Lobbying and Legislative Representation*

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Abstract

A common concern is that lobbying by interest groups distorts democratic representation by shifting legislators away from their constituents' preferences. For lobbying to harm legislative responsiveness, the preferences of interest groups must diverge from those of the constituents of the legislators they lobby. We analyze the ideological alignment between interest groups, members of Congress, and their constituents across three policy areas: the environment, healthcare, and immigration. Using issue-specific measures of district opinion and campaign contributions as a proxy for lobbying contacts, we find that legislators representing more conservative districts are more likely to be lobbied by conservative groups, suggesting that lobbying often reinforces, rather than distorts, representational alignment. We then estimate a structural model of roll-call voting that incorporates lobbying. The estimated effects are modest but show that lobbying nudges legislators to vote more consistently with district opinion. Lobbying does not systematically distort legislative responsiveness.

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1 INTRODUCTION

Does lobbying harm democracy? An overwhelming majority of Americans believe it does. The prevailing concern is that lobbying causes legislators to prioritize the interests of organized groups over those of their constituents. In a 2023 poll, 73% of respondents said lobbyists and special interest groups exert "too much influence" over members of Congress, while 70% said constituents have too little influence over their representatives (Pew, 2023). Whether lobbying ultimately harms legislative responsiveness, however, depends on the extent to which the preferences of interest groups align or conflict with those of the voters represented by the targeted legislators. This article empirically evaluates whether lobbying systematically distorts the connection between district preferences and legislative behavior.

Despite widespread public skepticism, theories of lobbying reach mixed conclusions about its effect on legislative responsiveness. *Quid pro quo* theories, in which interest groups provide contributions or resources in exchange for favorable policy, imply that lobbying distorts policy away from voter preferences (Snyder, 1991; Grossman and Helpman, 1994). In contrast, informational theories propose that lobbyists influence legislators through expertise and persuasion, with ambiguous consequences for responsiveness (Hansen, 1991; Austen-Smith, 1993; Lohmann, 1995). By shaping legislators' beliefs, lobbying may push them away from their constituents' positions, but the information provided may also improve aggregate outcomes by helping politicians develop more suitable policies (Schnakenberg and Turner, 2024). Finally, subsidy theories emphasize that legislators are resource-constrained, and argue that interest groups assist allied lawmakers by supplying specialized resources and support (Hall and Deardorff, 2006). Under this view, lobbying may even enhance responsiveness if the resources provided help legislators implement policies preferred by their constituents.

For lobbying to weaken legislative responsiveness, legislators must be lobbied by interest groups whose policy preferences diverge from those of their constituents. Even if lobbying influences legislators to vote in line with interest group preferences, it need not diminish responsiveness when those preferences are aligned with constituent preferences. Theories of lobbying with more benign implications for representation also predict greater alignment between interest groups and the constituents of those they lobby (Schnakenberg and Turner, 2024). Legislative subsidy theories predict that groups concentrate their efforts on legislators who already share their preferences, providing resources that help them advance shared policy goals (Hall and Deardorff, 2006; Ellis and Groll, 2020). Informational theories in which interest groups use allies to transmit information to other legislators (Schnakenberg, 2017) or inform legislators about their constituents' preferences (Hansen, 1991), make the same prediction. In contrast, *quid pro quo* theories require some disagreement between the legislator and interest

group absent lobbying. In these theories, interest groups compensate legislators for taking positions they would not have otherwise taken. Vote-buying theories, and some informational theories predict an interest group will lobby those easiest to influence, legislators who are somewhat supportive or mildly opposed to the group's position (Snyder, 1991; Wright, 1996).

Despite making different predictions about whom interest groups lobby, most theories of lobbying are silent on where legislators' alignment with interest group preferences originates. A vast literature on legislative accountability and responsiveness, however, identifies constituents as a primary driver of legislators' behavior. Understanding the relationship between elected officials and their constituents has long been central to scholarship on representative democracy (Miller and Stokes, 1963; Achen, 1977; Bartels, 1991), and extensive research finds a strong correlation between roll-call voting and district public opinion (e.g., Clinton (2006); Butler and Nickerson (2011)).

This paper examines how the ideology of interest groups relates to the legislators they target and to the preferences of those legislators' constituents across three salient policy areas: the environment, healthcare, and immigration. These are issues which are both heavily lobbied and relevant enough to public opinion to feature in large scale surveys. To capture constituency preferences on each issue, we scale responses from hundreds of thousands of survey respondents and apply multilevel regression with poststratification to account for demographic and geographic nonrepresentativeness (Tausanovitch and Warshaw, 2013). We measure the ideology of interest groups and legislators by combining interest group public positions on congressional bills with legislators' roll-call voting behavior, following Crosson, Furnas and Lorenz (2020). The resulting measures of legislative and constituent ideology are highly correlated—even within the same legislator across different issues—indicating that the measures capture variation distinct from general left–right orientation. Because the Lobbying Disclosure Act does not require interest groups to report which legislators they lobby, we infer lobbying contacts by linking the individual lobbyists hired by each group on specific issues to the legislators those lobbyists support through campaign contributions. This approach builds on evidence that contributions facilitate access to policymakers (Bertrand, Bombardini and Trebbi, 2014; Kalla and Broockman, 2016; Kim et al., 2025).

Our main results concern the relationship between the ideological preferences of a legislator's constituents and the ideology of the interest groups lobbying that legislator on a given issue. In our most restrictive specification, a one standard deviation shift to the right in voters' preferences on an issue corresponds, on average, to the legislator being lobbied by interest groups that are about 0.1 standard deviations more conservative on the legislator ideology distribution. This association holds in two-way fixed effects specifications that exploit within-legislator and district-issue variation in district preferences over time. We

find similar results when instrumenting district ideology with changes in the demographic composition of constituents. This pattern—where more conservative districts are lobbied by more conservative interest groups—is consistent with relatively benign subsidy theories. Although this alignment does not rule out all forms of *quid pro quo* lobbying, it suggests that lobbying may push legislators closer to their constituents' preferences.

In the second part of the paper, we directly study whether lobbying strengthens or weakens legislative responsiveness. Following Achen (1978) and subsequent work on legislative representation (Clinton, 2006; Bafumi and Herron, 2010; Lax, Phillips and Zelizer, 2019), we measure legislative responsiveness as the slope relating district preferences to legislators' roll-call behavior, with a steeper slope indicating greater responsiveness to constituent preferences. We develop a simple model of legislative voting in which a legislator's decision on a bill is shaped by both their spatial preferences and lobbying by groups supporting or opposing the bill. This model yields a linear expression for the probability of a legislator voting for a bill (Heckman and Snyder, 1997), which we estimate using an interactive fixed effects model (Bai, 2009). Estimating this model provides a measure of how lobbying affects roll-call voting, controlling for legislators' latent ideology, as well as a counterfactual measure of ideology in the absence of lobbying. Our estimates indicate that lobbying does influence legislative voting, though the effects are small, again consistent with a subsidy theory of lobbying. Comparing regressions of legislator ideology, estimated with and without lobbying, on constituent preferences indicates that lobbying does not weaken—and in fact modestly reinforces—the alignment between legislative behavior and district opinion.

Legislative responsiveness to district preferences in roll-call voting captures within-issue representation, but it is only one dimension of democratic representation. Lobbying may also affect representation across issues by shaping which issues legislators prioritize, influencing the legislative agenda without necessarily altering legislators' policy positions. We therefore examine how lobbying relates to legislators' issue-specific effectiveness and issue prioritization. There is a robust positive correlation between issue-specific lobbying and legislative effectiveness, though we find some evidence that greater lobbying on a given issue is associated with reduced effectiveness on other issues. Constituency characteristics systematically predict legislators' issue priorities, and lobbying is concentrated on the issues that are particularly relevant to legislators' constituents. This result suggests lobbying may if anything shift legislator attention closer to constituency priorities.

Our paper makes three contributions. First, we provide an updated empirical assessment of the normative implications of lobbying for legislative representation. Hall and Deardorff (2006) conceptualized lobbying as a legislative subsidy that can enhance representation, drawing on a long-standing but largely impressionistic literature suggesting that lobbyists

tend to target allies (Bauer, Pool and Dexter, 1964). We offer a systematic reassessment of this claim by examining two dimensions of dyadic representation that we can measure: within-issue responsiveness and issue prioritization. Our findings validate the core insights of the legislative subsidy perspective and provide evidence consistent with theories that view lobbying as less harmful to democratic representation. More broadly, using new data and methods, we challenge the common view that lobbying primarily involves interest groups capturing legislators and pulling them away from their constituents.

Second, we advance the literature on lobbying by demonstrating that constituency preferences are a central input into interest groups' targeting decisions. Our findings indicate that interest groups disproportionately lobby legislators whose constituents hold preferences aligned with their own. This alignment suggests that lobbying often operates in concert with public opinion and helps explain how how legislative subsidies may reinforce legislative responsiveness to district preferences.

Third, we advance the study of political representation by conceptualizing lobbying as an input into the representational process and by offering a tractable framework for analyzing this relationship. We develop and estimate a model that links lobbying activity to legislative voting behavior while explicitly accounting for legislators' underlying preferences and constituency opinions. This framework enables us to evaluate how factors shaping legislative behavior—including lobbying—affect the degree to which legislators reflect their constituents' views. In doing so, we provide both empirical evidence and a methodological template for future research on how external pressures interact with legislator preferences to influence legislative responsiveness.

2 INTEREST GROUPS, LEGISLATORS, AND VOTERS

Interest groups are often referred to as "special interests" because they are assumed to focus on a narrow set of issues, and the term carries the implicit assumption that their priorities may not align with the preferences of the broader public. Media coverage frequently reinforces this narrative, highlighting instances where "special interests" are seen as distorting policy away from voter preferences and the public good. For example, in its special report titled *Corruption Consultants*, the Center for American Progress argues that conservative special interests and corporations "skew political and economic power toward corporations or billionaires and away from everyday Americans," particularly at the state level (Wall, Root and Schwartz, 2019).

There is a long-standing literature emphasizing the power of special interests to bias public policy in their favor. The theory of regulatory capture, originating with Stigler (1971),

argues that regulation benefits the industries it is meant to oversee, to the detriment of the public (Carpenter and Moss, 2013). Grossman and Helpman (1994) provide a framework for analyzing the influence of special interests, particularly in the context of trade policy. Their central insight is that trade protection is "sold" by politicians in exchange for contributions from interest groups—explaining inefficient policies. A core assumption in this tradition of *quid pro quo* or exchange theories of interest group influence is that the preferences of interest groups and politicians' constituents are misaligned, so that political activity by interest groups tends to move policy away from what the public prefers.

But does this core assumption hold? Little existing research directly investigates this divergence. Two important studies answer related, but distinct questions. First, Gilens and Page (2014) use survey data to identify the policy preferences of average citizens (at the median income level), affluent citizens (90th income percentile), and powerful interest groups. Their goal is to assess whose preferences influence US policymaking. They find a negative correlation between the preferences of average citizens and those of business interest groups, and show that economic elites and business interest groups exert substantial influence over policy outcomes. In contrast, average citizens have little to no independent influence once elite and organized group preferences are accounted for. To measure interest group preferences, Gilens and Page (2014) use stated positions from a list of "powerful" groups on various issues: 28 business interests (e.g. the Chamber of Commerce), 11 mass-based groups (e.g. the National Rifle Association), and 3 others not classified as either (e.g. universities). While these organizations are nationally influential, the list is narrow, especially given that more than 10,000 groups register to lobby at the federal level each year. Moreover, their analysis is conducted at an aggregate level—assessing whether the policy preferences of different groups are associated with policy change across issues—rather than at the level of individual legislators. As a result, it does not address whether interactions with interest groups systematically distort legislative behavior away from the preferences of average citizens.

