerns on the political agenda but largely failed to push through legislation, in part due to conflicts between grassroots and national advocacy groups (p. 52) and Harrison (2019) documents how some agency officials advance environmental justice reforms while others resist them.

This paper builds on this work to systematically address the effects of political mobilization on specific policy documents across agencies and presidential administrations. Specifically, I use public comments and changes in the text of draft and final agency rules to assess the impact of environmental justice campaigns on bureaucratic policymaking.

To develop hypotheses about the relationship between political mobilization and bureaucratic policy outcomes, I turn to the literature on bureaucratic policymaking. While this literature has largely focused on the lobbying activities and influence of political insiders, I argue that theories about the power of technical and political information can be extended to study the kinds of claims raised by environmental justice advocates.

1.2 Technical Information: The Currency of Lobbying

Dominant theories of bureaucratic policymaking have little room for distributive justice claims or pressure campaigns. Instead, they focus on how experts learn about policy problems and solutions (Kerwin and Furlong, 2011). Leading formal models are information-based models where sophisticated lobbying groups affect policy by revealing new information to the agency (Gailmard and Patty, 2017; Libgober, 2020), and empirical studies support the conclusion that technical information is the currency of lobbying in rulemaking (Yackee, 2012; Cook, 2017; Gordon and Rashin, 2018; Walters, 2019).

Agency rulemaking is an especially technocratic and legalistic form of policymaking that explicitly privileges scientific and legal facts as the appropriate basis for decisions. Procedural requirements to consider relevant information incentivize lobbying groups to overwhelm agencies with complex technical information, making rulemaking obscure to all but the most well-informed insiders (Wagner, 2010). Influence in rulemaking generally requires resources

and technical expertise (Yackee, 2019).

The result is that rulemaking is dominated by sophisticated and well-resourced interest groups capable of providing new technical or legal information. Empirical scholarship finds that economic elites and business groups dominate U.S. politics in general (Gilens and Page, 2014; Hertel-Fernandez, 2019) and rulemaking in particular (Crow, Albright and Koebele, 2015; Wagner, Barnes and Peters, 2011; West, 2009; Yackee and Yackee, 2006; Haeder and Yackee, 2015; Cook, 2017; Libgober and Carpenter, 2018; Carpenter et al., 2021). To the extent that scholars address distributive justice advocacy or mobilization and public pressure at all, both existing theory and empirical scholarship suggest skepticism that public pressure campaigns matter.

1.3 Political Information: Why Distributive Justice Claims May Affect Policy

While movement organizations do engage in fights over technical reports and scientific studies, the information that activists provide is often more overtly political.

I argue that mobilizing new actors to participate in the policymaking process may yield information about a policy’s disparate effects. Information about a policy’s disparate effects is a form of political information, potentially alerting policymakers to new concerns and asserting new issue frames. Like levels of public attention and pressure, the normative appeal of distributive justice claims can be a political resource, potentially allowing groups to change policymakers’ perceptions of their political environment, the range of appropriate actions, and the political consequences of their decisions.

Information About a Policy’s Disparate Effects The politics and outcomes of policymaking depend on how the relevant groups are defined (Lowi, 1964). While specific *data* on disparate impacts of policy may require expertise (Ganz and Soule, 2019), anyone can highlight a community of concern or potential distributive effects of a policy. Identifying communities of concern is a political statement that does not require technical expertise. Just as policy tends to move when coalitions mobilize diverse experts (Nelson and Yackee, 2012) and interests (Dwidar, 2022a), mobilizing beyond the “usual suspects” may introduce new claims from new actors about how the communities that a policy may benefit or harm should be constructed.

Informing policymakers about how a policy affects a particular set of stakeholders is a common lobbying tactic. Distributive justice claims simultaneously assert that a particular group deserves specific attention and demand that the policymaker account for how that group may be impacted, both of which may require revisions to the policy. Instead of bolstering *technical* claims, comments that focus on a policy’s disparate impacts bolster *political* claims about who counts and even who exists as a distinct, potentially affected

group deserving policymakers' attention. Before (and, indeed, because) policies socially construct groups whose lives it aims to affect (Schneider and Ingram, 1993), the political construction of policy-relevant groups through the policy process foregrounds some conflicts and suppresses others.

The power of groups to affect policy depends on their recognition by formal and informal institutions. All organizations systematically privilege some policy problems, solutions, and types of information over others. As Schattschneider (1975) famously put it, "organization is the mobilization of bias" (Schattschneider, 1975, p. 71). All organizations elevate some conflicts and suppress others.

The political construction of relevant groups depends on who participates and the identities they mobilize or claim to represent. As Yackee (2019) and others note, high information costs mean that individuals rarely participate. Instead, groups claim to represent various constituencies. "Because the costs of individualized participation in policy decision making are often excessive, informal representatives are prevalent as a form of participation in agency decisions" (Rossi, 1997, p. 194).

Agencies have many reasons to consider the distributional effects of policy and often do. Bureaucratic policymaking in the United States is dominated by cost-benefit analysis, which requires defining groups that benefit or are harmed by a policy and may even upweight or prioritize benefits or costs to certain groups. While the dominant economic style of analysis generally de-emphasizes equity (Berman (2022)), the process of tallying costs and benefits creates an opening to highlight uncounted or unequal costs. President Biden instructed the Director of the Office of Management and Budget to propose recommendations for "procedures that take into account the distributional consequences of regulations"—i.e., the distributions of various harms (e.g., pollution) and benefits (e.g., air quality) that the policy would affect. In this context, comments raising distributive concerns provide potentially influential political information.

Public Pressure as a Political Resource The chances that an agency will address distributive justice claims may be affected by other political factors, including the overall levels of public attention or public pressure.

An organization's ability to expand the scope of conflict by mobilizing a large number of people can be a valuable political resource (Schattschneider, 1975), and public pressure campaigns expand the scope of conflict (Potter, 2017). Public engagement and mobilization can thus be a tactic to gain power. Furlong (1997) and Kerwin and Furlong (2011) identify mobilization as a tactic. The organizations they surveyed believed that forming coalitions and mobilizing large numbers of people were among the most effective lobbying tactics. Organi-

zations surveyed by English (2019) also reported being organized into coalitions. The theory and empirical strategies below build on work showing that the size of lobbying coalitions (the number of organizations lobbying together) predicts lobbying success (Dwidar, 2022*b,a*; McKay and Yackee, 2007; Nelson and Yackee, 2012; Yackee and Yackee, 2006). While these studies focused on how organizations mobilize their members and other organizations, I expand on this understanding of mobilization as a lobbying tactic to include a campaign’s broader audience.

Because many politically active groups are “memberless” or run by professionals who lobby with little input from their members (Baumgartner and Leech, 1998; Skocpol, 2003; Schlozman, Verba and Brady, 2012), evidence of an actual constituency offers political information. Petition signatures and form letters are among the only ways a pressure group can demonstrate an engaged, issue-specific constituency on whose behalf they claim to advocate. Finally,

the “fire alarm” role that interest groups play in the policy process (McCubbins and Schwartz, 1984) may have different effects when sounding the alarm involves “going public.” Expanding the scope of conflict by mobilizing public attention to rulemaking may thus shift policymakers’ attention away from the technical information and arguments provided by the “usual suspects” and toward the distributive effects of policy.

1.4 Hypotheses

Scholarship on bureaucratic policymaking presents competing intuitions about the effect of EJ activists and the broader public in rulemaking. From the above discussion about the potential impacts of political information in bureaucratic policymaking, I distill five hypotheses—three about distributive justice claims and two about public pressure. I posit each hypothesis in the direction that political information does affect rulemaking while also noting competing intuitions for concluding the opposite in several cases.

Hypothesis 1.1. Policymakers are more likely to change whether or how policies address distributive justice when commenters raise distributive justice concerns.

Agency policymakers have incentives to address distributive concerns. By raising distributive justice concerns, commenters draw attention to the distribution of policy impacts—who a policy may affect. Asserting definitions and categories of stakeholders and affected groups is one type of policy-relevant information.

Hypothesis 1.2. Policymakers are more likely to change whether or how policies address concerns when more organizations raise them.

Scholarship on lobbying in rulemaking emphasizes the value of repeated information and coalition size (Mendelson, 2011; Nelson and Yackee, 2012). If political information matters, this implies that the more distinct organizations raise distributive justice concerns, the more likely it is that this coalition will influence the policy process.

Competing intuitions and other prior studies oppose both the *Distributive Claims Hypotheses 1.1* and the *Coalition Size Hypotheses 1.2*. First, formal models and empirical scholarship on lobbying in rulemaking emphasize the importance of novel technical information—things unknown to agency experts (Wagner, 2010). Claims about distributive justice and repetition of such claims by more organizations provide no new technical information. Second, business commenters are influential, and public interest groups are not (Yackee and Yackee, 2006; Haeder and Yackee, 2015). Because environmental justice claims often conflict with business interests, such claims may be especially disadvantaged. Finally, policymakers may be more likely to anticipate EJ concerns when they are more salient to interest groups. This would mean that rules where commenters raise EJ concerns may be the *least* likely to change whether or how EJ is addressed because policymakers are more likely to have already considered these issues and stated their final position in the draft rule.

Hypothesis 1.3. Policymakers are more likely to change whether or how policies address distributive justice when they receive more public attention.

If the scale of public attention affects the policy process, policy may be more likely to change when more people comment on a draft policy.

The competing intuition against the *Public Attention Hypothesis 1.3* is that large numbers of comments indicate policy processes that were already salient before they were targeted by a public pressure campaign. Anticipating public scrutiny, policymakers would be more likely to have stated their final position in the draft policy. If this is the case, policies with more public comments should be *less* likely to change. Public attention could also be unrelated to policy change, meaning that policymakers neither anticipate nor respond to public attention in writing or revising policy documents. A null effect is most consistent with leading formal models of bureaucratic policymaking, where the scale of public attention is absent. Empirical research has found concluded that public comments from advocacy groups (Yackee and Yackee, 2006) and pressure campaigns (Balla et al., 2020) have no effect on rulemaking.

Hypothesis 1.4. Policymakers who more frequently address concerns like environmental justice will be more responsive to commenters raising those concerns.

The *Policy Receptivity Hypothesis 1.4* implies that some agencies may be more receptive to certain kinds of lobbying—for example, claims about distributive justice—than others. Bu-

reocracies are specialized institutions built to make and implement certain kinds of policies based on certain goals and types of facts. Each agency has distinct norms and epistemic communities (Carpenter, 2001; Harrison, 2019). Some may see an issue as “environmental” where others do not. Discourse effects are more likely in the “context of common symbols and other knowledge” (Woodly, 2015, p. 22). For example, vehicle emissions may be discussed more as an “environmental” issue at the Environmental Protection Agency (EPA) and as a “safety” issue at the Department of Transportation. Likewise, some officials may see disparate impacts that demand consideration, whereas other officials with different norms and training see such disparities as less relevant. For example, policy fights over pesticide regulation at the EPA may often be framed in environmental justice terms, leading to analyses of the distribution of harms to different types of farmworkers. In contrast, pesticide-related policy at the Department of Agriculture may focus more on crop yields than human health and be much less likely to be framed in distributive justice terms. In short, the contextual nature of “common sense” (Woodly, 2015) may lead some policymakers to see their policy area as more related to environmental justice than others and thus be more receptive to commenters’ concerns.

Information-based formal models (Libgober, 2020) imply a competing intuition to Hypothesis 1.4: policymakers familiar with EJ concerns are *least* likely to respond to EJ concerns because they anticipate these concerns—EJ concerns are not novel to them. If so, agencies that rarely consider EJ may be more easily influenced by commenters who present novel information of concerns. These policymakers may be less likely to have preempted EJ critiques in the draft policy.

Hypothesis 1.5. Groups with more technical and legal resources are more influential.

In contrast to the previous policy-level hypotheses, the *Differential Influence* Hypothesis 1.5 is an organization-level hypothesis, and the test will be a comparison across organizations.