Second, Giger and Klüver (2016) use policy referendum data from Switzerland to measure citizen preferences and examine how interactions with interest groups affect the relationship between constituency preferences and legislators' voting behavior. They find that legislators lobbied by sectional groups (e.g. the chemical industry association) are more likely to vote against their constituents, but legislators lobbied by cause groups (e.g. environmentalists) are less likely to vote against their constituents. However, because their study does not observe interest group positions on specific policies, it cannot directly assess the alignment between interest groups and constituents.

This view of interest groups as distorting democratic responsiveness stands in contrast to a substantial body of research emphasizing the power of constituent preferences in shaping

legislative behavior. A long tradition in the study of representation finds that legislators' roll-call votes, committee activity, and other legislative behaviors closely track the preferences of their constituents (Adler and Lapinski, 1997; Clinton, 2006). Extending this line of evidence, Pereira et al. (2025) shows that U.S. local policymakers respond to public opinion on climate change, while Rasmussen and Otjes (2024), in an experimental study of elected officials in Denmark and the Netherlands, find that public opinion exerts a strong and direct influence on politicians' intended voting behavior. In contrast, the influence of interest groups in their study appears limited to reinforcing the positions of legislators already predisposed to share their views (see also Otjes and Rasmussen (2026)). Consistent with this perspective, congressional staffers report that constituent opinion and communication are among the most important factors shaping the advice they provide to members of Congress (Hertel-Fernandez, Mildenberger and Stokes, 2019).

The tension between these two perspectives—interest group distortion versus voter-driven responsiveness—raises a central question: when interest groups lobby legislators, are they working against the preferences of constituents, or reinforcing them? Prominent theories of lobbying suggest that lobbying involves interest groups providing resources to help aligned legislators push for priorities that the interest group shares (Hall and Deardorff, 2006), or supplying information (Austen-Smith, 1993; Schnakenberg, 2017). As the literature on legislative representation suggests, if legislators are responsive to their constituents (Butler and Nickerson, 2011), the preferences of their constituents should in part dictate their policy preferences. Then, a natural ally for a group engaging in legislative subsidy or informational lobbying is a legislator whose constituents share the group's preferences.

To pursue this strategy effectively, interest groups need a clear understanding of the preferences of legislators' constituents on specific issues. It is therefore unsurprising that they frequently rely on professional polling firms to gauge public opinion in targeted districts. Political research firms such as Public Opinion Strategies and Global Strategy Group (GSG) regularly work with interest groups to assess district-level attitudes and tailor messaging. For instance, GSG partnered with Everytown for Gun Safety to survey Illinois voters on Assembly Bill HB 5522, which proposed an assault weapons ban and an increase in the minimum purchasing age (Hinz, 2022). Interest groups use polling data both internally to shape lobbying strategies and externally to pressure lawmakers—offering evidence that can help legislators justify and frame their positions (Loomis, 2003).

One valuable form of information that interest groups can provide to legislators is insight into whether their constituents—or particular groups within their districts—are likely to support a given policy. Kollman (1998) shows that interest groups mobilize constituents to signal to policymakers the public salience and support underlying their policy positions. Legislators

frequently hold inaccurate perceptions of public opinion in their districts (Broockman and Skovron, 2018; Hertel-Fernandez, Mildenberger and Stokes, 2019; Pereira, 2021). However, when presented with district-specific survey data on policy issues, legislators are more likely to align their votes with constituent preferences (Butler and Nickerson, 2011). If interest groups behave as predicted by the legislative subsidy or informational theories of lobbying—targeting aligned or persuadable lawmakers—then their interactions with legislators may help reduce uncertainty about constituency preferences. Hansen (1991) documents this dynamic in his study of agricultural lobbying in Congress. He notes (p. 5):

> Lawmakers operate in highly uncertain electoral environments. They have an idea of the positions they need to take to gain reelection, but they do not know for sure. Interest groups offer to help. In exchange for serious consideration of their policy views, they provide political counsel for members of Congress. They provide political intelligence about the preferences of congressional constituents.

Bringing together voters, politicians, and interest groups reveals a different picture of how lobbying influences democratic representation. While lobbying, especially by business interests, is often viewed as a force that distorts policymaking (Hertel-Fernandez, Mildenberger and Stokes, 2019), the actual impact on legislative responsiveness depends on the alignment between interest group preferences and those of constituents. Prior studies that examine the influence of organized interests either do not measure the policy preferences of interest groups (Giger and Klüver, 2016), or do not assess whether the groups actually lobby the members or their staff on the specific issues under study (Hertel-Fernandez, Mildenberger and Stokes, 2019). When public opinion shapes whom interest groups choose to lobby, legislators targeted by such groups will systematically differ from those not targeted, complicating inferences from studies that compare outcomes between lobbied and non-lobbied legislators. To assess whether lobbying reduces or enhances democratic representation, we must systematically measure and compare the policy preferences of voters and interest groups on specific issues, identify which legislators are being targeted and on what topics, and evaluate the degree of alignment between interest group agendas and constituency opinion. In the following section, we turn to the data we use to address these questions.

3 DATA

We combine issue-specific data on the preferences of voters, legislators, and interest groups across three issues: energy and the environment, healthcare, and immigration. Table 1 summarizes the data sources and estimation strategies used to measure the preferences of each actor. The following sections describe each component in detail.

Table 1: Overview of Preference Estimation

Group	Voters	Interest Groups	Legislators
Issues	Environment, healthcare, immigration		
Data	CES	Maplight	Roll-calls
Estimation	IRT with MRP	IRT on joint dataset	
Same scale	No	Yes	Yes
Level	District-congress-issue	Group-issue	Legislator-issue

3.1 *Public Opinion*

Our primary source of public opinion data is the Cooperative Election Survey (CES). We use issue-specific survey questions to estimate ideological positions at the state and congressional district levels, following the two-stage approach of Tausanovitch and Warshaw (2013). In the first stage, we fit an IRT model to issue-specific survey responses to place individuals who answer different sets of questions on a common scale. We implement the quadratic one-dimensional model of Clinton, Jackman and Rivers (2004) using the algorithms developed by Imai, Lo and Olmsted (2016), and employ matrix factorization to obtain starting values, as in Clinton, Jackman and Rivers (2004). The resulting measures are rotated so that higher values correspond to policy preferences closer to those of congressional Republicans and standardized to have a mean of 0 and a variance of 1 for each issue. Tables B.1–B.5 list the survey questions, sample sizes, and estimated discrimination parameters. Before fitting the IRT models, we recoded the responses so that positive answers correspond to more conservative positions; correspondingly, the estimated discrimination parameters—which capture the relationship between respondents' ideology and the probability of a positive response—are positive for all questions.

In the second stage, we use multilevel regression with post-stratification (MRP) to adjust for the potential non-representativeness of the CES data. We estimate models with fixed effects for combinations of respondents' race and education, and gender and education, as well as random effects for congressional districts nested within states. We then post-stratify the estimates using race-gender-education distributions from the American Community Survey at the congressional district or state level.

One might be concerned that our specification choices—such as how we scale ideology or whether we adjust for non-representativeness—influence our substantive conclusions. These concerns appear unwarranted. Figures A.1 and A.2 compare district-by-issue estimates of ideology derived from our IRT models with those obtained from factor models (Heckman and Snyder, 1997) and fixed-effects models (as in Fowler and Hall 2016), showing that the three

measures are closely correlated. The similarity between the fixed effects and IRT measures increases confidence that the small number of questions per respondent does not bias our estimates of district-level ideology.[1] Similarly, Figure A.3 shows that multilevel regression with post-stratification has little effect on the estimates, which is unsurprising given the large CES sample size.

3.2 *Group and Legislator Positions*

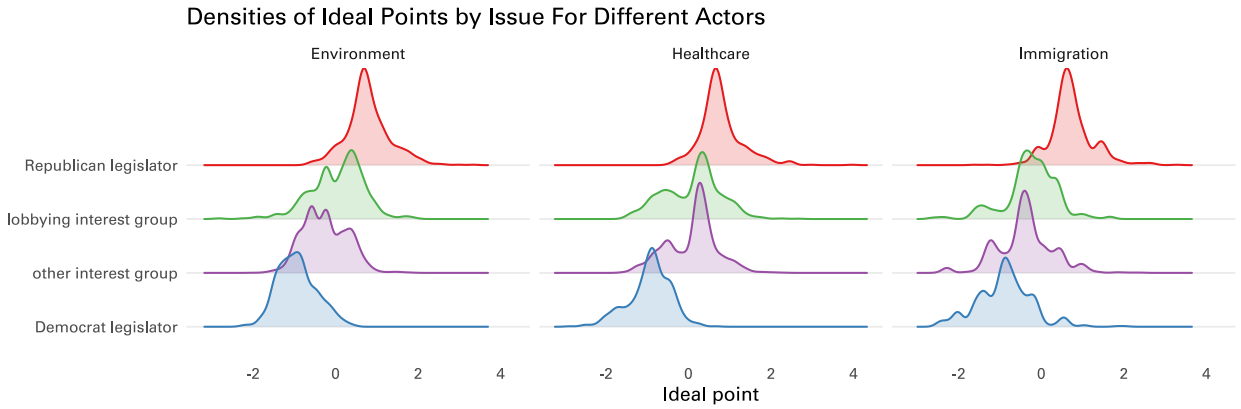
To estimate the issue-specific positions of interest groups and legislators, we follow Crosson, Furnas and Lorenz (2020) by combining data on groups' public positions on bills from Maplight with legislators' roll-calls on the final vote on bills.[2] We use the Congressional Research Service's Policy Area coding to classify bills to specific areas. As above, on each issue we estimate the quadratic ideal point model of Clinton, Jackman and Rivers (2004) using the algorithms from Imai, Lo and Olmsted (2016), and rotate the resulting estimates so that higher scores are positively correlated with legislators' first-dimension DW-Nominate scores. This procedure yields measures of legislators' and interest groups' preferences on the same ideological scale. We standardize the ideal points so that legislators have a mean of zero and a variance of one for each issue.

Figure 1 shows the distributions of the estimated ideal points across the three issues, separating Republican and Democratic legislators as well as interest groups in the Maplight dataset that do and do not lobby (explained below). Tables B.6–B.9 list the interest groups with the highest and lowest estimated ideal points on each issue. These patterns illustrate the validity of our measure. For instance, pro-immigration groups such as the Immigrant Legal Resource Center and anti-immigration groups like Californians for Population Stabilization appear on the opposite ends of the ideological spectrum. On environmental issues, environmental organizations receive low scores, while energy industry groups receive high ones. The healthcare spectrum ranges from unions and pro-abortion groups (low) to anti-abortion and health insurance industry groups (high). Across all issues, lobbying groups tend to occupy more centrist positions than legislators, consistent with Crosson, Furnas and Lorenz (2020). Figure A.4 shows that this pattern is not an artifact of some groups having few recorded positions. Dropping groups with fewer than 10 positions on an issue, or weighting by the number of group positions, reproduces the same pattern.

[1] Note that the fixed effects approach—regressing whether individuals support an issue against individual and issue fixed effects and using the individual fixed effects as measures of ideology—does not suffer from the incidental parameters problem which can affect IRT models with a small number of items.

[2] Maplight's "Bill Positions" dataset documents over 225,000 public statements by more than 14,000 organizations on approximately 14,000 U.S. congressional bills from 2007 to 2021. The dataset compiles organizations' stated positions from websites, press releases, government filings, congressional hearings, and

Figure 1: Legislators Are More Extreme Than Interest Groups



Notes: The figure compares the distributions of issue-specific ideal points for legislators and interest groups. Legislator and interest group ideal points are jointly estimated on a common scale using positions on the same bills: legislators' positions are measured from their roll-call votes, while interest group positions are measured from publicly stated support or opposition to bills in the MapLight data.

Figure 2 shows that district and legislator issue-specific ideology are strongly correlated on all issues. Table A.1 demonstrates that this positive association is not merely a byproduct of generally conservative districts electing more conservative legislators: it is robust to the addition of controls for the legislator's first dimension DW-Nominate score, the slope of which we allow to vary by issue, and legislator-period fixed effects. These results increase confidence that district and legislator ideology are meaningfully related: districts that are more conservative on a specific issue tend to be represented by legislators who are likewise more conservative on that issue.[3]

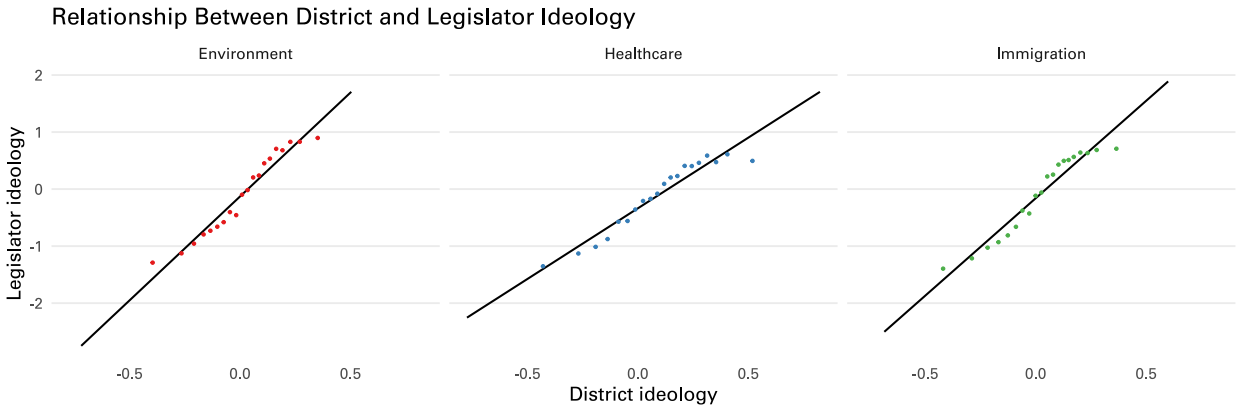
3.3 *Lobbying*

Ideally, we would observe direct interactions between interest groups and legislators, but the Lobbying Disclosure Act does not require lobbyists to identify the specific legislators they contact (You, 2020). Instead, we leverage two disclosure requirements: interest groups must report the lobbyists they hire on each specific lobbying issue, and lobbyists must report the legislators to whom they make campaign contributions. Building on evidence that lobbyists' personal and professional connections to legislators are valuable (Bertrand,

other publicly available sources.

[3]We also gathered data on a fourth issue area, trade. However, the shifting positions of the parties on trade policy during the period studied create problems for scaling legislators relative to voters. More positive legislator ideal points on trade capture voting with the Republican majority, which was pro-trade pre-2016 and anti-trade after. We discuss these issues in Appendix C. Including trade does not alter any substantive conclusions: Appendix H reproduces all analyses including trade.

Figure 2: District and Legislator Ideology Are Positively Correlated



Notes: Each figure shows the binned scatterplot of the relationship between district ideology and legislator ideology. Constituency ideology is estimated by running an IRT model on CES survey data; legislator ideology is estimated by running an IRT model on roll-call votes. Lines show OLS fits.

Bombardini and Trebbi, 2014; Hirsch et al., 2023), we infer linkages between interest groups and legislators through these contribution networks. Prior research shows that lobbyists command higher fees when connected to key legislators and tend to align their lobbying activities with those legislators' issue specializations (Bertrand, Bombardini and Trebbi, 2014). These patterns suggest that interest groups strategically hire particular lobbyists to reach particular legislators. Following Bertrand, Bombardini and Trebbi (2014), we infer connections from contributions made by lobbyists to legislators in a given year, as disclosed under the Lobbying Disclosure Act.

In each year, interest groups are required to disclose the issues they lobbied on, the branch of government targeted, and the lobbyists they hired. We calculate the number of times that each lobbyist contributed to each legislator in the year of each lobbying report. Summing over the lobbyists hired by an interest group to lobby Congress on a given issue during a congressional session yields our measure of lobbying at the interest group-legislator-issue-congress level. More formally, our measure of lobbying connections between an interest group g and a legislator i on a given issue j in congressional cycle t is

$$\textit{Lobbying connections}_{gijt} = \sum_{l} \textit{Reports hiring lobbyist}_{gljt} \cdot \textit{Contributions to legislator}_{lit},$$

where $\textit{Reports hiring lobbyist}_{gljt}$ is the number of Lobbying Disclosure Act reports filed in a given cycle t in which interest group g reports hiring individual lobbyist l to lobby Congress on issue j, $\textit{Contributions to legislator}_{lit}$ is the number of contributions made by lobbyist l to

legislator i in that cycle, and the summation is over lobbyists.[4]

The lobbying data are drawn from the Senate Office of Public Records and Kim (2018). Tables A.2 and A.3 present descriptive statistics on the connections between lobbyists, interest groups, and legislators. The median lobbyist hired on a given issue in a given period is employed by one interest group and contributes to four to five legislators, depending on the issue. The median interest group files four to five lobbying reports on a given issue, hires two distinct lobbyists, and connects to nine to fifteen legislators. Table A.4 reports the average number of lobbying connections which we use to measure the intensity of lobbying activity.

We take two approaches to validate our measure. First, in Appendix D we use data on foreign lobbying. The Foreign Agents Registration Act (FARA) requires foreign agents to disclose the legislators lobbyists meet with on their behalf (You, 2020). Table D.1 shows that lobbyists are 6.4 times more likely to contact a legislator if they donate money to them, which validates the core assumption that lobbyist donations proxy for access. Table D.2 directly compares the number of times lobbyists hired by a given foreign client contact a legislator to our measure of lobbying connections. We estimate a strong positive correlation, with a 1:1 relationship between lobbying connections and actual contact. For additional validation, we show in Table A.5 that lobbying connections between an interest group and a legislator are strongly and robustly correlated with whether the interest group lobbies on a bill sponsored by the legislator, which Kim, Stuckatz and Freiheyt (Forthcoming) use to infer lobbying linkages.

3.4 *Representativeness of the MapLight Data*

We use MapLight data to infer groups' positions and examine how those positions relate to their lobbying strategies. MapLight records publicly expressed support for and opposition to specific congressional bills. Lorenz, Crosson and Furnas (2020) show that these data provide broad coverage of groups' revealed legislative preferences across organizations and issue areas, while also documenting that MapLight disproportionately covers more substantively important bills. Two potential concerns remain for our application. First, groups included in the MapLight dataset may not be representative of lobbying groups more generally. Second, groups' publicly stated positions may differ from those they privately advocate through lobbying. We address both concerns in Appendix E. On the first concern, groups in the

[4]For instance, a 2013 lobbying report filed by Conrad Law & Policy Counsel reports lobbying Congress on environmental matters on behalf of ExxonMobil, with James Conrad identified as the individual lobbyist (`https://lda.senate.gov/filings/public/filing/f4fc3061-4016-4fb4-89bf-5a6b7eaa9ca6/print/`). In that same year, James Conrad made a campaign contribution to Senator Tim Kaine (`https://lda.senate.gov/api/v1/contributions/62fd5078-ae8a-4bac-a076-3a3db8c24c39/`). Accordingly, in our data this report generates a lobbying connection between ExxonMobil and Senator Kaine in the 113th Congress for the environmental issue area.

MapLight data lobby more intensively than other lobbying groups (Figure E.1), but they do not systematically target legislators from districts that differ in ideological orientation or extremism (Figures E.2 and E.3). We also compare lobbying groups in the MapLight data with groups in Kim et al. (2025), who infer group positions on bills from lobbying activity, and find similar distributions of estimated ideology (Figure E.5). On the second concern, we show that groups are far more likely to lobby on issues where they take public stances (Table E.2), suggesting that public statements captured by MapLight are complements to rather than substitutes for lobbying. Moreover, we show that group ideology estimated from public positions in MapLight has a strong and positive correlation with the ideology estimated from its lobbying behavior in Kim et al. (2025). Taken together, these results suggest that the MapLight data are broadly representative of major lobbying groups and that groups' public positions closely mirror the preferences they promote privately through lobbying.

A distinct issue concerns selection into our sample from Maplight. A MapLight group must both engage in lobbying and hire a lobbyist who donates to a legislator for us to infer a lobbying contact. This linkage differs from organizational PAC giving: while Furnas, LaPira and Brock (2025) document limited overlap between organizations that lobby and those that make PAC contributions, we identify connections using contributions by individual lobbyists hired by an organization. We examine both stages of selection in Appendix F. Groups that lobby are more conservative and more politically active than other MapLight groups and are less likely to be charities or advocacy groups (Table F.1), consistent with evidence that businesses dominate lobbying (Crosson, Furnas and Lorenz, 2020). Conditional on lobbying, hiring a lobbyist connected to a legislator through donations is primarily predicted by the extent of a group's lobbying activity; after accounting for lobbying intensity, we find little systematic differences by group ideology or organizational type (Table F.2).

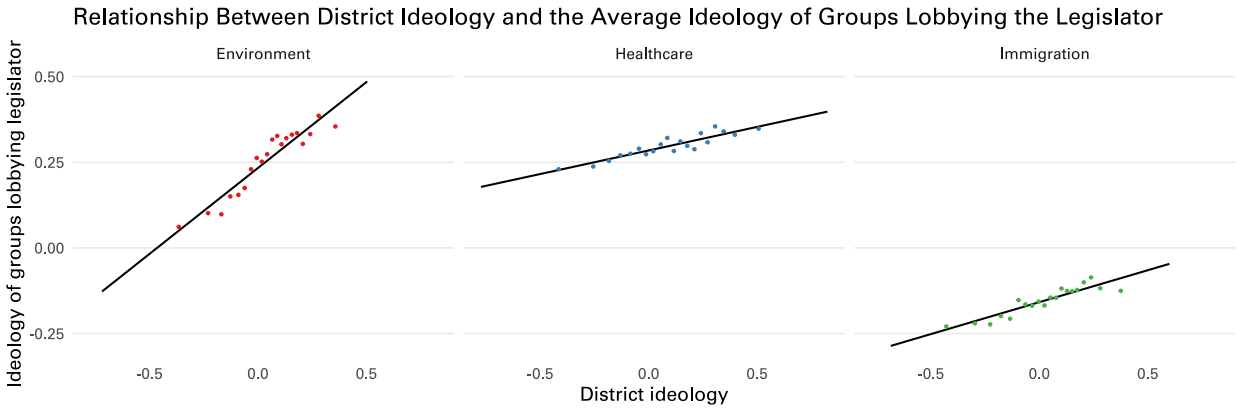
4 Alignment between lobbying interest groups and constituents

In this section, we examine whether the ideology of interest groups lobbying a legislator is systematically related to the preferences of her constituents. We calculate the average ideology of lobbying groups for each legislator-issue-Congress, weighting groups by the number of lobbying connections, and regress this measure on constituent ideology. A positive relationship indicates that groups disproportionately lobby legislators representing constituents whose preferences align with their own, a pattern consistent with the subsidy and informational mechanisms discussed above.

Figure 3 displays the bivariate relationship between these variables for each issue area. Across issues, legislators representing more conservative districts are, on average, lobbied by

more conservative interest groups.