2 Data and Methods

2.1 The Environmental Justice Frame

The politics of environmental justice has several convenient properties for studying the policy impact of political movements. First, discourse around policies framed as environmental issues is (unlike issues like civil rights and immigration) inconsistently racialized and (unlike issues like taxes and spending) inconsistently focused on *distributions* of costs and benefits. Indeed, White environmentalists have long framed environmental policy as public good provision, thereby suppressing distributive conflict. This means that policies may or may not be

framed in EJ terms. Despite policy almost always having disparate impacts, an “environmental” frame often creates a human-environment distinction and shifts attention to non-human objects such as air, water, food, or landscapes and away from the distribution of access to them or protection from them when they are contaminated. By focusing on distributions of costs and benefits, EJ analyses differ from the more utilitarian or preservationist analyses that dominate White environmental activism and policymaking (Harrison, 2019).

Second, compared to other ideas around which people mobilize, “environmental justice” is a fairly distinctive phrase. Most people who use this term share a general definitional foundation. Even attempts to reframe the term (e.g., to focus on class more than race or jobs more than health) come about as dialectical responses to the term’s historical uses. Thus, when “environmental justice” appears in a text, it is rarely a coincidence; its appearance is a result of the movement or reactions to it.

Third, this phrase appears frequently when the idea is discussed. There are few synonyms. Groups raising equity concerns on environmental issues commonly use the phrase “environmental justice.” Those who use narrower, related terms—including the older frame of “environmental racism” and the newer frame of “climate justice”—almost always use “environmental justice” in their advocacy as well.

Finally, the term is relevant to rulemaking records in particular due to President Clinton’s Executive Order 12898—“Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”—directing all agencies to consider EJ implications of their actions and policies. Executive Orders or statements from agency heads in every administration have since interpreted and reinterpreted parts of E.O. 12898, all with direct implications for rulemaking. Despite this Executive Order, not all draft or final rules address EJ. Those that do, however, tend to cite E.O. 12898 and use the phrase “environmental justice.” For the same reason, commenters who critique draft rules also cite this Executive Order and use this language. Again, this is true both for movement activists and reactionary efforts to redefine the term.

The legal salience of the phrase “environmental justice” means that advocates attempting to frame policies in distributive terms tend to use the phrase, and agencies also tend to use it if they respond to these concerns.

2.2 Safe Levels of Mercury For Whom? How Distributive Justice Claims Shaped U.S. Mercury Regulation:

Tracing the evolution of EJ discourse through several policy processes related to regulating mercury pollution shows how distributive justice claims can shape policy. It also shows how the issue definition is hotly contested and rarely addressed by agencies in ways that activists

find acceptable.

This example shows how distributive justice claims and EJ activist pressure affected how policies addressed EJ in some cases but failed to affect other policies. Regulations on mercury initially focused on protecting the average US resident despite EJ activists calling attention to how mercury affects some communities much more than others—i.e., concerns over distributive justice. After sustained advocacy, new mercury regulations incorporated distributive justice claims and set mercury limits aimed at protecting communities with high mercury exposure. Appendix A.2 traces the evolution of mercury regulations in more detail.

2.3 Data

To examine the impact of EJ activists and public pressure campaigns on policy documents, I collect the text of all draft rules, public comments, and final rules from regulations.gov. Then, I select rulemaking documents from agencies that published at least one rule explicitly addressing EJ from 1993 to 2020. This yields 26,670 rulemaking dockets from 40 agencies; 13,179 of these have both a proposed and final rule, allowing me to assess change in relation to comments.²

Despite E.O. 12898, most rules do not address environmental justice. Most draft and final rules do not mention “environmental justice.” The number of policies that take EJ into account (rather than just mentioning the E.O. 12898) is even lower (Gauna et al., 2001; Revesz, 2018). Interestingly, the total number of final rules and the percent of the total addressing EJ have remained relatively stable for the period where regulations.gov data are complete (after 2005).³ Figure 1 shows that from 2006 to 2020, these agencies published between 1,300 and 1,885 final rules per year, of which less than 15 percent addressed EJ.

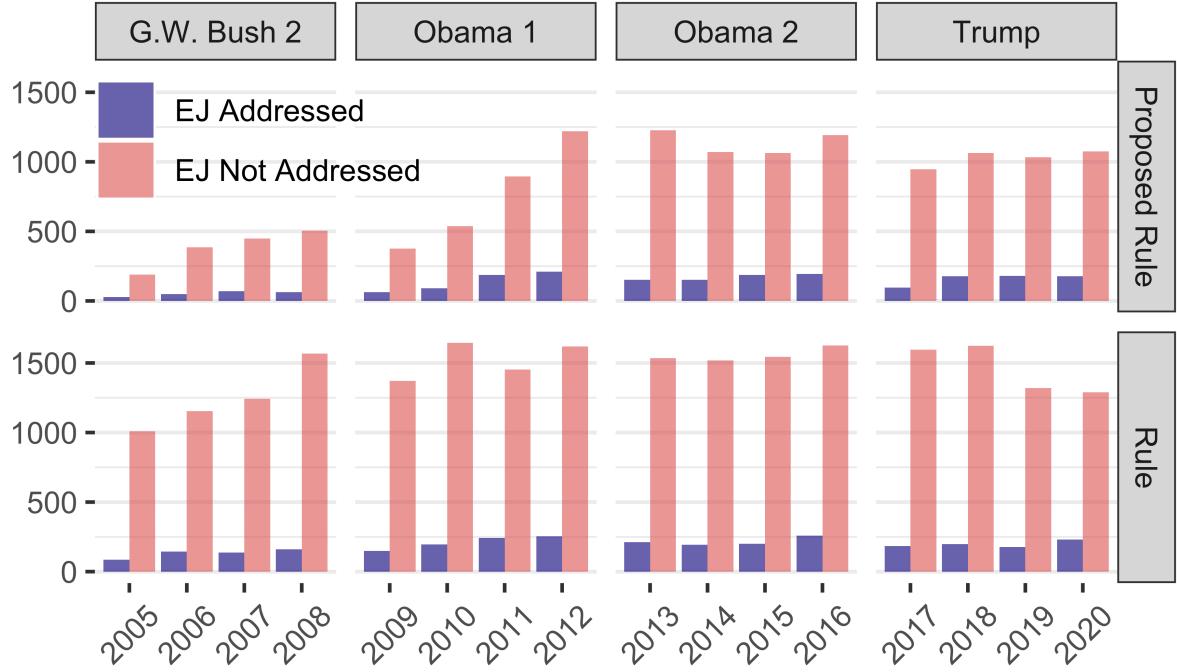
Figure 2 shows the number of rulemaking dockets over time by whether they ultimately addressed EJ at agencies that either published more than ten rules addressing EJ or received over 100 comments raising EJ concerns. Even at the EPA, where most policies are clearly framed as “environmental” issues, only about half of final rules address EJ. Many agencies that make policies with apparent EJ effects almost never address EJ (e.g., the Office of Surface Mining (OSM) and Pipeline and Hazardous Materials Safety Administration (PHMSA)). At no agency did a majority of rules address EJ overall. Only in a handful of years at agencies that publish few rules was EJ addressed in most rules.

Comments Figure 3 shows the number of comments on each proposed rule published between 1993 and 2020. Circles indicate rules where no commenters raised EJ concerns. Tri-

²Some final rules are published without a draft, and some proposed rules are withdrawn or never finalized.

³See Figure 12 for the full time period

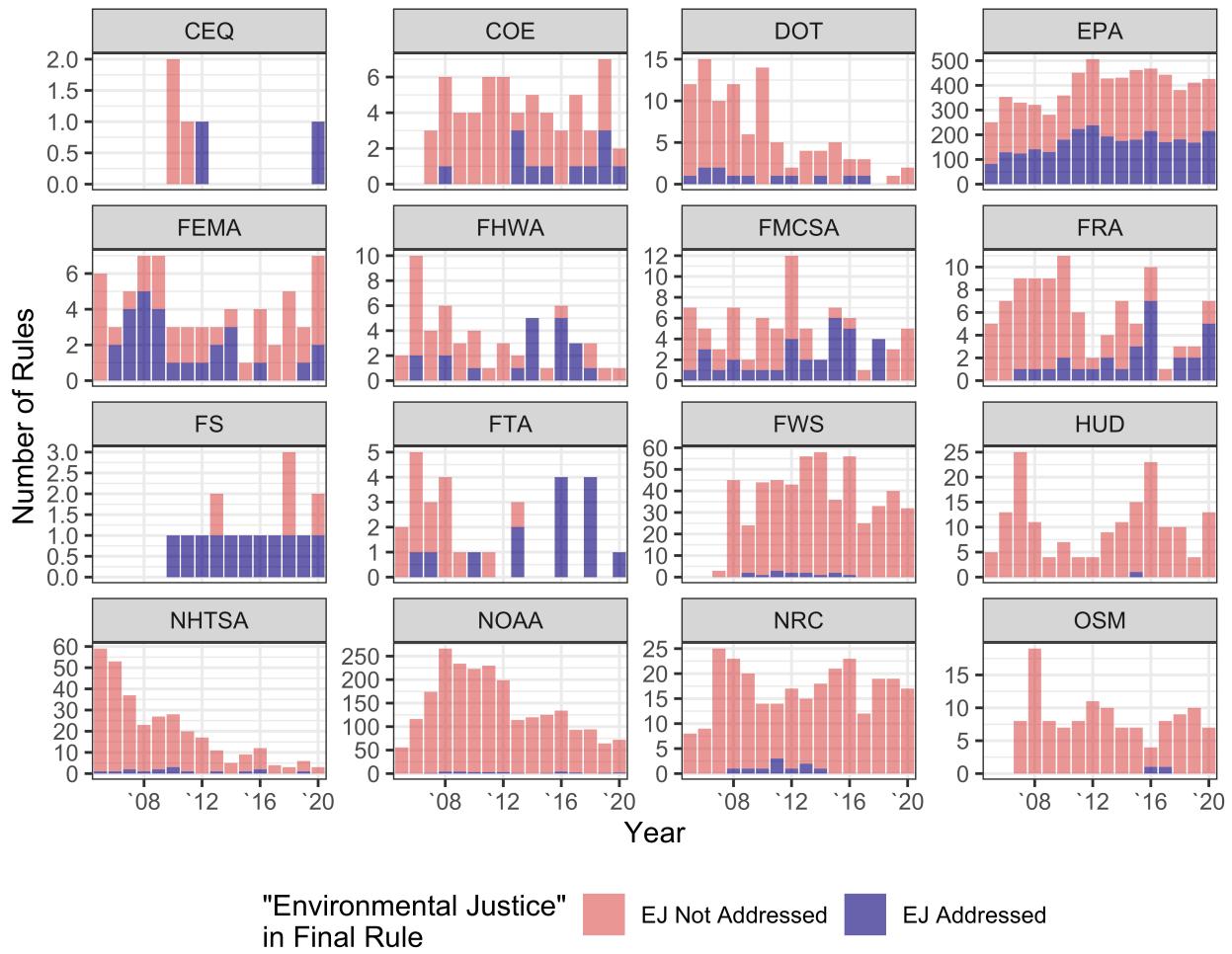
Figure 1: Proposed and Final Rules by Whether They Address Environmental Justice



angles indicate rules where they did. The bottom row shows the subset of rules where “environmental justice” appeared in neither the draft nor the final rule. The middle row shows rules in which “environmental justice” appeared in the final but not the draft. My first analysis compares these two subsets. The top row shows rules where “environmental justice” appeared in both the draft and final rule. My second analysis assesses change in this subset of rules. Predictably, commenters most often raised EJ concerns on rules in the first row, but many rules that did not initially address EJ still received comments raising EJ concerns. For the statistical analysis, I distinguish unique comments from mass comments. The number of unique comments approximates a coalition’s size regarding the number of different groups, each submitting a unique text. The total number of comments, including signatures on identical form letters, indicates the scale of public attention and pressure.