Figure 3: Representatives of More Liberal Districts Are Lobbied by More Liberal Interest Groups On Average



Notes: Each figure presents a binned scatterplot showing the relationship between district ideology and the average ideology of interest groups lobbying the legislator, weighted by the number of contributions made by lobbyists hired by each group. Constituency ideology is estimated using an IRT model applied to CES survey data, and interest group ideology is estimated using an IRT model based on group positions on roll-call votes. Note that the two measures are not on the same scale: interest group ideology is standardized so that legislators' ideal points have a mean of 0 and a standard deviation of 1. The level difference between district and interest group ideology has no substantive interpretation; the quantity of interest is slope, which captures how the ideology of groups lobbying a legislator varies with district ideology. Lines represent fitted values from OLS regressions.

Our preferred regression specification exploits within-district-issue variation in district ideology. We estimate models of the form

$$\textit{Average ideology of groups lobbying}_{ijt} = \beta\, \textit{District ideology}_{ijt} + \gamma_{ij} + \delta_{jt} + \varepsilon_{ijt}, \qquad (1)$$

where $\textit{Average ideology of groups lobbying}_{ijt}$ is the average ideology of groups lobbying the legislator representing district i on issue j in period t, γ_{ij} is a fixed effect for district i on issue j, and δ_{jt} is a fixed effect for issue j in period t. Because all fixed effects are interacted with issue indicators, this specification is equivalent to estimating separate regressions for each issue with district and period fixed effects, and then taking a precision-weighted average of the coefficients. Within-district, within-issue variation in district ideology is driven by changes in district demographic composition and by shifts in the policy preferences of existing residents. In additional specifications, we add legislator-by-issue fixed effects, which further isolates variation in ideology within a legislator's tenure on a given issue.

One potential concern with estimating equation (1) is that interest groups might themselves influence district ideology. Interest groups may attempt to persuade legislators indirectly

by shaping the opinions of their constituents. If such "outside lobbying" were effective, it would raise conceptual challenges for analyzing the representational consequences of lobbying. Research on representation dating back to Miller and Stokes (1963) and Achen (1978) treats constituent preferences as exogenous; the representation of constituent preferences is only meaningful if those preferences are meaningful. However, existing empirical evidence suggests that this concern is limited: field experiments in both the US (Kalla and Broockman, 2022) and Europe (Junk and Rasmussen, 2024) find minimal effects of interest group activity on public opinion.

To further address the concern that interest group influence on district ideology drives our results, we develop an instrument for district ideology that exploits changes in the demographic composition of districts. Using data from the American Community Survey, we divide each district in a given Congress into mutually exclusive and collectively exhaustive demographic cells defined by gender, race, and education. Let σ_{itk} denote the share of the population in district i and period t with demographic combination k (e.g., Black female college graduates or Asian male high-school graduates). Because these categories are exhaustive, $\sum_k \sigma_{itk} = 1$ for all i and t.

We predict district ideology as a weighted average of baseline ideological preferences by demographic group:

$$\textit{Demographic-predicted ideology}_{ijt} = \sum_k \sigma_{itk} \cdot \textit{Ideology}_{jk},$$

where $\textit{Ideology}_{jk}$ denotes the average ideology on issue j among individuals with characteristics k in a base period. Changes in $\textit{Demographic-predicted ideology}_{ijt}$ within a district and issue over time therefore reflect shifts in demographic composition (σ_{itk}), not ideological change within demographic groups on a given issue, which are held fixed at base-period levels. For example, if college graduates are more supportive of immigration, an increase in the share of college graduates in a district would decrease its $\textit{Demographic-predicted ideology}_{ijt}$ for immigration (recall that more positive values correspond to more conservative positions). However if college graduates in that district—or any other—became more pro-immigration, this would not affect $\textit{Demographic-predicted ideology}_{ijt}$. While interest groups might attempt to influence voters' preferences, it is implausible that they could meaningfully alter the demographic composition of congressional districts.

Table 2 shows the resulting estimates. Model (1) includes issue-period fixed effects, and so uses variation across districts in the same issue. Note that the underlying ideal points on each issue for voters and interest groups are scaled to have standard deviation one (for interest groups, so that legislators' ideal points also have standard deviation of one). The coefficient

in Model (1) indicates that a one standard deviation rightward shift in voter ideology is associated with legislators being lobbied by groups whose average ideology is about one-quarter of a standard deviation more conservative. Model (3) adds district-issue fixed effects, as in Equation (1), yielding a similar coefficient. Model (5) further adds legislator-issue fixed effects, restricting the analysis to variation within a given legislator's tenure—for example, cases where a legislator's district becomes more conservative on a given issue.[5]

Table 2: Changes to district ideology due to demographics correlate with changes in the ideology of groups lobbying the representative

	Average ideology of groups lobbying					
	(1)	(2)	(3)	(4)	(5)	(6)
District ideology	0.253*	0.244*	0.222*	0.384*	0.100†	0.326*
	(0.022)	(0.030)	(0.055)	(0.069)	(0.053)	(0.145)
Model	OLS	TSLS	OLS	TSLS	OLS	TSLS
FE: Issue x period	x	x	x	x	x	x
- Issue x district			x	x	x	x
- Issue x legislator					x	x
First stage F-stat		118.9		149.2		29.2
N	11905	11900	11905	11900	11905	11900
R^2	0.386	0.374	0.514	0.513	0.655	0.655

Notes: This table reports the relationship between issue-specific district ideology and the ideology of groups lobbying a legislator, instrumenting for district ideology with values predicted from district demographics. The data are at the congress-legislator-issue level. The dependent variable is the average issue-specific ideal point of groups lobbying the legislator on the issue in question. The indepenent variable is district ideology estimated from CES data. Even-numbered models use an instrumental variable equal to the weighted average of ideological positions of different demographic groups in the first period of the analysis, weighted by each group's population share in the district. All models include issue-by-congress fixed effects. Models (3)–(6) add district-by-issue fixed effects, and models (5)–(6) add legislator-by-issue fixed effects. Standard errors clustered by state in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Our preferred specifications are the OLS specifications, because existing research suggests it is unlikely that interest groups systematically shape constituent preferences. The two-stage least squares (TSLS) estimates, which are reported in the even-numbered columns, help address concerns about this particular assumption. Across all specifications, the first stage is strong, and Figure A.5 shows that the relationship between predicted and observed district ideology is approximately monotonic. The coefficient on district ideology is positive

[5]The slightly smaller coefficient in this specification is consistent with part of the effect of district ideology on lobbying operating through the replacement of legislators whose views are out of step with their districts.

and, in the more restrictive specifications, somewhat larger than the corresponding OLS estimates, though less precisely estimated.[6] The positive coefficients after isolating variation in district ideology that cannot be influenced by interest groups rules out explanations based on simultaneous manipulation of voters and legislators by organized interests.[7]

5 LOBBYING AND ALIGNMENT WITH VOTERS

Thus far, we have examined the relationship between district ideology and lobbying activity. We now directly examines whether lobbying strengthens or weakens the relationship between constitutent preferences and legislative behavior.

Our measure of representation is the slope of the relationship between district ideology on an issue and legislators' roll-call voting. A vast literature, beginning with Miller and Stokes (1963) and Achen (1978), conceptualizes the quality of representation in this way (see also Ansolabehere, Snyder and Stewart 2001; Tausanovitch and Warshaw 2013 and Olson and Rogowski 2024). This slope measures how well legislative behavior adheres to the norm that "Conservative districts should have legislators with right-wing views; liberal districts should be represented by left-wingers" (Achen, 1978, 490).[8] To measure this relationship in observed data, one would scale legislative roll-call votes on a given issue to create an issue-specific measure of legislative ideology and then regress the resulting measure against measured district ideology. The challenge for our purposes is that studying the effects of lobbying requires a comparable measure of counterfactual legislative behavior—how legislators would have voted in the absence of lobbying—on the same ideological scale as the observed measure.

We construct these measures by developing a model of roll-call voting in which a legislator's

[6]The larger TSLS coefficients make sense given their interpretation as local average treatment effects: they capture the responsiveness of interest groups to changes in district ideology among districts whose ideological shifts are driven by demographic change. Interest groups may respond more strongly to such predictable, demographically driven changes in district opinion than to shifts in attitudes within demographic groups.

[7]Table A.6 shows that our results are robust to the inclusion of issue-specific controls for the main demographic components used to construct the instrument (e.g., the share of college graduates or Hispanic residents). These specifications require identification from variation in predicted policy preferences across districts with similar changes in major demographic components but differing changes in the subgroups that comprise those components. For example, they compare districts with similar increases in the shares of college graduates and Hispanic residents but different increases in the share of Hispanic college graduates. The robustness of our estimates to these controls suggests that broad demographic changes correlated with potential threats to the exclusion restriction do not drive our results. Table A.6 further shows that the results are robust to controlling for issue-by-district time trends, which accounts for differential trends in lobbying on specific issues across districts. The OLS estimates are also robust to these additions, increasing our confidence that they are not driven by spurious trends. Table A.7 shows that our results are robust to restricting the measure of the ideology of interest groups lobbying the legislator to groups with a large number of recorded positions on the issue.

[8]Achen (1977) criticizes Miller and Stokes (1963)'s use of correlation coefficients in this endeavor, but Achen (1978) proposes the regression coefficient approach as a measure of "responsiveness."

vote on a given bill reflects her latent ideology and the influence of lobbying by groups supporting or opposing the bill. The model is agnostic about the specific form lobbying takes; it assumes only that lobbying can shift the probability that a legislator votes in favor of a bill. This framework yields an interactive fixed-effects estimating equation. Estimating the model allows us to recover three quantities: the net effect of lobbying on legislative voting, spatial bill parameters, and legislators' latent ideology. The estimated latent ideology represents how legislators would be expected to vote in the absence of lobbying. Using the estimated bill parameters, we then construct a corresponding measure of observed legislative behavior that incorporates the effects of lobbying—defined on the same ideological scale as the counterfactual measure.

With these estimates in hand, we can assess how eliminating lobbying would affect the relationship between district preferences and legislative ideology. We find that the net effect of lobbying is modest but tends to strengthen this relationship, slightly steepening the slope between district preferences and legislators' ideological positions.

THEORETICAL SETUP On a given issue, legislators have quadratic preferences. Legislator i's ideal point is λ_i.

Legislators vote on a number of bills. Bill j would establish policy p_j, replacing the status quo s_j. Legislator decisions are shaped by their spatial preferences and by lobbying. The utility that legislator i receives from the passage of bill j is

$$u_{ij}^{p} = -(\lambda_i - p_j)^2 + \beta f_{ij}$$

where f_{ij} is the log number of groups lobbying legislator i *in favor* of the bill. The parameter β captures the effectiveness of lobbying in influencing legislative voting, and we expect $\beta \geq 0$: groups rarely lobby in ways that would reduce the probability of a favorable vote. Different theories of lobbying make distinct predictions about the magnitude of β. Under a *quid pro quo* model, β should be large, because lobbying directly shifts legislator's voting behavior. Alternatively, if lobbying provides informational or resource support to allied legislators without altering their underlying preferences or votes, β should be small.

The utility legislator i receives if the bill fails is

$$u_{ij}^{s} = -(\lambda_i - s_j)^2 + \beta a_{ij} + \varepsilon_{ij},$$

where a_{ij} is the log number of groups lobbying *against* the bill, and ε_{ij} is an idiosyncratic preference shock that legislator i has for the status quo on bill j. The shock term ε_{ij} is assumed to be independently and identically distributed across legislators and bills, with

cumulative distribution function $G(x) = P(\varepsilon_{ij} < x)$.