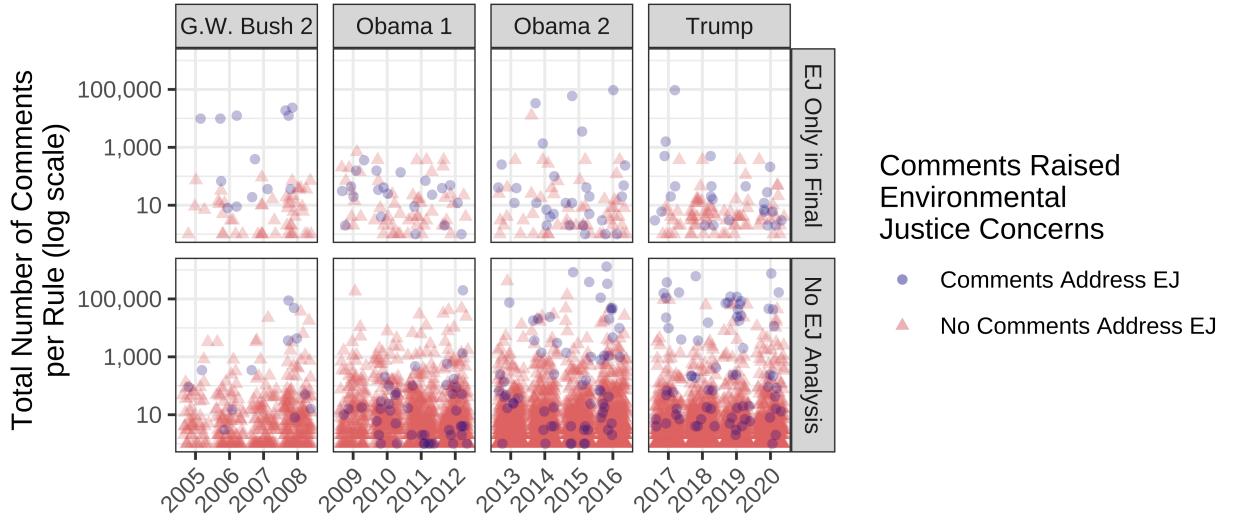
Interest Groups and Second-order Representation When lobbying during rulemaking, groups often claim to represent broader movements and segments of the public—claims which are often dubious and difficult to verify (Seifter, 2016). We cannot assume that a group’s lobbying success is a win for the people they claim to represent. Interpreting the substantive results or normative import of any findings in this analysis thus requires caution. It is insufficient to know which groups participate. We also need to know who these groups claim to represent

Figure 2: Number of Final Rules Addressing Environmental Justice



Even at the Environmental Protection Agency (EPA), where most policies are clearly framed as "environmental" issues, only about half of final rules address EJ. Many agencies that make policy with apparent EJ effects almost never address EJ. These include the Fish and Wildlife Service (FWS), Department of Housing and Urban Development (HUD), National Oceanic and Atmospheric Administration (NOAA), Nuclear Regulatory Commission (NRC), and the Office of Surface Mining (OSM). At no agency did a majority of rules address EJ overall. Only in a handful of years at agencies that publish few rules was EJ addressed in most rules. These include the Council on Environmental Quality (CEQ), Army Corps of Engineers (COE), Federal Emergency Management Agency (FEMA), Forest Service (FS), and several Department of Transportation agencies (the Federal Highway Administration (FHWA), Federal Motor Carrier Safety Administration (FMCSA), Federal Railroad Administration (FRA), and Federal Transit Administration (FTA)).

Figure 3: Number of Comments on Proposed and Final Rules and Whether Comments Raised Environmental Justice Concerns



and whether the people they claim to represent are actually involved in the organization's decisions. As Seifter argues, "the expertise a group claims is often based on its ability to convey a particular constituency's perspective, experience, or concerns... A group that does not have or engage with a membership cannot reliably convey those sorts of constituency-based insights." (Seifter, 2016, p. 1306).

Examining second-order representation is thus required to assess "what contemporary participation does and does not achieve" (Seifter, 2016, pg. 1306)—for example, the extent to which EJ concerns (and any potential policy response) indicate genuine movement advocacy and influence. Recall that EJ is a contested concept used to evoke different distributive claims by different groups. The prevalence and impact of EJ concerns in the policy process are only meaningful against the backdrop of who exactly is using EJ rhetoric.

I examine who is raising EJ concerns in two ways. First, I identify the top organizational commenters such as tribes, businesses, and nonprofits using EJ language and investigate whom these groups represent. I then use a hand-coded sample of 10,000 organizational comments to assess which types of organizations get the substantive policy changes they request when raising EJ concerns. Second, for comments where commenters signed their name, I compare surnames to their racial and ethnic identity propensities in the U.S. Census. Together these pieces of information allow me to comment on "second-order" representation. This is a proxy for the extent to which public comments are representative of the groups they claim to represent (Seifter, 2016).

Table 1: Organizations Raising Environmental Justice Concerns on the Most Rulemaking Dockets 1993-2020

Organization	Dockets	Unique EJ Comments	Total EJ Comments
Center For Biological Diversity	53	82	199
Sierra Club	36	62	342,099
Earthjustice	24	32	177,462
Center For Food Safety	19	42	42
NRDC	16	17	162,535
Citizens Trade Campaign	8	8	8
Friends Of The Earth	7	7	61,871
OCEANA	7	7	146
Arctic Slope Regional Corporation	6	7	7
PEW	5	5	63,773
Alaska Eskimo Whaling Commission	5	5	5
American Public Transportation Association	5	5	5
California Pan-Ethnic Health Network	5	5	5
Environmental Protection Agency	5	5	5
Southern Environmental Law Center	5	5	5
CREDO	4	4	221,559
Environmental Defense Fund	4	29	29
California Air Resources Board	4	5	5
Defenders Of Wildlife	4	5	5
Policylink	4	5	5

Which Organizations Most Often Raise EJ Concerns? To explore who raises EJ concerns, I first identify the organization behind each comment through an iterative process of hand-coding and text analysis. This includes organizational comments on signed letterhead and individuals who use the text of a form letter provided by an organization. I then investigated all organizations that raised EJ concerns on more than one policy.

Table 1 shows the organizations that raised environmental justice in comments on the most proposed rules between 1993 and 2020. In terms of a total number of comments, the top mobilizer was the Sierra Club, with over 340,000 comments mentioning EJ on dozens of rules. The Sierra Club is a membership organization whose members pay dues, elect the leaders of local chapters and have some say in local advocacy efforts. However, its policy work is directed by a more traditional national advocacy organization funded by

donations, including over \$174 million from Bloomberg Philanthropies, which funded several of the public pressure campaigns in these data. The Sierra Club has a major program arm dedicated to Environmental Justice that works with local partners “to foster the growth of the environmental justice movement so that oppressed communities will find justice and everyone can experience the benefits of a healthy and sustainable future.” As a federated organization with many local efforts, it is difficult to generalize about second-order representation. The extent to which EJ communities have a formal say in the national organization’s lobbying decisions varies across campaigns. The National Board of Directors adopted a statement on social justice in 1993 and principles on environmental justice in 2001. The national website contains regular Spanish-language content, demonstrating that the organization makes an effort toward increasing language accessibility.

The second most prolific organizer of EJ comments was Earthjustice, with over 175,000 comments on many of the same rules that the Sierra Club lobbied on. Earthjustice is primarily engaged in litigation on behalf of environmental causes. Their website boasts 2.2 million supporters, but it is not clear who they are or if they play any role in advocacy strategy. A search on the website returns hundreds of results for “Environmental Justice,” with the top results from staff biographies who work on more local or targeted campaigns, such as environmental conditions for the incarcerated. The website contains some Spanish-language content. The Natural Resources Defense Council (NRDC) is similar to Earthjustice—a national nonprofit funded by donations and focused on litigation—but they also lobby and organize public pressure campaigns, including over 160,000 comments mentioning environmental justice.

CREDO Action, PEW, and MoveOn are more generic progressive mobilizers who lack a systematic focus on EJ issues, but occasionally leverage their vast membership and contact lists to support EJ campaigns led by others.

We Act and Communities for a Better Environment both have environmental justice in their central mission statement. Community leaders founded We Act in Harlem, New York, to advocate against environmental racism and poor air quality. Communities for a Better Environment has projects throughout California but is particularly active in Oakland. Most of the content of their website is in both English and Spanish. Both organizations focus primarily on low-income communities of color and frame their work primarily in terms of race and class. While both organizations participate in national policymaking, WE ACT is more focused on communities in Harlem and New York, whereas Communities for a Better Environment casts a broader frame: “CBE’s vision of environmental justice is global—that’s why the organization continues to participate in such international efforts as the Indigenous Environmental Network and the Global Week of Action for Climate Justice.”

While not a large portion of EJ comments, private companies repeatedly raise research about the unequal impacts of policy to frame these issues as a legitimate but unresolved scientific debate that is not yet conclusive enough to base regulations on, mirroring the way tobacco and fossil fuel companies have emphasized scientific uncertainty in their lobbying efforts (Oreskes and Conway, 2011). For example, in one comment, the Southern Company wrote:

People with lower SES are exposed to almost an order of magnitude more traffic near their homes (Reynolds et al., 2001), and live closer to large industrial sites and are exposed to more industrial air pollution (Jerrett et al., 2001). Legitimate health concerns must be addressed. But adopting standards with a scientific basis so uncertain that health improvement cannot be assured is not sound public health policy. (EPA-HQ-OAR-2004-0018-0211)⁴

Other electric utility companies and the American Chemistry Council (the Chemical Industry's Trade Association) submitted nearly identical language on multiple proposed rules. Like many companies, the Southern Company claimed to represent its customers: "electric generating companies and their customers are expected to bear much of the burden" of regulations (EPA-HQ-OAR-2004-0018-0211). Yet, customers have little say in companies' decisions.

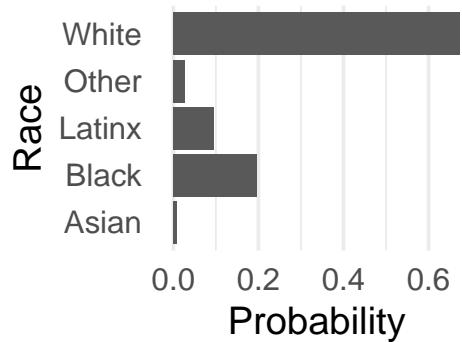
Overall, regarding second-order representation, it appears that the groups most often using the language of environmental justice may do so sincerely but generally represent affected communities in a surrogate capacity (Mansbridge, 2003). Several groups representing local communities and led by community leaders have participated, but not nearly as often or with the same intensity as the "big greens." The domination of large advocacy organizations highlights the importance of resources as a condition for lobbying and mobilizing. Not all groups that may benefit from generating political information can leverage it because they lack the resources to fund a campaign or even comment on relevant policies. However, smaller, more member-driven groups may partner with national groups that have more resources to mobilize on their behalf. Finally, a third, much less common type of commenter raises EJ issues to reframe them as ongoing debates and thus undermine their urgency. Though this strategy is intended to undermine EJ efforts, the fact that energy companies felt compelled to acknowledge and question EJ concerns suggests their importance for policy outcomes.

Commenter Race To estimate the racial distribution of commenters using EJ language, I select commenters who signed with a surname appearing in Census records. Figure 4

⁴All primary documents cited are available on regulations.gov.

shows a probabilistic racial distribution of commenters who raise EJ concerns in their comments based on the distribution of self-reported racial identities associated with surnames as recorded in the 2010 census.⁵ I estimate this distribution using the proportion of people with a given surname identified as belonging to each racial category (from this limited set of options). This approach does not assign specific individuals to racial categories. Instead, it represents each commenter as a set of probabilities adding up to 1. The estimated racial distribution of the sample is the sum of individual probabilities.

Figure 4: Estimated Racial Distribution from Census Surnames of Commenters raising “Environmental Justice” Concerns in Rulemaking



Compared to the overall distribution in the 2010 census, this sample of commenters appears to be slightly disproportionately Black and less than proportionately Latinx or Asian, with just slightly fewer Whites relative to the national population. This is unsurprising, given that Black Americans have led theorizing and activism around environmental justice (Bullard, 1993).