Legislator i votes for the bill if she receives greater utility from its passage than from maintaining the status quo. Formally, the probability that legislator i votes for bill j is

$$\begin{aligned} P(i \text{ votes for } j) &= P\left(\varepsilon_{ij} < -(\lambda_i - p_j)^2 + (\lambda_i - s_j)^2 + \beta(f_{ij} - a_{ij})\right) \\ &= G\left(2\lambda_i(p_j - s_j) + s_j^2 - p_j^2 + \beta(f_{ij} - a_{ij})\right). \end{aligned} \tag{2}$$

ESTIMATION Writing $\alpha_j = s_j^2 - p_j^2$ and $F_j = 2(p_j - s_j)$, the probability that legislator i votes for bill j can be written as

$$P(i \text{ votes for } j) = G(\alpha_j + \beta(f_{ij} - a_{ij}) + \lambda_i F_j).$$

This equation expresses the probability of a legislator voting in favor of a bill as a function of three components: a bill fixed-effect α_j, the net effect of lobbying activity $\beta(f_{ij} - a_{ij})$, and an interaction between a legislator-specific loading λ_i and a bill-specific factor F_j. The legislator-specific loading λ_i corresponds to the legislator's ideal point, while the bill factor F_j captures the relative positions of the proposed policy p_j and the status quo s_j. A positive F_j indicates that the proposal has a more positive value than the status quo, so legislators with more positive ideal points are more likely to support it. The magnitude of F_j indicates the ideological distance between the proposal and the status quo: larger absolute values imply that the bill more sharply divides legislators along ideological lines.

The decomposition of roll-call voting into a bill fixed effect and an interactive component is standard in the ideal point estimation literature (Heckman and Snyder, 1997; Clinton, Jackman and Rivers, 2004). Our model extends this framework by incorporating the effects of lobbying through variables a_{ij} and f_{ij}. Different ideal point models make different assumptions about the distribution of the legislator-bill preference shock ε_{ij}, and hence about the functional form of the link function G. In Clinton, Jackman and Rivers (2004), ε_{ij} is assumed to follow either a normal distribution, yielding a probit estimator, or a logistic distribution, yielding a logit estimator. Heckman and Snyder (1997) assume a uniform distribution, resulting in a linear probability model.

If we assume that the distribution of ε_{ij} is uniform over the $[0, 1]$ interval, following Heckman and Snyder (1997), the model simplifies to the following linear interactive fixed effects equation:

$$y_{ij} = \alpha_j + \beta(f_{ij} - a_{ij}) + \lambda_i F_j + e_{ij}, \tag{3}$$

where y_{ij} is 1 if legislator i votes for bill j and 0 otherwise, and e_{ij} is an error term. This equation differs from a conventional linear regression because of the interactive term, $\lambda_i F_j$: the

unobserved legislator ideology (λ_i) interacts with the unobserved direction and divisiveness of the bill (F_j).

Bai (2009) proposes an estimator for interactive fixed-effects models such as Equation (3). We apply Bai's estimation routine to estimate β and λ_i using least squares. The procedure alternates between estimating β by regressing the outcome—roll-call votes—on the covariates $(f_{ij} - a_{ij})$ and estimating the bill and legislator components (F_j and λ_i) by applying principal components analysis to the residuals from that regression. The dependent variable, residualized with respect to these bill and legislator components, is then used to update the estimate of β; this process iterates until convergence. Bai shows that the model is identified under standard assumptions normalizing the size and rotation of the factors and loadings. We use the procedures developed by Xu (2017) and Liu, Wang and Xu (2024) to estimate Equation (3).[9]

COMPARISONS The estimated factor loadings λ_i correspond to legislators' ideology. In the absence of lobbying—that is, when $f_{ij} - a_{ij} = 0$ for all i and j—the probability that legislator i votes for bill j simplifies to $\alpha_j + \lambda_i F_j$. In this sense, λ_i provides a counterfactual estimate of each legislator's voting behavior in the absence of lobbying.

To study how lobbying affects legislative behavior, we compare the counterfactual measure representing legislators' behavior in the absence of lobbying to an observed measure of legislative ideology. Using the estimated model parameters, we can construct this observed measure on the same scale as λ_i. Given estimated α_j and F_j for bills $j = 1, ..., J$, we estimate it by solving the following least squares problem:

$$R_i = \arg\min_{x_i} \sum_{j=1}^{J} (y_{ij} - \alpha_j - x_i F_j)^2. \tag{4}$$

Intuitively, R_i represents the model's estimate of legislator i's ideal point when the influence of lobbying is not explicitly modeled, that is, when the effects of lobbying are absorbed into the observed relationship between legislators and bills. In this sense, R_i captures legislative behavior *including* the influence of lobbying. By contrast, λ_i reflects legislators' ideological positions in the absence of lobbying, netting out the direct effect of lobbying activity.[10] R_i and λ_i are measured on the same scale. For legislators who are never lobbied, the two measures coincide—that is $R_i = \lambda_i$. Any differences between R_i and λ_i reflect the influence of lobbying.

[9] Interactive fixed-effects models as estimated by Bai (2009) provide the basis for the Generalized Synthetic Control and Interactive Fixed Effects Counterfactual estimators of Xu (2017) and Liu, Wang and Xu (2024).

[10] The distinction is analogous to estimating the effect of education on income with and without controlling for experience: in the model without experience, the estimated coefficient on education reflects both education and experience; in the model with experience included, it isolates the effect of education alone.

Because our goal is to assess how lobbying affects the relationship between district opinion and legislative behavior, we regress both λ_i and R_i on issue-specific measures of district opinion. Since R_i and λ_i are defined on the same scale, differences in the estimated slopes can only be attributed to the influence of lobbying, even though voter and legislator ideology are not measured on the same scale. In the observed data, where lobbying is present, legislator behavior is captured by R_i; in the counterfactual scenario without lobbying, it is summarized by λ_i.

Specifically, we estimate the following two regressions:

$$R_i = \theta_1 + \varphi_1 \, \textit{District ideology}_i + \eta_{1i} \text{ and } \lambda_i = \theta_2 + \varphi_2 \, \textit{District ideology}_i + \eta_{2i}. \tag{5}$$

If $\varphi_1 > \varphi_2$, lobbying causes legislators to behave as though they are more responsive to their constituents: removing lobbying would make legislative behavior less aligned with voter preferences. Conversely, if $\varphi_1 < \varphi_2$, lobbying distorts representation by pulling legislators away from their voters' preferences, and eliminating lobbying would strengthen the alignment between legislators and constituents. In Appendix G.1, we show that under additional assumptions, φ corresponds to the weight that legislators place on their voters' preferences when deciding how to vote. In that case, a finding that $\varphi_1 > \varphi_2$ implies that lobbying leads legislators to behave as if they attach greater weight to their constituents' preferences.

ESTIMATES We estimate Equations (3), (4), and (5) separately for each issue area. To ensure model convergence, we restrict the sample to the subset of legislators connected through voting on the same set of bills and to those who have cast votes on at least 10 bills on each issue. Table A.8 reports the numbers of legislators, roll-call votes, and average rates of lobbying for and against. Legislators are lobbied by interest groups supporting or opposing the bill on 19% of roll-calls. There is little evidence of counter-lobbying. In just 2% of roll-calls the legislator is lobbied by groups on both sides of the bill. For inference, we bootstrap the entire estimation procedure, resampling at the state level.

Table 3 reports the estimated β coefficients. These coefficients capture the association between being lobbied by groups supporting or opposing a bill and the probability that a legislator votes in favor of that bill, holding fixed the average support for the bill and the interaction between the legislator's latent ideology and the bill's characteristics.

For the environment and healthcare, our estimates indicate that lobbying does influence legislative voting, though the effects are small. On healthcare—the issue with the largest estimated coefficient—a 10% increase in the number of groups lobbying a legislator in favor of a bill corresponds to a 0.2 percentage point increase in the probability of that legislator

Table 3: Estimated Effects of Lobbying on Voting for a Bill.

Issue	$\beta \times 100$	95% CI
Environment	0.900	[0.393, 1.476]
Healthcare	1.818	[1.267, 2.455]
Immigration	0.701	[-0.519, 1.97]

Notes: This table reports estimates of β, the effect of net lobbying by groups supporting a bill on the probability of voting in favor of that bill. Estimates are from the interactive fixed-effects model, with separate β coefficient for each issues. Coefficients are multiplied by 100 to ease of interpretation. 95% confidence intervals are calculated using the percentile bootstrap method, clustered by state.

voting for it.[11] These nonzero estimates suggest that not all lobbying takes the form of a legislative subsidy. However, the very small magnitudes imply that most lobbying activity likely operates through subsidy-like mechanisms rather than direct persuasion.

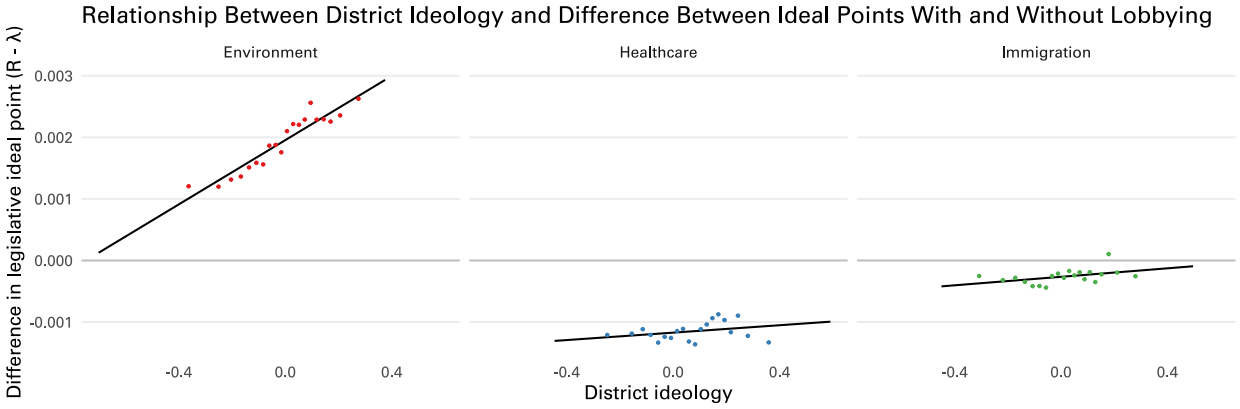
Figure 4 plots the difference between observed ideal points inclusive of lobbying and counterfactual ideal points in the absence of lobbying ($R_i - \lambda_i$) against district ideology.[12] A positive slope in Figure 4 indicates that lobbying strengthens the relationship between district ideology and legislators' ideal points. This pattern is most evident for environmental policy, while for the other issues the relationship appears relatively flat. In addition to affecting the slope of the relationship between district ideology and legislative behavior, lobbying also shifts its level, although these effects are small in magnitude. Figure 4 suggests that lobbying shifts legislators slightly to the right on environmental issues, but to the left on healthcare and immigration. Appendix G.2 decomposes these effects at the bill level. The leftward shift on healthcare is primarily driven by lobbying in support of the Children's Health Insurance Program Reauthorization Act of 2009 and opposition to efforts to repeal the Affordable Care Act.

Table 4 presents regression estimates, with confidence intervals obtained by bootstrapping the entire estimation procedure. Overall, legislators' ideal points inclusive of lobbying are more strongly associated with district ideology than their ideal points in the absence of lobbying. This pattern implies that removing lobbying would weaken the relationship between constituents and legislators. The effect is primarily driven by lobbying on environmental

[11] In Appendix H, we report a slightly larger coefficient for trade.

[12] Figure A.6 presents both sets of ideal points plotted against district ideology across issues. These figures show a positive relationship between district ideology and both measures of ideal points for all three issues. Consistent with the small estimated values of β, the two sets of ideal points are very similar.

Figure 4: The Relationship between District Ideology and Legislative Ideal Points Is Steeper With Lobbying



Notes: Each figure displays a binned scatterplot of the relationship between district ideology and the difference in legislator's ideology attributable to lobbying. District ideology (x-axis) is measured using a factor model estimated on CES survey responses. The y-axis represents the difference between legislators' estimated ideal points inclusive of lobbying (R) and their counterfactual ideal points in the absence of lobbying (λ), estimated using an interactive fixed-effects model of roll-call voting. Because R and λ are on the same scale, positive values indicate that lobbying moves legislators in a more conservative direction and negative values in a more liberal direction.

issues.