2.4 Measuring Policy Change

I use two indicators of responsiveness to model the effect of public comments on policy documents: *whether* a policy addresses EJ and change in *how* it addresses EJ, i.e., change in portions of the text discussing EJ. Both measures indicate whether agency officials explicitly paid attention to EJ as they revised the rule. This is similar to measures of “procedural responsiveness” used by Balla et al. (2020). Recall from Figure 1 that only 10% of proposed or final rules from these agencies mention environmental justice at all.

Measure 1: Adding Text Addressing EJ to Final Rules For the subset of draft rules that did not address EJ, I measure whether agencies added any mention of “environmental justice”

⁵I recode “Hispanic” as “Latinx.”

in the final rule. Such additions usually take the form of an “E.O. 12898” section where the agency justifies its policy changes with respect to some concept(s) of EJ. The next most common addition occurs in the agency’s response to comments, explaining how the rule did not have disparate effects or that they were insignificant.

Agencies may both respond to a comment and add a 12898 section. For example, the EPA responded to several commenters, including Earthjustice, the Central Valley Air Quality Coalition, the Coalition for Clean Air, Central California Environmental Justice Network, and Central California Asthma Collaborative: “EPA agrees it is important to consider environmental justice in our actions and we briefly addressed environmental justice principles in our proposal.” As the commenters noted, the EPA had not, in fact, addressed EJ in the proposed rule, which approved California rules regulating particulate matter emissions from construction sites, unpaved roads, and disturbed soils in open and agricultural areas. EPA did add a fairly generic 12898 section to the final rule but did not substantively change the rest of the policy.

Less frequently, an agency may explicitly dismiss a comment and decline to add a 12898 section. For example, the G.W. Bush EPA responded to a comment on another rule, “One commenter stated that EPA failed to comply with Executive Order 12898 on Environmental Justice... We do not believe that these amendments will have any adverse effects on... minority and low-income populations... Owners or operators are still required to develop SSM plans to address emissions... The only difference from current regulations is that the source is not required to follow the plan” (71 FR 20445). As these examples illustrate, agencies may add text addressing EJ that would not satisfy critics. This measure merely indicates whether the agency engaged with the claims.

Most frequently, agencies neither responded to comments nor added a 12898 section.

Measure 2: Changing Text Addressing EJ in Final Rules Where draft rules did address EJ, I assessed whether a rule changed *how* it discussed environmental justice between its draft and final publication.⁶ When an agency addresses EJ in the draft rule, it is almost always in a section about how it addressed E.O. 12898. In many cases, much of the text of final rules, including 12898 sections, remains exactly the same between draft and final versions. To measure change, I parse draft and final rules into sentences and identify sentences containing the phrase “environmental justice.” If an agency leaves these sentences unchanged between

⁶Occasionally, there is more than one version of a proposed or final rule on a rulemaking docket. Here I opt for an inclusive measure of change that counts change from *any* proposed to *any* final rule. If the change occurred between the first and second draft of a proposed rule, I count it as a change. This best captures the concept of rule change. However, estimates are similar if we only count cases where a change occurred between *every* version of the rule.

the draft and final rule and adds no new sentences mentioning EJ, this suggests that the agency did not engage with comments raising EJ concerns.⁷

3 Results: Changes in How Policy Documents Address Distributive Justice

3.1 Are final rules more likely to address EJ after comments do so?

When agencies did not address EJ in the draft rule, they are more likely to add EJ language when comments raise EJ concerns. Descriptively, there is a large difference in the rate of addressing EJ between rules where commenters did (33 percent) and did not raise EJ concerns (4 percent). However, in most cases (67 percent), agencies did not respond at all when commenters raised EJ concerns.

Rates of adding EJ in rules without EJ comments have decreased over time, leveling out at 3 percent during the Obama and Trump presidencies. Rates of adding EJ when commenters raised EJ concerns are consistently much higher but also decreased over time, from 57 percent under G.W. Bush to 26 percent under Trump. EPA had a relatively high baseline rate of change (10 percent), which increased to 52 percent when comments raised EJ concerns. Most other agencies also added EJ at a higher rate when comments raised EJ concerns; indeed, most agencies almost never added mentions of EJ when comments did not raise EJ concerns.

To account for differences across presidents, agencies, and the number of comments, I estimate logit regressions. For models 1 and 2 in Table 2, the outcome is whether the agency added “environmental justice” to the final rule. The predictors are whether comments raised EJ concerns, the number of unique (non-form letter) comments addressing EJ, the total number of comments (including form letters), and the interaction between the total number of comments and whether any comments raised EJ concerns. Models 1 and 3 also include the agency’s prior rate of addressing EJ in final rules (see Table 4). Models 3 and 4 are the same as models 1 and 2, except that the outcome is whether the policy text changed how EJ is discussed (described in the next section).

All models include fixed effects for the presidential administration. Models 2 and 4 also include fixed effects for each agency instead of controlling for each agency’s prior rates of addressing EJ. Thus, estimates in Models 1 and 3 include any variation *across* agencies that

⁷An alternative approach would be to parse documents by section and assess whether E.O.12898 sections are identical. Parsing by sentences has three advantages: it is computationally faster, it avoids problems with changes in section numbering and other frustrations with section matching, and it captures attention to EJ outside of the 12898 section, especially in the section responding to comments. If an agency is paying attention to EJ issues, sentence matching will likely detect it.

Table 2: Logit Regression Predicting Change in Rule Text

	1	2	3	4
Dependent Variable	EJ Text Added	EJ Text Added	EJ Text Changed	EJ Text Changed
EJ Comment	2.414*** (0.164)	2.298*** (0.082)	0.555+ (0.321)	0.568*** (0.013)
Log(Comments+1)	0.305*** (0.054)	0.232*** (0.027)	-0.142 (0.105)	-0.159*** (0.031)
Log(Unique EJ Comments+1)	0.649+ (0.392)	0.687+ (0.405)	0.333*** (0.077)	0.374*** (0.032)
EJ Comment*Log(Comments+1)	-0.283*** (0.033)	-0.202*** (0.018)	0.064 (0.100)	0.066*** (0.014)
Agency EJ Ratio	8.342*** (0.340)		1.910+ (1.076)	
Num.Obs.	11 315	7067	1864	1842
AIC	3232.9	3084.8	2161.4	2126.9
BIC	3298.9	3290.7	2211.2	2226.3
Log.Lik.	-1607.436	-1512.396	-1071.705	-1045.469
Std.Errors	by: president	by: president & agency	by: president	by: president & agency
FE: president	X	X	X	X
FE: agency		X		X

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

is not attributable to prior rates of addressing EJ, whereas estimates in models 2 and 4 only rely on variation *within* each agency. All estimates rely on variation *within* each presidential administration. All predicted probabilities shown below include agency fixed effects, models 2 and 4.

Models 1 and 3 show that the agency’s prior rate of addressing EJ in their final rules is a strong predictor of adding EJ language. While many agencies make policies that could be framed as “environmental,” and all policy decisions have distributive consequences, institutions have norms and procedures that lead policymakers to see problems in different ways and thus be more or less receptive to EJ claims. The *Policy Receptivity Hypothesis* (1.4) predicts a correlation between past rates of addressing EJ and receptivity to comments raising EJ claims. We see such a correlation both for adding text and changing existing EJ text.

The Predicted Probability of Added Text As logit coefficients are not easily interpretable and all models contain interactions, Figures 5, 6, and 8 show the predicted probability of a final rule addressing EJ when the draft rule did not.

Controlling for average rates of policy change per agency and the number of comments,

Figure 5 shows a large increase in the probability of policy change when comments raise EJ concerns. This supports the *Distributive Claims Hypothesis* (1.1). When comments raise distributive justice concerns, they are more likely to be addressed in the final policy. Rates of adding EJ language decreased after the Clinton Administration, but differences between presidents are small compared to the difference between rules that did and did not receive EJ comments. Predicted differences among presidents are also much smaller than those between the EPA and Pipeline and Hazardous Materials Safety Administration (at the upper and lower ends of prior rates of addressing EJ, respectively), supporting the *Policy Receptivity Hypothesis* (1.4).⁸

Figure 5: Probability that "Environmental Justice" is Added Between Draft and Final Rules by President

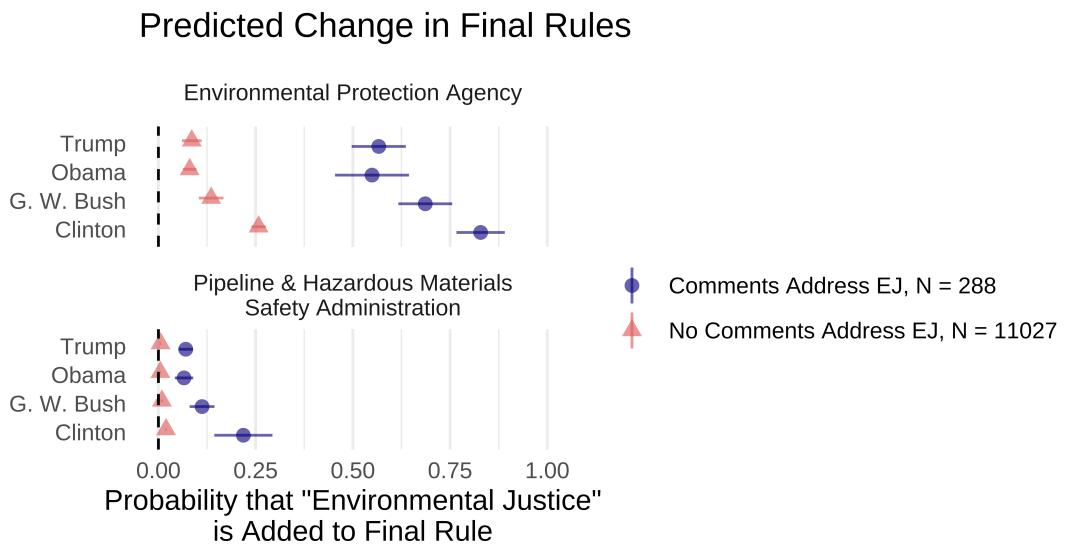


Figure 6 shows the probability that an agency will add EJ language given different total numbers of comments. At low numbers of total comments (i.e., low levels of public attention), a single comment raising environmental justice is a strong predictor that language mentioning environmental justice will be added to the final rule. For rules with less than ten comments (most rules), one comment mentioning EJ is associated with a 47 percent increase in the probability that EJ will be addressed in the final rule. This supports the *Distributive Claims Hypothesis* (1.1). However, at low levels of public attention and pressure, the probability

⁸Other variables are held at their modal values: one total comment and zero additional EJ comments. Except for Figures 5 and 8, all predicted probability plots below show probabilities at the modal values for other variables: President Obama, the EPA, zero additional EJ comments, and the median number of total comments (one comment for models 1 and 2; four comments for models 3 and 4) unless otherwise specified. Plots by president or agency show models estimated with indicators rather than fixed effects. Figure 8 uses estimates from Model 1.

that an agency will add EJ language still tops out around 50 percent—even when comments raise EJ concerns, agencies often do not address them.

As the number of comments increases, the probability that a rule will add text addressing EJ increases. This supports the *Public Attention Hypothesis* (1.3)—policy change is more likely when there is more public attention to a policy process. Simultaneously, the relationship between any one comment raising EJ and agencies addressing EJ in the rule is less strong when there are more overall comments. In the small portion of highly salient rules with 10,000 or more comments, the presence of any one comment raising EJ concerns has a much smaller relationship with agencies adding EJ to the text. Even without EJ comments, a rule with 10,000 comments is predicted to add EJ language 38 percent of the time, 30% higher than a rule with few comments and no EJ comments. This is evidence against the *Conditional Pressure Hypothesis* (??)—the number of comments matters (i.e., the scale of public attention) matters regardless of whether these comments explicitly raise EJ concerns. However, as shown in Figure 3, few rules with 10,000 or more comments do not have at least one comment mentioning EJ, so we are highly uncertain about estimates of the impact of EJ comments with high levels of public attention. We can be much more confident about the relationship between comments raising EJ concerns and rule change at lower, more typical levels of public attention.