In estimating the parameters (β and λ_i), the key identification assumption is that the error term (e_{ij}) is uncorrelated with lobbying activity ($f_{ij} - a_{ij}$), after controlling for the interaction between legislators' latent ideology and bill characteristics ($\lambda_i F_j$), and for average support for the bill (α_j). Our estimation strategy permits lobbying activity to be correlated with legislator ideology—an important feature given the evidence presented in earlier sections that lobbying is systematically related to district ideology, which predicts legislator ideology. This identification assumption is weaker than that required under a standard two-way fixed effects framework. If $F_j = 1$ for all bills, Equation (3) is equivalent to two-way fixed effects. Relative to that framework, our approach does not require that each bill separates legislators along ideological lines in the same way. As Xu (2017) demonstrates, incorporating interactive fixed effects relaxes the parallel trends assumption that underpins traditional difference-in-differences.

The most plausible threat to our identification assumption arises if interest groups target legislators based not only on their ideology, but also on their idiosyncratic preferences for specific bills (the ε_{ij} term in Equation (2)). If groups supporting a bill focus their lobbying on legislators who, for reasons unrelated to their ideology on the issue in question, are already more inclined to support the bill, our estimate of β would be biased upward. Conversely, if

Table 4: Lobbying aligns legislator behavior with voter preferences

Legislator ideal point:	Inclusive of lobbying (R_i)		Net of lobbying (λ_i)		Difference $(R_i - \lambda_i) \times 100$	
	(1)	(2)	(3)	(4)	(5)	(6)
District ideology	1.622*		1.621*		0.093*	
	[1.554; 1.736]		[1.552; 1.735]		[0.031; 0.148]	
× issue = Environment		1.804*		1.802*		0.230*
		[1.718; 1.932]		[1.714; 1.929]		[0.090; 0.393]
× issue = Healthcare		1.291*		1.291*		0.018
		[1.209; 1.418]		[1.209; 1.418]		[−0.048; 0.084]
× issue = Immigration		1.864*		1.864*		0.033
		[1.774; 2.015]		[1.775; 2.014]		[−0.033; 0.132]
FE: Issue-period	x	x	x	x	x	x
N	14278	14278	14278	14278	14278	14278
R^2	0.459	0.471	0.459	0.471	0.404	0.408

Notes: This table examines the relationship between district ideology and legislators' ideal points, estimated using factor models. The unit of analysis is legislator-congress-issue. In models (1)–(2), the dependent variable is the legislator's revealed preference ideal point inclusive of the lobbying (R_i), in (3)–(4) the legislator's ideal point net of lobbying (λ_i), in (5)–(6) the difference between them ($R_i - \lambda_i$), multiplied by 100 for legibility. The independent variable is the district's ideology, in even-numbered models the coefficient varies by issue. All models include issue-by-congress fixed effects. 95% percentile bootstrap confidence intervals clustered by state in brackets. * Null hypothesis value outside the confidence interval.

such groups tend to lobby legislators who are less likely to support the bill, our estimate of β would be biased downward.

While either form of endogeneity could affect our estimates of β, it would not alter our substantive conclusions about the effect of lobbying on representation. In Figure A.7, we replicate Figure 4, re-estimating λ_i and R_i while fixing β at half and twice its estimated value. The resulting patterns are nearly identical, differing only in magnitude. Changing the assumed effectiveness of lobbying does not affect our conclusions about how lobbying influences the relationship between voters and legislators because that conclusion depends on the pattern of lobbying activity relative to district ideology—an empirical relationship that is invariant to the scale of β.

One concern is that our results may be specific to salient issues. Our approach of studying whether lobbying strengthens or weakens the relationship between district opinion and legislative behavior necessarily focuses on policy areas for which constituent preferences can be measured. Yet, lobbying may be most influential on issues that receive little public attention (Baumgartner et al., 2009; Culpepper, 2010; De Bruycker and Beyers, 2019). While we cannot examine low salience issue areas for which comparable public opinion data are not

available, we can exploit variation in salience across bills within the issue areas we study. We divide bills into high- and low-salience groups using two measures: whether *Congressional Quarterly* identified the bill as a Key Vote (Volden and Wiseman, 2014) and whether the number of interest groups taking public positions on the bill in MapLight data is above or below the sample median. Table A.9, shows that legislators tend to be lobbied more in the Republican direction when their constituents are more conservative on that issue, and this relationship holds both for high- and low-salience bills. Though this analysis cannot speak to issues for which we do not have public opinion data, it suggests that our results are not solely driven by bills which are salient to voters.

Is a steeper relationship between district preferences and legislator behavior necessarily good for voters? Such a pattern could arise because legislators who are out of step with their constituents move closer to district opinion, but it could also result from legislators who are already more extreme than their constituents moving even further away. We cannot directly assess which of these patterns predominates without placing legislator and constituent ideology on the same scale. For a subset of roll-call votes, however, the CES provides information on voters' preferences for the bill in question. These votes allow us to compare legislators' positions directly with constituent preferences. In Table A.10, we find that legislators are 19 percentage points more likely to be lobbied by groups supporting rather than opposing a bill when a majority of their constituents support that bill. This pattern is consistent with our earlier evidence that lobbying activity is positively associated with district opinion. We also find that legislators are more likely to be lobbied by groups supporting a bill when their constituents are, on average, more supportive of the bill than the legislator's predicted position, as inferred from our structural model of roll-call voting. This result suggests that lobbying—for this subset of bills—helps to bring legislative behavior into closer alignment with constituent preferences.

In addition to changing the slope of the relationship between district preferences and rollcall voting, lobbying may alter the intercept of that relationship. In Figure 4, we observe that lobbying moves legislator ideal points on average right on the environment, and left on healthcare and immigration.

For the subset of bills included in the CES, we can analyze whether the level of lobbying is aligned with district opinion. In Figure A.8, we plot the extent to which legislators are lobbied in the more Republican direction on a given bill against the share of their constituents who support the more Republican position. While for these bills there is more lobbying against the Republican position, lobbying patterns largely match district opinion. Representatives of districts where a majority support the Republican position on a bill are on average lobbied more in the Republican direction, while the opposite is true for districts where the majority

supports the Democratic position. Representatives of districts that are close to evenly split on a given bill tend to be lobbied roughly evenly by groups supporting and opposing the bill. For those bills on which we can observe majority constituency opinion, lobbying tends to align with the majority's preferences.[13]

PREDICTING ROLL-CALL VOTES WITH DISTRICT PREFERENCES Up to this point, we have assessed representation by examining the slope of the relationship between district ideology and legislators' roll-call behavior. An alternative approach is to measure representation by the extent to which district ideology can predict individual roll-call votes. If legislators are responsive to their constituents, then district ideology alone should correctly predict a substantial share of their votes.

Equation (3) defines a data-generating process for roll-call votes, in which the probability that legislator i votes for bill j depends on a bill fixed effect (α_j), the interaction between the legislator's ideal point and the relative positions of the status quo and proposal ($\lambda_i F_j$), and net effect of lobbying $\beta(f_{ij} - a_{ij})$. Using the estimated parameters, we simulate additional roll-call votes under two scenarios—with and without lobbying. We then compare the share of correctly predicted votes under each scenario to assess how lobbying affects representational accuracy. Specifically, we run 1,000 simulations in which, for each bill, we generate a predicted vote for each legislator according to the following probabilities:

$$\begin{aligned} P(i \text{ votes for } j \text{ with lobbying}) &= \alpha_j + \lambda_i F_j + \beta\left(f_{ij} - a_{ij}\right), \\ P(i \text{ votes for } j \text{ without lobbying}) &= \alpha_j + \lambda_i F_j. \end{aligned}$$

In these simulations, we use the observed pattern of lobbying activity across bills, along with the estimated bill and legislator parameters. For comparability across issues, we orient each simulated roll-call so that a vote in favor of a bill corresponds to a more conservative position, based on the sign of the estimated bill parameter F_j. We then regress the simulated roll-call outcomes for each issue on district ideology for that issue, including period fixed effects. Our primary quantities of interest are the shares of correctly predicted votes, averaged across the 1,000 simulations, under the scenarios with and without lobbying. For inference, we bootstrap the entire estimation procedure—including the estimation of bill and legislator

[13]Beyond direct lobbying of individual legislators, interest groups may influence legislative behavior through legislators' co-partisans and public position-taking. Table A.11 shows that lobbying a legislator's co-partisans also strengthens the relationship between district preferences and roll-call voting, although greater partisan voting is not necessarily desirable for voters. Public position-taking also closely tracks lobbying: Figure A.9 shows that the balance of conservative and liberal positions among MapLight groups on a bill is strongly correlated with the direction of lobbying on that bill. These patterns suggest that our results are not limited to direct lobbying of individual legislators.

parameters—clustering by state.

Table 5 presents the results of this exercise. The logistic regression using district ideology correctly predicts roughly three-quarters of roll-call votes generated under the observed level of lobbying. When we simulate roll-calls setting lobbying to zero, the share of correctly predicted votes decreases slightly—by about 0.04 percentage points—but this difference is statistically significant. In other words, when lobbying influences roll-call voting, district ideology becomes a marginally better predictor of legislators' behavior.

Table 5: District Ideology Predicts Roll-call Votes Slightly Better When Lobbying Is Included in the Data-generating Process

	% rollcalls classified correctly	95% CI
With lobbying	74.334	[70.498, 75.492]
Without lobbying	74.295	[70.451, 75.457]
Difference	0.039	[0.008, 0.08]

Notes: This table reports the results of simulating roll-call votes from data-generating processes that either include or exclude lobbying, and then predicting these roll-calls using district ideology on the issue in question. The first row shows the percentage of correctly predicted roll-call votes from a logit model using district ideology, where votes are generated under the lobbying-inclusive process described in Equation (3). The second row reports the same measure when lobbying is set to zero. The third row gives the difference between the two. The right column presents 95% bootstrap percentile confidence intervals, clustered by state.

6 LOBBYING, LEGISLATIVE EFFECTIVENESS, AND ISSUE PRIORITIZATION

We have evaluated legislative responsiveness through the lens of roll-call voting across three issue areas. Yet voting captures only one dimension of representation. Legislators also exercise discretion in determining which issues to prioritize, and face severe time constraints. Even when legislators' policy positions align with voter preferences, interest groups can shape the legislative agenda by supplying information and resources that elevate certain issues. In this sense, lobbying may not alter policy stances but can still affect representation by shifting the relative attention legislators devote to different issues.

To address this question, we begin by examining the relationship between issue-specific lobbying and legislative effectiveness. Legislative effectiveness scores capture both the volume of legislation a member introduces and the extent to which that legislation advances toward enactment (Volden and Wiseman, 2014, 2018). We assess how lobbying on a given issue relates to legislators' effectiveness on that same issue. Table 6 reports the results. Across the first three models, we find a strong positive correlation between lobbying and legislative

effectiveness. This relationship may arise because interest groups strategically target legislators who are already effective and therefore well positioned to influence policy, or because lobbying enhances legislative effectiveness by providing additional resources and expertise. While we avoid drawing causal conclusions from this association, the relationship is extremely robust.[14]

Table 6: Being lobbied on a given issue correlates with legislative effectiveness, while lobbying on other issues is negatively associated with legislative effectiveness

	Log issue-specific legislative effectiveness					
	(1)	(2)	(3)	(4)	(5)	(6)
Log lobbying connections						
on issue	0.070*	0.055*	0.047*	0.155*	0.099*	0.059*
	(0.006)	(0.006)	(0.007)	(0.012)	(0.009)	(0.011)
on other issues				−0.099*	−0.051*	−0.016
				(0.010)	(0.009)	(0.011)
FE: Issue x congress	x	x	x	x	x	x
- Issue x district		x	x		x	x
- Issue x legislator			x			x
N	11518	11518	11518	11518	11518	11518
R^2	0.029	0.299	0.529	0.042	0.301	0.529

Notes: This table shows the relationship between being lobbied on different issues and issue-specific legislative effectiveness. Data are at the congress-legislator-issue level. The dependent variable is the legislator's log issue-specific legislative effectiveness score. The independent variable in models (1)–(3) is the log number of lobbying connections on that issue and period, that is, the number of contributions made to the legislator by lobbyists hired to lobby on that issue, (4)–(6) includes the same but for the other two issues. All models include issue-by-congress fixed effects, (2)–(3), and (5)–(6) add issue-by-district fixed effects, (3) and (6) issue-by-legislator fixed effects. Standard errors clustered by legislator in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

However, lobbying may also entail trade-offs. Intensive lobbying on one issue could reduce a legislator's effectiveness on others by diverting limited time and attention. Models (4)–(6) provide evidence consistent with this possibility. Controlling for the extent to which a legislator is lobbied on a particular issue, higher lobbying activity on other issues is associated with lower legislative effectiveness on that issue, although this negative relationship attenuates when issue-by-legislator fixed effects are included.

[14]Table A.12 shows this relationship is robust to the addition of (a) legislator-by-period fixed effects to account for certain legislators being more effective in general, (b) legislator-by-issue time trends to capture certain legislators becoming more effective on a given issue over time (e.g., due to seniority or experience), and (c) issue-by-congress specific controls including third degree polynomials in the legislator's first dimension DW-Nominate score and the district's issue-specific ideology, which adjust for shifts in congressional composition or the issue-specific policy environment that may increase the likelihood of legislative success.

Issue-specific legislative effectiveness captures both the extent to which legislators prioritize an issue through bill introductions and their success in advancing those bills through the legislative process. Table A.13 helps disentangle these components by examining the relationship between lobbying and (a) the number of bills introduced, and (b) the number of bills enacted, conditional on the number introduced. The number of bills introduced reflects the attention legislators allocate to an issue, whereas the passage rate more directly captures their influence within Congress on that issue. We find strong positive associations between lobbying and both outcomes. However, the negative relationship between lobbying on other issues and legislative effectiveness arises only for the number of bills introduced, not for bills passed into law. This pattern is consistent with the idea that lobbying on competing issues diverts legislators' time and attention, but does not reduce their capacity to navigate the legislative process on other topics.

Is this reallocation of legislators' time good or bad for representation? The answer depends on the match between the issues constituents care about, and the issues their representatives are lobbied on. If legislators tend to be lobbied on issues their voters do not prioritize, lobbying may lead to legislators spending less time on the issues their voters do prioritize. However, if legislators are lobbied on issues that are high priority for their constituents, lobbying may serve to align legislator behavior with their constituents' priorities.

We study the relationship between the relevance of an issue for a district and the intensity of lobbying of the district's representative on that issue. We infer constituency priorities from constituency characteristics, measured in the American Community Survey. Immigration policy is more relevant for districts with more immigrants, healthcare policy is more relevant for districts with more retirees dependent on Medicare, and environmental policy is more relevant for districts with more energy sector employment. This approach of using constituency characteristics to approximate voters' priorities follows Adler and Lapinski (1997) and Fowler and Hall (2016). In Table A.14, we find that, comparing across districts in the same congress for a given issue, a larger share of relevant constituents predicts legislative effectiveness. This result validates our approach to measuring constituency priorities: Legislators spend more time on an issue if it is more relevant to their constituents. In the same specification, we also find that legislators are lobbied more on a given issue if the issue is more relevant to their district. This result suggests that if lobbying distorts legislative attention, it does so in a way that aligns legislative attention with constituency priorities.

An important caveat, however, is that our analysis is limited to the dimensions of constituency relevance we can measure. We cannot rule out that lobbbying distorts attention on issues outside of our data or along dimensions of constituency priorities not captured by demographic composition.

7 CONCLUSION

Our findings challenge the widespread view that lobbying inherently distorts democratic representation. Rather than seeking to pull legislators away from their constituents' preferences, we show that interest groups tend to focus their efforts on legislators whose districts already share their policy orientations. This pattern suggests that interest groups strategically engage in lobbying where they are most likely to reinforce, rather than redirect, legislative behavior. Consistent with this intuition, our structural model of roll-call voting shows that lobbying exerts a modest but systematic influence in the direction of constituency opinion. We also find no robust evidence that lobbying on specific issues reduces legislators' effectiveness on other issues or diverts their attention away from the issues their constituents prioritize. Taken together, these results imply that lobbying operates less as a corrupting force and more as a mechanism that amplifies existing connections between voters and legislators.

Why, then, do interest groups devote such substantial resources to lobbying if its effects on roll-call voting are limited? One plausible explanation is that lobbying does not influence how legislators vote on roll-calls but does influence which legislators are effective in formulating policy. Groups that lobby can still skew policy towards their preferences by providing resources to legislative allies. This explanation is consistent with the legislative subsidy account that we find broad support for, and with our evidence that lobbied legislators tend to be more effective. It also implies an important distinction between lobbying's effects on dyadic and system-level representation. Although our results indicate that lobbying can enhance dyadic representation—that is, the alignment between an individual legislator and her constituents—it may still distort representation at the aggregate level. As Hall and Deardorff (2006) argue, lobbying tends to benefit legislators whose policy goals already align with those of organized interests by subsidizing their legislative efforts. Consequently, legislators representing constituencies whose views coincide with those of well-resourced groups are better positioned to advance those issues. By contrast, issues favored by constituents lacking equivalent organizational support receive less legislative attention—not because their representatives are unresponsive, but because their allies lack sufficient resources to compete. Thus, democratic distortion can arise through the unequal distribution of policy effort across issues and districts, without any individual legislator being "captured." Examining how the distribution of group resources across issues and the alignment of group and public preferences evolve over time is a promising direction for future research on the divergence between dyadic and system-level representation.

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Online Appendix for Lobbying and Legislative Representation

Table of Contents

A Additional Tables and Figures **A1**

A.1 Tables A1

A.2 Figures A12

B Ideal Point Estimation Parameters **A18**

B.1 Survey questions A18

B.2 Ideal points of most extreme interest groups A23

B.3 Parameters of bills A27

C Additional Detail on Legislators' Trade Preferences **A31**

D Validating Lobbying Connections Measure With FARA Data **A37**

E Representativeness and Strategic Disclosure in the Maplight Data **A38**

F Selection Into Lobbying **A45**

G Model Extensions and Additional Estimates **A48**

G.1 Model Extension: Microfounding The Ideology Weights A48

G.2 Decomposing Estimated Effects A50

G.3 Regression-Based Estimates A57

H Robustness of Results to Including Trade **A59**

A ADDITIONAL TABLES AND FIGURES

A.1 *Tables*

	Legislator ideology					
	(1)	(2)	(3)	(4)	(5)	(6)
District ideology	3.737*	0.702*	0.298*	3.235*	0.653*	0.354*
	(0.115)	(0.063)	(0.090)	(0.097)	(0.066)	(0.079)
Including trade				x	x	x
FE: Issue x period	x	x	x	x	x	x
- Period x legislator			x			x
Controls: Issue x Nominate		x	x		x	x
N	16125	16123	16123	18761	18759	18759
R^2	0.452	0.867	0.928	0.315	0.835	0.899

This table presents evidence of the relationship between district and legislator ideology. Data is at the congress-legislator-issue level. The dependent variable is the legislator's ideology on the issue, inferred from rollcall votes, the independent variable is the district's ideology, as estimated by MRP from CES data. All models include issue-by-congress fixed effects, (2)–(3) and (5)–(6) control for the legislator's Nominate first-dimension score interacted with the issue, (3) and (6) include congress-by-legislator fixed effects. Models (4)–(6) also include trade as one of the issues. Standard errors clustered by state in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table A.1: Issue-specific legislator ideology correlates with district ideology

	Interest groups		Legislators		Contributions	
Issue	Mean	Median	Mean	Median	Mean	Median
Environment	2.00	1	11.86	5	17.11	6
Healthcare	3.66	1	10.36	4	14.81	5
Immigration	1.66	1	11.78	5	16.80	6
Trade	2.31	1	11.62	5	16.29	6

This table reports descriptive statistics for connections between lobbyists and interest groups and legislators. The first set of columns gives the average number of interest groups that hire a lobbyist to lobby on a given issue in a given period, the second gives the average number of legislators to whom a lobbyist hired on an issue in a period contributes, the third gives the average distinct number of contributions.

Table A.2: Lobbyist-level mean and median connections between lobbyists and interest groups and legislators

	Reports		Lobbyists		Legislators	
Issue	Mean	Median	Mean	Median	Mean	Median
Environment	5.69	4	2.69	2	27.57	10
Healthcare	7.61	5	3.82	2	35.29	15
Immigration	5.70	4	2.98	2	28.42	9
Trade	6.35	4	3.65	2	37.57	13

This table reports descriptive statistics for lobbying activity by interest groups on each issue. The first group of columns gives the average number of reports filed on a given issue in a given period by a group lobbying on that issue in that period, the second gives the average number of unique lobbyists listed in reports filed by a group lobbying, the third gives the number of unique legislators contributed to by lobbyists hired.

Table A.3: Interest group-level mean and median connections to lobbyists and legislators

	Reports		× Lobbyists		× Legislators		× Contributions	
Issue	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Environment	5.69	4	11.57	7	130.77	32	175.89	42
Healthcare	7.61	5	17.81	8	196.02	48	259.85	64
Immigration	5.70	4	12.86	6	138.59	26	181.75	31
Trade	6.35	4	15.86	8	189.40	40	245.77	52

This table reports descriptive statistics for lobbying activity by interest groups on each issue. The first group of columns gives the average number of reports filed on a given issue in a given period by a group lobbying on that issue in that period, the second gives the number of reports multiplied by the number of lobbyists listed in those reports, the third gives the number of reports multiplied by the number of lobbyists multiplied by the number of legislators to whom the lobbyists contribute, the fourth gives the number of reports multiplied by the number of lobbyists multiplied by the number of distinct contributions to legislators by those lobbyists.