The probability of “environmental justice” appearing in the final rule also increases with the number of unique comments mentioning “environmental justice” in model 2. Figure 7 shows that there is a much higher probability of seeing EJ language added when 100 unique commenters raise EJ concerns, compared to when only one commenter does so. This supports the *Repeated Claims Hypothesis* (1.2).

Figure 6: Probability Environmental Justice is Added Between Draft and Final Rules

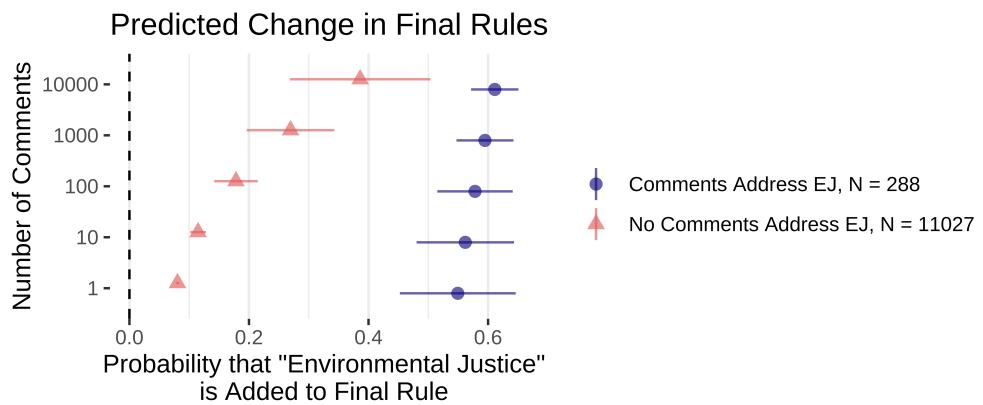
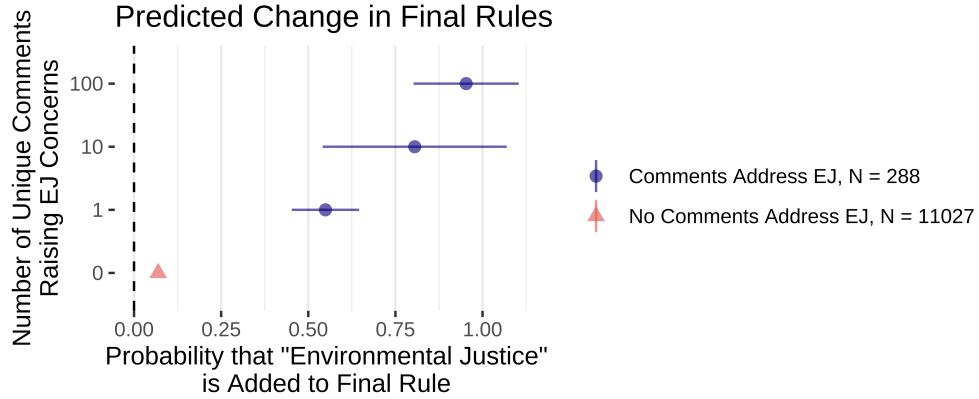


Figure 8 shows the predicted probability of EJ being added to rules at different overall rates of addressing EJ in final rules (“Agency EJ Ratio” in Model 1). The Federal Emergency

Figure 7: Probability Environmental Justice is Added Between Draft and Final Rules by Number of Comments Raising Environmental Justice



Management Agency (FEMA), the EPA, and the Federal Transit Administration (FTA) have the highest baseline rates of addressing EJ (46%, 41%, and 38%, respectively) and also the greatest predicted responsiveness to EJ comments on proposed rules that did not address EJ. The Federal Motor Carrier Safety Administration (FMCSA) and Army Corps of Engineers (COE) have lower baseline propensities to address EJ. At just under the average baseline ratio of 10%, the Nuclear Regulatory Commission (NRC) has an even smaller predicted increase when commenters raise EJ concerns. The Rural Housing Service (RHS), Bureau of Ocean Energy Management (BOEM), and Federal Aviation Administration rarely address EJ in their final rules and have even lower predicted levels of responsiveness to EJ comments.⁹ The strong correlation between a tendency to address EJ and responsiveness to comments raising EJ concerns is strong evidence for the *Policy Receptivity Hypothesis* (1.4).

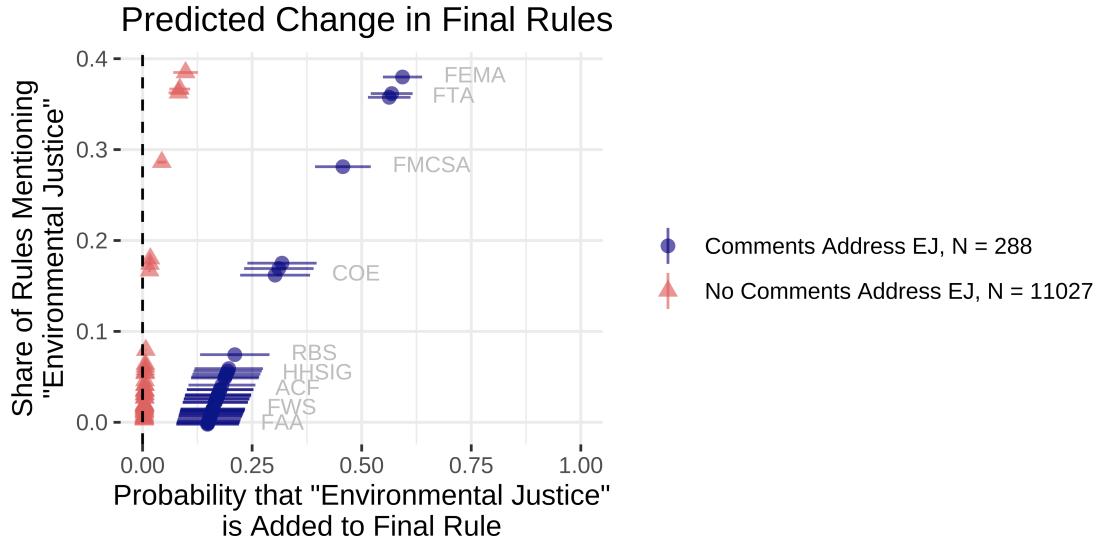
3.2 Are rules more likely to change how they address environmental justice when comments mention it?

Turning to rules that do address EJ in the draft, we also see responsiveness to comments raising EJ concerns, now measured as whether any sentences containing “environmental justice” changed between draft and final rule. Models 3 and 4 in Table 2 are the same as Models 1 and 2, except that the dependent variable is now whether any sentences mentioning EJ changed between the draft and final rule.

Most rules that addressed EJ in the draft were published by the EPA. The EPA had a high rate of baseline change, which increased when comments raised EJ concerns. Other agencies had too few draft rules mentioning EJ to make strong inferences, but many changed

⁹ Appendix Figure 13 offers an alternative approach, estimating individual agency effects, where possible.

Figure 8: Probability Environmental Justice is Added Between Draft and Final Rules by Share of Rules Addressing Environmental Justice



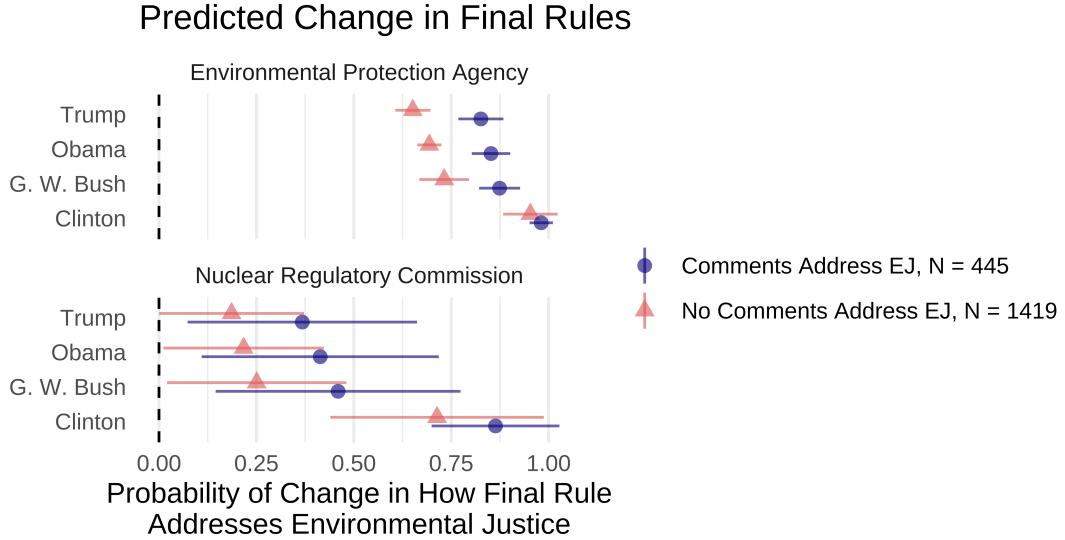
how they discussed EJ 100 percent of the time when comments raised EJ concerns, while inconsistently doing so when comments did not.

The Predicted Probability of Changed Text Controlling for average rates of change per agency and the number of comments, Figure 9 shows little difference in baseline rates of changing EJ language across the Bush, Obama, and Trump presidencies compared to the differences between agencies.¹⁰ All are significantly lower than the Clinton administration's rate, which could be related to Clinton's Executive Order on environmental justice or simply an artifact of the limited sample of rules posted to regulations.gov before the mid-2000s.

For draft rules that already addressed EJ, the relationship between the total number of comments and policy change is in the opposite direction posited by the *Public Attention Hypothesis* (1.3). The logged total number of comments is inversely related to change in the final rule text. The more comments on a proposed rule, the less likely it is to change. Rules are more likely to change when they receive *fewer* comments. Thus, the total number of comments has the opposite relationship to *how* rules that already addressed EJ changed as it did to *whether* rules added any EJ text. While the *Public Attention Hypothesis* (1.3) accurately explained the adding of EJ text where none existed in the draft, the opposite is true for changing a text that already addressed EJ. Instead, this result supports the competing intuition that more salient rules may be harder to change because the agency

¹⁰Standard errors for these predicted probabilities come from estimating Model 4 with indicator variables rather than fixed effects.

Figure 9: Predicted Change in How Environmental Justice is Addressed Between Draft and Final Rules by President



has anticipated public scrutiny. Their position stated in the draft is more likely to be the position of the final rule.

As shown in Figure 10, EJ comments have a small but discernible relationship to the probability of rule change at typical (low) numbers of comments. As the total number of comments increases, the estimated difference between policies that did and did not receive EJ comments increases. When no comments mention EJ, a rule that receives 10,000 comments is much less likely to change than a rule that received only 10. Again, this suggests that agencies have already stated their final policy position in high-salience draft policies. When comments do raise EJ concerns, more public attention has little impact on the probability of policy change. Figure 11 shows the probability that an agency will change EJ language at different numbers of unique comments raising EJ concerns. Unlike the general level of public attention, specific attention to EJ issues is positively related to change in rule texts. Sentences mentioning EJ are more likely to change between draft and final rules when 100 comments raise EJ concerns than when only one comment raises EJ concerns.

3.3 Substantive Policy Change and Lobbying Success

The statistical analysis above measure agency responses to a particular issue frame over time. How does this relate to substantive policy change in particular rulemakings? Using a hand-coded sample of approximately 10,000 comments—all comments from organizations with concrete policy demands on a random sample of 182 agency rules from 2005 to 2020, Table 3 shows relative rates of lobbying success for different types of organizations. “Overall

Figure 10: Predicted Change in How Environmental Justice is Addressed Between Draft and Final Rules by Number of Comments



Figure 11: Probability Environmental Justice is Added Between Draft and Final Rules by Number of Comments Raising Environmental Justice

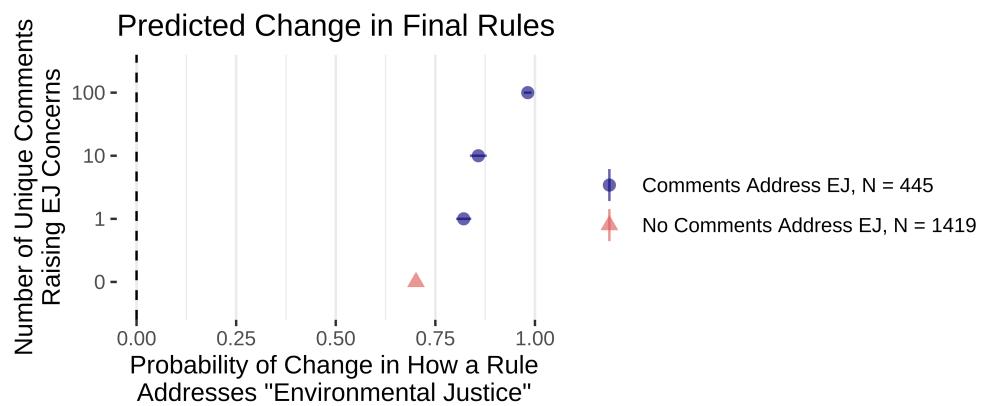


Table 3: Hand-coded Lobbying Success by Type of Organization, 2005-2020

Organization Type	N	Overall Success Rate	EJ Success Rate
NGO	6,096	27%	24%
Business	1,911	13%	-
Trade Association	894	45%	-
State	294	50%	-
Law Firm	288	25%	50%
Religious	220	24%	-
Pressure Group	182	15%	-
Professional Assn.	179	33%	-
Tribe	179	9%	0%
University	140	10%	-
Environmental Group	130	18%	14%
Credit Union	103	50%	-
Union	88	27%	-
Frontline EJ	78	4%	0%
Finance	6	33%	-
City	5	40%	-

Success Rate” shows the share of cases that changed between draft and final as each type of commenter requested. “EJ Success Rate” shows the share of cases that changed as the commenter requested when comments included the phrase “environmental justice.” Some organization types—including frontline EJ community groups, universities, religious groups, professional associations, environmental groups, and pressure groups are subsets of the broad “NGO” category. Trade associations, while technically nonprofits, are not included in the NGO category.

Only law firms were more likely to get their substantive policy demands met when their comments raised EJ concerns. Tribes and Frontline EJ community groups—already the types of organizations least likely to have their substantive demands met (9% and 4%, respectively)—saw none of their substantive demands related to EJ met. NGOs, overall, and environmental groups (a subset of NGOs) were slightly less likely to see their policy demands met when these demands were explicitly linked to EJ. The most successful types of organizations overall—Trade Associations, States, Cities, and Banks—did not use EJ language in the hand-coded sample. Because the EJ demands often oppose the status quo, this aligns with

research showing that advocating for the status quo is one of the strongest predictors of lobbying success (Baumgartner, 2009). This should not be taken as evidence that tribes and frontline groups are never influential. Rare events—like comments raising EJ concerns on rules that did not address EJ—are not captured by this small sample of rules.

4 Conclusion

This analysis presents a rare, systematic account of the impact of a political movement on specific policy outcomes across institutions and over time. It illustrates the importance of issue definitions in policymaking and how movements can affect the policy process—even technocratic processes like agency rulemaking, where most U.S. law is now made.

When activists assert distributive justice claims, there is a higher probability that policymakers engage in discourse that highlights the distributive effects of policy. However, baseline rates of addressing environmental justice in rulemaking are so low that, even when activists raise EJ concerns, most policy documents pay no explicit attention to EJ. This general lack of attention persists across agencies and across the G.W. Bush, Obama, and Trump administrations. Yet, similarities across administrations in baseline rates of considering EJ and responsiveness to public pressure mask radically different definitions of environmental justice advanced by each administration.

There is a great deal of variation in responsiveness across agencies, suggesting that policy receptivity and responsiveness to public input are conditional on slow-moving institutional factors such as organizational cultures and institutional mechanisms for processing political information. Agencies with a history of addressing distributive justice concerns are more receptive to claims about distributive justice than agencies for whom these claims are novel.

Bureaucracies are specialized institutions built to make and implement certain kinds of policies based on certain goals and types of legitimate knowledge. Each agency has distinct norms and biases. Some may see an issue as “environmental” when others do not. Likewise, some may see disparate impacts that demand consideration as issues of fairness and distributive “justice” where other officials, with different norms and training, see no such disparity. In short, some policymakers appear to see their policy area as more related to environmental justice than others and thus be more receptive to commenters’ concerns.

The policy outcomes suggested by an environmental justice analysis depend on how the populations of concern are defined. In some cases, those raising environmental justice concerns present it as an economic inequality issue, leading policy to account for disparate impacts on low-income populations. In other cases, groups raise claims rooted in cultural practices, such as fish consumption among certain tribes. As occurred in the Mercury Rule,

the analysis in subsequent drafts of the policy used evaluative criteria specific to these communities. Thus, policy outcomes depend on the specific environmental justice concerns raised. Future research should assess the relationship between distinct types of EJ claims and corresponding policy changes.

Which communities and concerns are raised by pressure campaigns depend on second-order representation—who makes decisions in the organizations that mobilize public pressure. Examining which groups raise environmental justice concerns and second-order participation in these organizations’ advocacy decisions validates some of the skepticism about who is able to participate and make their voice heard. Elite groups dominate policy lobbying, even on an issue like environmental justice. National advocacy organizations frequently request that regulators protect “all people” or even “low-income communities of color.” However, this more generic advocacy may not lead to the same outcomes as participation by groups that can present more specific local environmental justice concerns unique to a community.

Several types of organizations raise environmental justice concerns. Some are generic progressive advocacy organizations. Others are community-based organizations. Linking these two types are high-capacity national organizations that frequently partner with local organizations for place-based litigation and campaigns. National advocacy groups that partner with frontline community groups may be more likely to raise local concerns in national policymaking than groups that focus almost exclusively on national campaigns. Given the importance of federal policy for local environmental outcomes, and advocacy organizations’ potential to draw policymakers’ attention to environmental justice issues, future research should examine the quality of partnerships between frontline communities and national advocacy organizations. Similarly, historical research might investigate the extent to which nationalization of environmental politics may have shaped an advocacy environment dominated by national advocacy organizations as has been found in other policy areas (Miller (2008)).

The quality of representation is more than an academic concern. Policymakers must make sense of representational claims in order to understand the political environment in which they act. Political information like petition signatures thus has the power to affect policy. While lobbying disclosure requirements could be amended to provide other information about how well groups represent the constituencies they claim to represent (Seifter, 2016), letter-writing campaigns are one of the only strategies currently available to demonstrate issue-specific congruence between the positions of groups and the people they claim to represent.

The above analysis focuses on one particular type of political action that is likely correlated with other forms of activism, lobbying, and civic engagement. For example, future research could explore connections between pressure campaigns and protests, both for organizers and

participants. Likewise, future research could measure media attention to agency rules and the various issue frames that media coverage promotes. It is difficult to disentangle the effects of co-occurring inside and outside lobbying strategies. However, future research could look at other tactics and pathways for activists to raise distributive justice concerns and affect policy. For example, campaign leaders often meet with policymakers, commission scientific reports, and encourage letter-writing to politicians.

Future work could also explore connections between geography, identity, and participation in campaigns. To date, environmental justice scholarship has focused on geography-based inequalities. These inequalities and harms may have cross-cutting effects on civic participation. On the one hand, exposure to environmental harms may inspire civic engagement, especially around distributive justice frames like environmental justice (Taylor, 2012). On the other hand, economic and environmental inequality create inequalities in the time and resources for civic participation (Piven and Cloward, 1977; Soss, Hacker and Mettler, 2007; Michener, 2018). The receptivity of government institutions to different identities (Harrison, 2019) may also affect the tactics activists use (Taylor, 2012).

In the end, the above analysis offers some clarity on two poorly understood and rarely linked features of U.S. politics: the policy impact of social movements and the role of public pressure in bureaucratic policymaking. It offers some hope that policymakers may at least acknowledge concerns raised through direct democracy mechanisms like public comment periods. At the same time, it highlights how policymakers rarely explicitly address the disparate impacts of policy, even when directly confronted with distributive justice concerns. Social movements do affect the policy process in aggregate terms, but there are steep odds to overcome in any given policy fight.

A Appendix A: Tracing Ideas Through Rulemaking

A.1 Environmental Justice as a Contested Concept

Using an environmental justice frame does not always imply the same communities of concern. Environmental justice emerged from movements against environmental racism, especially the disposal of toxic materials in predominantly Black neighborhoods (Bullard, 1993). However, the term quickly took on other meanings, encompassing various marginalized groups. President Clinton's 1994 Executive Order on Environmental Justice required all parts of the federal government to make "addressing disproportionately high and adverse human health or environmental effects of programs, policies, and activities on minority populations and low-income populations" a core aspect of their mission. This meant considering the disproportionate effects of policies by race and income during rulemaking, thus broadening the scope beyond race.

In 2005, EPA political appointees reinterpreted the Order, removing race as a factor in identifying and prioritizing populations. This move was criticized by activists and two reports by EPA's own Office of Inspector General (EPA-OIG-2004-P-00007 and EPA-OIG-2006-P-00034).

President Obama's EPA Administrators reestablished race as a factor. They named EJ as one of their top priorities, but they also faced criticism from activists for paying lip service to environmental racism without adequate policy changes.

In an October 2017 proposed rule to repeal restrictions on power plant pollution, the Trump EPA acknowledged that "low-income and minority communities located in proximity to [power plants] may have experienced an improvement in air quality as a result of the emissions reductions." This is remarkable given that "assertions that hazardous facilities are concentrated in minority and low-income communities in the United States and that those communities are exposed to inordinate amounts of environmental hazards" are "the most controversial claims of the environmental justice movement" (Taylor (2014), p. 1). Because the Obama EPA discussed EJ when promulgating the Clean Power Plan rule (stating that "climate change is an environmental justice issue"), the Trump EPA attempted to reframe rather than ignore environmental justice. The Trump EPA contended that the Obama EPA "did not address lower household energy bills for low-income households [and that] workers losing jobs in regions or occupations with weak labor markets would have been most vulnerable" (EPA 2017). Like regulated industry commenters, these statements frame the distribution of jobs and electricity costs as EJ issues in order to push back against policies that would equalize the distribution of health impacts from pollution.

The central conflict over the role of race in policy analyses is just one of many conflicts that

the environmental justice movement has caused to be fought somewhat on its terms. The next section briefly reviews the decades-long policy fight over regulating mercury pollution to illustrate how these definitional conflicts shape rules and rulemaking. This case and other examples in this article emerged from reading hundreds of rulemaking documents where agencies did and did not respond to comments raising EJ concerns. Their purpose is to assess whether the cases in the quantitative analysis are plausibly what they appear to be: that changes in rule text are, sometimes, causally related to public comments and that non-changes are cases of agencies disregarding comments, not some accident of the data or measures. The qualitative reading also confirmed other key assumptions, such as the fact that advocates do, in fact, use “environmental justice” when they raise distributional concerns, even on many rules that are not about issues traditionally considered “environmental.”

A.2 The Evolving Distributive Politics of Mercury Pollution

Definitions of the public good and minority rights are implicit in most policy documents, including agency rules. The public comment process offers an opportunity to protest these definitions. In the EPA’s Mercury Rules, two definitional issues were decisive. First, as with many forms of pollution, mercury-emitting power plants are concentrated in low-income and non-White communities. Second, some populations consume much more locally-caught freshwater fish, a major vector of mercury toxicity. Studies inspired by the political controversy around the Mercury Rules found high risk among certain communities, including “Hispanic, Vietnamese, and Laotian populations in California and Great Lakes tribal populations (Chippewa and Ojibwe) active on ceded territories around the Great Lakes” (EPA 2012). Thus the standards that EPA chooses depend on whom the regulation aims to protect: the average citizen, local residents, or fishing communities. Mercury regulations have disparate effects based on race and class because of disparate effects based on geography and cultural practices.

In December 2000, when the EPA first announced its intention to regulate mercury from power plants, the notice published in the *Federal Register* did not address EJ issues, such as the disparate effects of mercury on certain populations; it only discussed anticipated impacts in reference to “the U.S. population” (EPA 2000). When the first draft rule was published, it only discussed the effects of the rule on regulated entities, noting that “Other types of entities not listed could also be affected” (EPA 2002). Commenting on this draft, Heather McCausland of the Alaska Community Action on Toxics (ACAT) wrote:

The amount of methyl-mercury and other bioaccumulative chemicals consumed by Alaskans (especially Alaskan Natives) could potentially be much higher than

is assumed. . . [This could increase] the Alaskan Native mortality rate for babies, which according to the CDC, is 70% higher than the United States average. Indigenous Arctic & Alaskan Native populations are some of the most polluted populations in the world.

By citing the CDC, McCausland's comment provided both technical and distributive information. As allies mobilized, public pressure mounted to address the disparate impacts of mercury levels. After receiving hundreds of thousands of comments and pressure from tribal governments and organizations, a revised proposed rule echoed McCausland's comment noting that

Some subpopulations in the U.S., such as Native Americans, Southeast Asian Americans, and lower-income subsistence fishers may rely on fish as a primary source of nutrition and/or for cultural practices. Therefore, they consume larger amounts of fish than the general population and may be at a greater risk of the adverse health effects from Hg due to increased exposure (04-1539/p-719).

After nearly a million additional public comments, a further revised proposed rule ultimately included five pages of analysis of the disparate impacts on "vulnerable populations" including "African Americans," "Hispanic," "Native American," and "Other and Multi-racial" groups (EPA 2011). In the final rule, "vulnerable populations" was replaced with "minority, low income, and indigenous populations" (EPA 2012). The EPA had also conducted an analysis of sub-populations with particularly high potential risks of exposure due to high rates of fish consumption as well as additional analysis of the distribution of mortality risk by race.

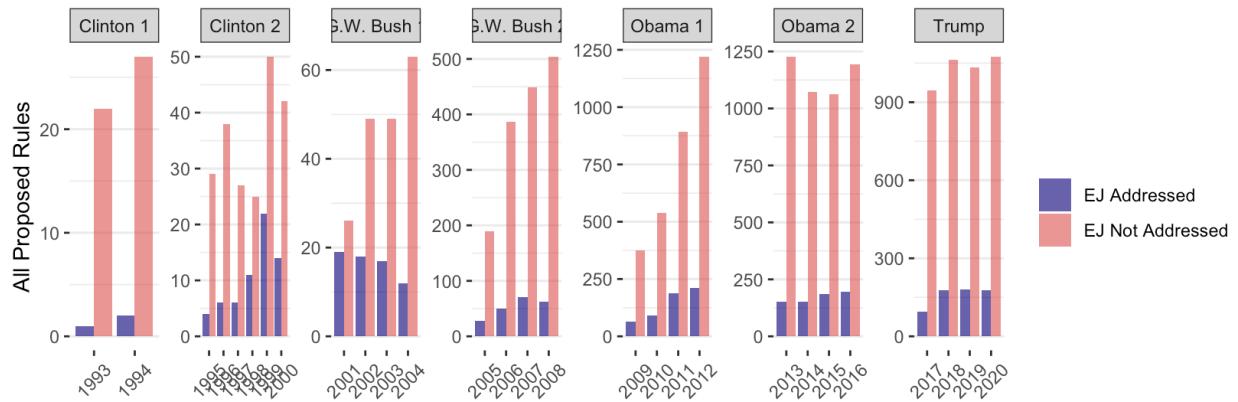
Of this second round of comments, over 200 unique comments explicitly raised EJ issues. The Little River Band of Ottawa Indians expressed the Tribe's

...frustration at trying to impress upon the EPA the multiple and profound impacts of mercury contamination from a Tribal perspective. Not to mention the obligations under treaties to participate with tribes on a 'Government to Government' basis. At present, no such meetings have occurred in any meaningful manner with EPA Region V, the EPA National American Indian Environmental Office, nor the State of Michigan's Department of Environmental Quality... In this rulemaking, the EPA perpetuated, rather than ameliorated, a long history of cultural discrimination against tribes and their members (EPA-HQ-OAR-2009-0234-12462, p. 67).

Did comments like these play a role in EPA's changed analysis of whom mercury limits should aim to protect? Because of the many potential sources of influence, it may be difficult to attribute causal effects of particular comments on a given policy. However, comments may serve as a good proxy for the general mobilization of groups and individuals around an administrative process, and it is not clear why else the EPA would not address EJ in the first draft of a rule and then add it to subsequent drafts in the absence of activist pressure. Electoral politics does not offer an easy explanation. The notice proposing the Mercury Rule was issued by the Clinton administration, the same administration that issued the Executive Order on Environmental Justice, and the subsequent drafts that did address EJ issues were published by the Bush administration, which had a more contentious relationship with EJ advocates, while Republicans controlled both houses of Congress. The expansion of the analysis from one draft to the next seems to be in response to activist pressure.

Figure 12 shows the full time period for these data.

Figure 12: Proposed and Final Rules by Whether they Address Environmental Justice.



B Appendix B: Additional Descriptives

B.1 Rates of Addressing EJ by Agency

Table 4 shows the total number of final rules and the percent that address EJ for the twenty agencies that most frequently mention EJ in final rules.

Figure 13 shows estimated variation in rates of adding EJ to final rules across agencies. Some agencies have dedicated staff and prominent internal guidance on EJ analysis in rule-making, including the Environmental Protection Agency and the Department of Transportation (which includes the Federal Railroad Administration (FRA), Federal Motor Carrier Safety Administration (FMCSA), and Federal Highway Administration (FHWA)). These agencies are among the most responsive to commenters raising EJ concerns. However, differences among agencies are fairly uncertain due to the small number of rules where EJ was added at most agencies. Combined with the main results (models 1 and 3 in Table 2), these differences in responsiveness add further support for the *Policy Receptivity Hypothesis* (1.4), but differences between agencies with different missions and institutional practices regarding EJ are not clear-cut.

Figure 13: Probability that "Environmental Justice" is Added Between Draft and Final Rules by Agency

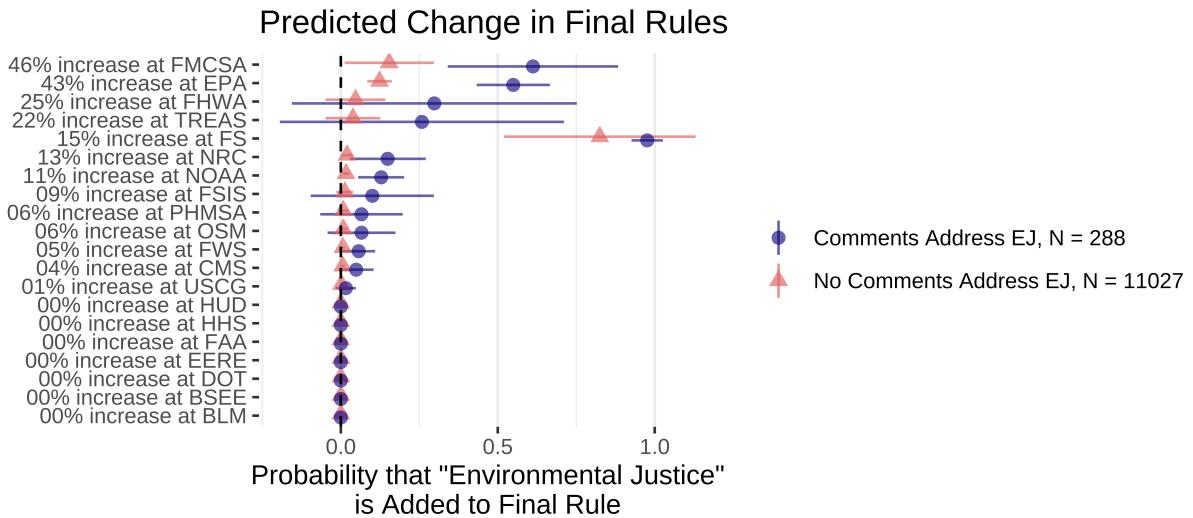
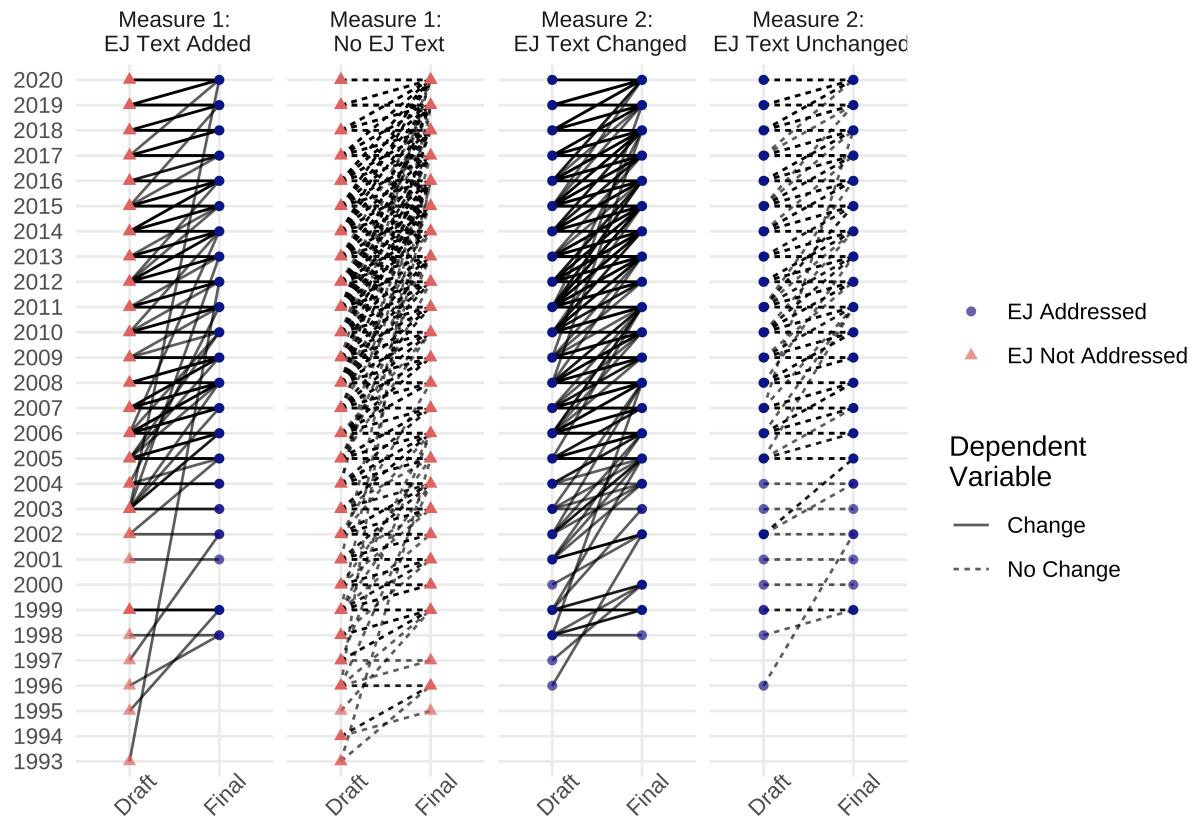


Table 4: Rates of Mentioning "Environmental Justice" in Final Rules

Agency	Rules	Mention EJ
FEMA	68	38.24%
EPA	7294	36.41%
FTA	50	36.00%
FMCSA	141	28.37%
CEQ	8	25.00%
FRA	107	17.76%
FHWA	134	17.16%
COE	73	16.44%
RBS	65	7.69%
NRC	536	6.16%
USDA	17	5.88%
HHSIG	18	5.56%
RUS	76	5.26%
BLM	39	5.13%
BOEM	23	4.35%
ACF	26	3.85%
BSEE	26	3.85%
DOT	182	3.30%
CCC	31	3.23%
NRCS	32	3.12%
FS	35	2.86%
FSA	36	2.78%
NHTSA	732	2.46%
RHS	82	2.44%
FWS	812	1.72%
BIA	60	1.67%
TREAS	63	1.59%
DOE	66	1.52%
PHMSA	281	1.42%
FSIS	73	1.37%
DOD	343	1.17%
HHS	87	1.15%
NOAA	2596	0.96%
GSA	119	0.84%
OSM	171	0.58%
HUD	250	0.40%
EERE	350	0.29%
CMS	509	0.20%
USCG	4783	0.13%
FAA	9612	0.03%

B.2 Pairs of Draft and Final Rules

Figure 14: Draft and Final Rule Pairs



B.3 Rates of Change With and Without Comments Raising Environmental Justice

Figure 15: Rates of Change Between Draft and Final Rule

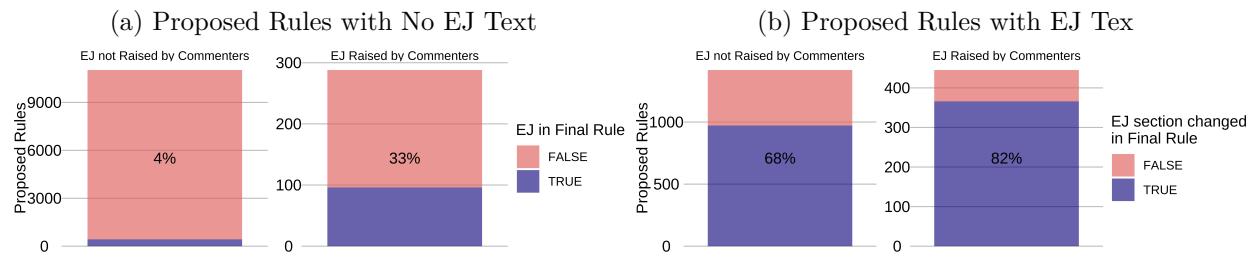


Table 5: Logit Regression Predicting Change in Rule Text (Data Subsets)

	2 EPA Only	2 Mass Only	2 EJ Only	4 EPA Only	4 Mass Only	4 EJ Only
Dependent Variable	EJ Added	EJ Added	EJ Added	EJ Changed	EJ Changed	EJ Changed
EJ Comment	2.141*** (0.376)	-1.321 (2.198)		0.492 (0.350)	-0.739 (0.992)	
Log(Comments+1)	0.315*** (0.081)	-0.355 (0.369)	-0.260*** (0.006)	-0.166 (0.115)	-0.036 (0.090)	-0.085 (0.102)
Log(Unique EJ Comments+1)	0.422 (0.266)	0.893*** (0.207)	0.763* (0.302)	0.340*** (0.094)	0.242*** (0.030)	0.362*** (0.108)
EJ Comment*Log(Comments+1)		(0.159)	(0.316)		(0.111)	(0.128)
Num.Obs.	3834	272	286	1753	242	443
AIC	2483.4	183.8	335.2	2022.2	251.3	398.8
BIC	2533.4	248.7	353.5	2060.5	282.7	419.2
Log.Lik.	-1233.710	-73.906	-162.608	-1004.097	-116.668	-194.389
Std.Errors	by: president	by: president & agency	by: president	by: president	by: president & agency	by: president
FE: president	X	X	X	X	X	X
FE: agency		X			X	

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

C Appendix C: Robustness

The main models (2 and 4) from Table 2 use agency fixed effects and an indicator for whether at least one comment raised EJ concerns. Table 5 presents roughly the same models to show that results are not driven only by agencies that have little contact with EJ issues or rules that have little to do with EJ issues. Models “2 EPA Only” and “4 EPA Only” are identical to Models 2 and 4 but subset to EPA rules instead of agency fixed effects. Models “2 Mass Only” and “4 Mass Only” are identical to Models 2 and 4 but subset to rules that received over 100 comments. Models “2 EJ Only” and “4 EJ Only” are identical to Models 2 and 4 but subset to rules that received at least one comment raising EJ concerns instead of including the indicator.

D Appendix D: Alternative specifications

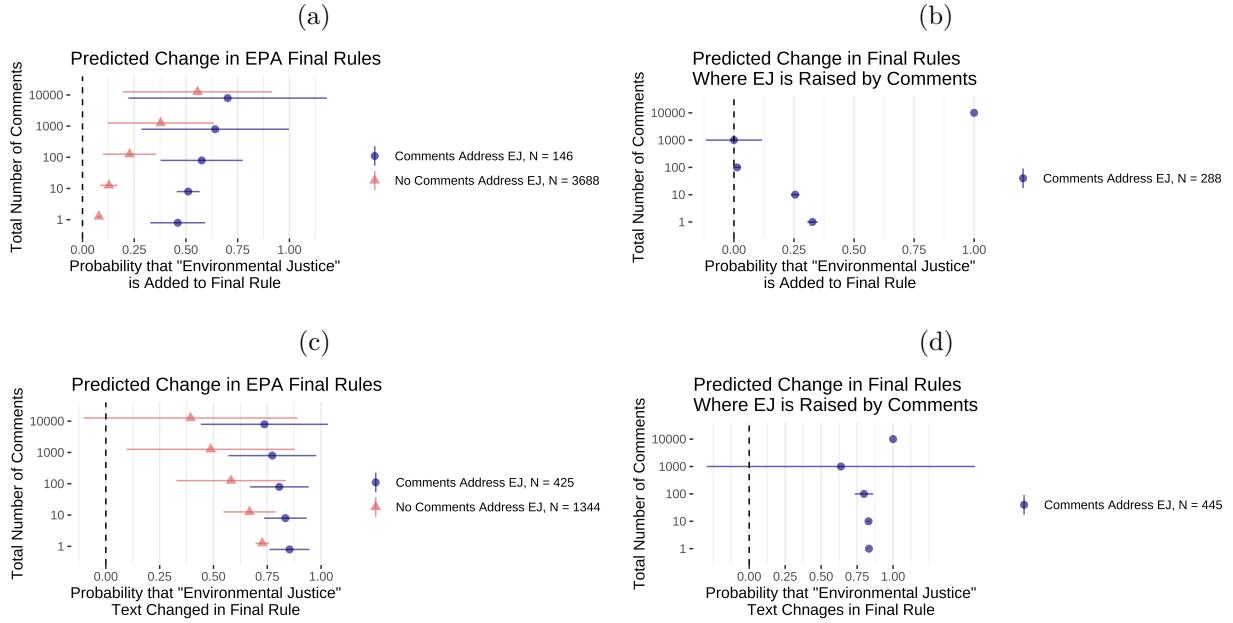
Table 6 presents an alternative specification as robustness checks for the main models 2 and 4 in Table 5. While we have strong reasons to believe that comments have decreasing marginal effects, and the logged number of comments offers a parsimonious modeling strategy, the models in Table 6 relax this assumption about functional form by using both linear and quadratic terms instead. In these tables, “Total Comments” is measured in thousands, whereas “Unique EJ Comments” is not transformed. With this specification, most hypotheses cannot be assessed by the p-value on any one term. Instead, Figures 16 and 17 show predicted probabilities at various levels of public attention (total comments) and coalition size (unique EJ comments), respectively, while holding other variables at their modal values.

Table 6: Logit Regression Predicting Change in Rule Text

	2b	2b EPA Only	2b Mass Only	2b EJ Only	4b	4b EPA Only	4b Mass Only	4b EJ Only
Dependent Variable	EJ Added	EJ Added	EJ Added	EJ Added	EJ Changed	EJ Changed	EJ Changed	EJ Changed
EJ Comment	2.276 (0.125)	2.152 (0.168)	2.322 (0.744)		0.639 (0.064)	0.588 (0.268)	1.179 (0.372)	
Total Comments	0.141 (0.189)	0.281 (0.098)	0.059 (0.176)	-0.039 (0.008)	0.171 (0.110)	0.250 (0.142)	0.274 (0.270)	-0.002 (0.002)
Comments^2	-0.005 (0.008)	0.026 (0.032)	-0.002 (0.005)	0.000 (0.000)	-0.008 (0.004)	-0.011 (0.004)	-0.012 (0.010)	0.000 (0.000)
Unique EJ Comments	0.159 (0.150)	0.228 (0.204)	-0.056 (0.142)	0.194 (0.056)	0.034 (0.004)	0.027 (0.014)	0.035 (0.005)	0.028 (0.003)
Unique EJ Comments^2	0.007 (0.005)	0.014 (0.031)	0.013 (0.004)	-0.001 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
EJ Comment*Total Comments	-0.176 (0.157)	-1.659 (0.691)	-0.050 (0.130)		-0.174 (0.110)	-0.252 (0.143)	-0.275 (0.270)	
EJ Comment*Comments^2	0.006 (0.008)	0.098 (0.075)	0.002 (0.004)		0.008 (0.004)	0.011 (0.004)	0.012 (0.010)	
Num.Obs.	7067	3834	272	286	1842	1753	242	443
AIC	3113.6	2527.9	183.9	340.1	2143.7	2039.0	249.6	401.5
BIC	3340.1	2596.6	259.7	365.6	2259.6	2093.7	291.5	430.2
Log.Lik.	-1523.794	-1252.936	-70.967	-163.027	-1050.868	-1009.493	-112.807	-193.751
Std.Errors	by: president & agency	by: president						
FE: president	X	X	X	X	X	X	X	X
FE: agency	X		X		X		X	

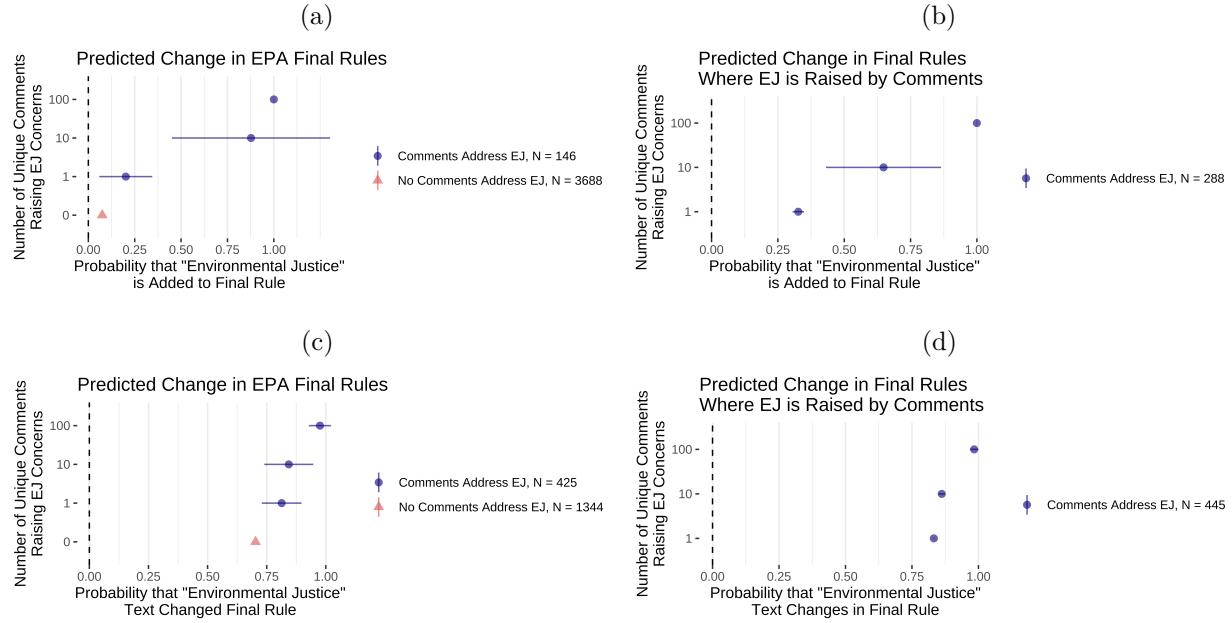
D.1 Predicted Response by Total Comments

Figure 16: The Effect of Public Attention in Subsets of Data



D.2 Predicted Response by Number of EJ Comments

Figure 17: Rates of Change Between Draft and Final Rule



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