Table A.4: Interest group-level cumulative mean and median connections to lobbyists and legislators

	Bill connection (relative to average)			
	(1)	(2)	(3)	(4)
Log lobbying connections	1.155*	0.859*	0.522*	0.234*
	(0.137)	(0.091)	(0.061)	(0.030)
FE: Issue x period	x			
- Issue x group x period		x	x	x
- Issue x legislator x period			x	x
- Issue x group x legislator				x
N	3853857	3853857	3853857	3853857
R^2	0.010	0.047	0.134	0.468

This table presents evidence that lobbying connections correlate with another proxy for lobbying: whether the interest group lobbies on a bill sponsored by the legislator. Data is at the interest group-legislator-issue-congress level. The dependent variable is an indicator that the interest group lobbies on the issue on a bill sponsored by a legislator, scaled by the average rate of such connections across dyads. The independent variable is the log number of lobbying connections between the interest group and legislator, on that issue in that period. A coefficient of 1 would indicate that a log unit increase in lobbying connections corresponds to an increase in the probability of a bill connection that is 100% of the base rate of such connections. Model (1) includes issue-by-period fixed effects, (2) adds issue-by-group-by-period fixed effects, which subsume issue-period fixed effects, (3) adds issue-by-legislator-by-period fixed effects, (4) issue-dyad fixed effects. Standard errors clustered by interest group and legislator in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table A.5: Lobbying connections strongly predict bill-based proxies for lobbying

	Average ideology of groups lobbying													
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
District ideology	0.205*	0.370*	0.230*	0.458*	0.221*	0.406*	0.220*	0.382*	0.200*	1.566*	0.191*	0.371*	0.173*	1.688†
	(0.048)	(0.088)	(0.059)	(0.076)	(0.055)	(0.067)	(0.057)	(0.067)	(0.052)	(0.529)	(0.079)	(0.146)	(0.073)	(0.862)
Model	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS
FE: Issue x period	x	x	x	x	x	x	x	x	x	x	x	x	x	x
- Issue x district	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Controls: % College x issue	x	x							x	x			x	x
- % Black x issue			x	x					x	x			x	x
- % Hispanic x issue					x	x			x	x			x	x
- % Male x issue							x	x	x	x			x	x
- District x issue trends											x	x	x	x
First stage F-stat		274.1		104.9		328.7		134.1		8.5		58.2		19.6
N	11900	11900	11900	11900	11900	11900	11900	11900	11900	11900	11905	11900	11900	11900
R^2	0.515	0.513	0.514	0.513	0.514	0.513	0.514	0.513	0.515	0.514	0.620	0.620	0.621	0.621

This table reports the relationship between issue-specific district ideology and the ideology of groups lobbying a legislator, instrumenting for district ideology with values predicted from district demographics. The data are at the congress-legislator-issue level. The dependent variable is the average issue-specific ideal point of groups lobbying the legislator on the issue in question. The indepenent variable is district ideology estimated from CES data. Even-numbered models use an instrumental variable equal to the weighted average of ideological positions of different demographic groups in the first period of the analysis, weighted by each group's population share in the district. All models include issue-by-congress and district-by-issue fixed effects, as in Table 2, models (3) and (4). Models (1) and (2) control for the share of college graduates in the district, allowing the slope of that relationship to vary by issue area, (3) and (4) do the same for the share of Black residents, (5) and (6) for the share of Hispanic residents, (7) and (8) for the share of male residents. (9) and (10) control for all of these demographic shares, allowing each coefficient to vary by issue area. (11) and (12) adds district-by-issue time trends. (13) and (14) include all these additional controls. Standard errors clustered by state in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table A.6: Robustness of the relationship between district ideology and the ideology of groups lobbying the representative

	Ideology of groups lobbying (5+ positions)				(10+ positions)				(20+ positions)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
District ideology	0.276*	0.266*	0.256*	0.469*	0.234*	0.223*	0.197*	0.467*	0.274*	0.265*	0.162*	0.335*
	(0.030)	(0.054)	(0.060)	(0.066)	(0.036)	(0.064)	(0.063)	(0.090)	(0.043)	(0.086)	(0.067)	(0.132)
Model	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS
FE: Issue x period	x	x	x	x	x	x	x	x	x	x	x	x
- Issue x district			x	x			x	x			x	x
First stage F-stat		121.3		156.3		119.5		140.1		116		108.5
N	11339	11335	11339	11335	10763	10759	10763	10759	9657	9653	9657	9653
R^2	0.439	0.429	0.557	0.556	0.466	0.461	0.583	0.583	0.508	0.502	0.623	0.622

This table reports the relationship between issue-specific district ideology and the ideology of groups lobbying a legislator, instrumenting for district ideology with values predicted from district demographics. The table reproduces models (1)–(4) of Table 2, restricting the interest groups used to calculate the dependent variable to those with 5 or more recorded positions on the issue used to estimate ideal points in (1)–(4), 10 or more in models (5)–(8), and 20 or more in (9)–(12). The data are at the congress-legislator-issue level. The dependent variable is the average issue-specific ideal point of groups lobbying the legislator on the issue in question. The indepenent variable is district ideology estimated from CES data. Even-numbered models use an instrumental variable equal to the weighted average of ideological positions of different demographic groups in the first period of the analysis, weighted by each group's population share in the district. All models include issue-by-congress fixed effects. Models (3), (4), (7), (8), (11) and (12) add district-by-issue fixed effects. Standard errors clustered by state in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table A.7: Robustness of the relationship between district ideology and the ideology of groups lobbying the representative, restricting to groups with many stated positions

Issue	Rollcalls	Legislators	% Lobbied	% both sides	Log for	Log against	Difference
Environment	66579	1040	22.1	1.5	0.240	0.037	0.203
Healthcare	88298	1151	18.5	2.6	0.225	0.077	0.148
Immigration	16973	731	12.4	0.2	0.106	0.051	0.056
Trade	3957	332	22.8	0.0	0.346	0.000	0.345
Total	175807	1154	19.4	1.9	0.222	0.058	0.164

This table reports descriptive statistics related to lobbying on roll-calls used to estimate legislator ideology with and without lobbying. The "Roll-calls" column gives the number of legislator-by-bill roll-call votes used in the estimation, "Legislators" the number of unique legislators. "% Lobbied" gives the percentage of these roll-calls on which the legislator is lobbied by a group supporting or opposing the bill. "% both sides" gives the percentage of roll-calls on which the legislators is lobbied both by groups supporting and those opposing the bill. "Log for" gives the average log (1+) number of groups lobbying the legislator in support of the bill. "Log against" the average log (1+) number of groups lobbying the legislator in opposition of the bill. "Difference" gives the difference between these two, which we use in our estimation.

Table A.8: Number of roll-calls and patterns of lobbying by roll-call

	Log net lobbying							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
District ideology	0.161*	0.350*	0.160*	0.270*	0.080*	0.311*	0.060*	0.295*
	(0.023)	(0.050)	(0.023)	(0.043)	(0.019)	(0.026)	(0.019)	(0.026)
CQ Key vote	No	Yes	No	Yes				
Above median Maplight positions					No	Yes	No	Yes
Including trade			x	x			x	x
FE: Bill	x	x	x	x	x	x	x	x
N	25831	7989	26570	9146	18200	17450	19207	18339
R^2	0.839	0.784	0.843	0.809	0.828	0.823	0.831	0.835

This table presents evidence of the relationship between district preferences and the direction of lobbying activity targeted at the legislator on a given bill. The unit of observation is a legislator-bill combination. The independent variable is the legislator's district ideology on the issue in question. The dependent variable is the log (1 +) number of interest groups lobbying the legislator that support the bill, minus the log number that oppose the bill, multiplied by the sign of the bill's discrimination parameter (F_j), so that a positive value corresponds to being lobbied in favor of a bill moving the status quo right, or against a bill moving the status quo left. Odd-numbered models subset to low-salience bills: in (1) and (3) these are those not listed by Congressional Quarterly as Key Votes, in (5) and (7), these are bills for which the number of Maplight groups taking public positions is less than the median among bills in our sample with positive lobbying. Even-numbered models subset to high-salience bills: Key Votes in (2) and (4) and those with above-median numbers of Maplight groups taking positions in (6) and (8). Models (3), (4), (7), and (8) include bills on trade policy. Standard errors clustered by state in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table A.9: District ideology predicts the direction of lobbying on both high and low salience bills

	Net lobbying for		Lobbied more for	
	(1)	(2)	(3)	(4)
Share of constituents supporting	2.784*			
	(0.236)			
minus legislator probability of support		0.149*		
		(0.049)		
Majority of constituents supporting			0.186*	
			(0.019)	
minus predicted legislator support				0.072*
				(0.012)
FE: Issue x period	x	x	x	x
N	4050	4050	3949	3949
R^2	0.627	0.585	0.675	0.661

This table presents evidence of the relationship between the the share of a legislator's constituents supporting a given bill, measured in the CCES, and the extent to which the legislator is lobbied by interest groups supporting or opposing the bill. In models (1)–(2), the dependent variable is the log (1+) number of groups lobbying in favor of the bill, minus the log (1+) number lobbying against. The independent variable in (1) is the share of constituents supporting the bill, in (2) the share of constituents supporting the bill, minus the structural model's predicted probability of the legislator voting for the bill, based on the bill parameters and the legislator's ideology; this gives a measure of whether voters are more supportive of the particular measure than their representative. (3) and (4) use binary versions of these variables. The dependent variable is an indicator that the legislator is lobbied by more groups supporting than opposing the bill, in (3) the independent variable is an indicator that a majority of constituents support the bill, in (4) that variable minus the structural model's binary prediction of whether the legislator will vote for the bill. Models (1) and (2) are subset to legislator-bill combinations in which lobbying occurs, (3) and (4) to combinations in which the legislator is lobbied by either more groups supporting or more groups opposing the bill. Standard errors clustered by state in parentheses, for (2) and (4) these are calculated by boostrapping the entire structural estimation routine. $^*p < 0.05$; $^\dagger p < 0.1$.

Table A.10: Legislators are lobbied more in favor of a bill when their constituents support it

	Vote in Republican direction		
	(1)	(2)	(3)
District ideology	0.885*	0.883*	0.793*
	(0.027)	(0.027)	(0.026)
Log net lobbying in R direction		0.042*	0.015*
		(0.006)	(0.004)
Log net lobbying of copartisans			0.179*
			(0.004)
Difference with ideology in (1) $\times$ 100		-0.208	-9.193
95% CI		[-0.292; -0.111]	[-9.623; -8.265]
FE: Bill	x	x	x
N	165505	165505	165505
R^2	0.484	0.485	0.529

Notes: This table presents the relationship between district ideology and legislative voting behavior, controlling for lobbying directed at legislators and their co-partisans. The unit of observation is a legislator–bill pair. The dependent variable equals 1 if the legislator votes in the more Republican direction on the bill, as inferred from the IRT model's bill parameter. District ideology is estimated by fitting an IRT model to survey data and adjusting the estimates using MRP. Models (2) and (3) control for the log number of groups lobbying the legislator in support of the more Republican position, minus the log number lobbying in opposition to that position. Model (3) additionally controls for the corresponding difference in lobbying directed at the legislator's co-partisans. All models are estimated by OLS with bill fixed effects. State-clustered standard errors are reported in parentheses. For the differences, we report 95% percentile confidence intervals calculated using a fractional random-weight bootstrap clustered by state. $^*p < 0.05$; $^\dagger p < 0.1$.

Table A.11: Adjusting for lobbying of copartisans weakens the relationship between district preferences and legislative behavior

	Log issue-specific legislative effectiveness							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log lobbying connections	0.077*	0.054*	0.055*	0.054*	0.053*	0.053*	0.057*	0.051†
	(0.018)	(0.026)	(0.027)	(0.027)	(0.015)	(0.021)	(0.022)	(0.026)
FE: Issue x congress	x	x	x	x	x	x	x	x
- Issue x district	x	x	x	x	x	x	x	x
- Issue x legislator	x	x	x	x	x	x	x	x
- Legislator x congress	x	x	x	x	x	x	x	x
Controls: Legislator time trends		x	x	x		x	x	x
- Nominate x issue x congress (cubic)			x	x			x	x
- District ideology x issue x congress (cubic)				x				x
Sample: Including trade					x	x	x	x
N	11518	11518	11515	11515	15724	15724	15720	13617
R^2	0.718	0.824	0.825	0.828	0.652	0.782	0.785	0.826

This table shows the relationship between lobbying activity and legislative effectiveness is robust to the addition of an array of additional fixed effects and controls. Data are at the congress-legislator-issue level. The dependent variable is the legislator's log issue-specific legislative effectiveness score. The independent variable is the log number of lobbying connections on that issue and period. All models include issue-by-congress, issue-by-district, issue-by-legislator, and legislator-by-congress fixed effects. Models (2)–(4) and (6)–(8) add controls for legislator-specific time trends, (3)–(4) and (7)–(8) add issue-by-period specific controls for third-degree polynomials in the legislator's first dimension Nominate score, (4) and (8) add issue-by-period specific controls for third degree polynomials in the district's ideology on the issue in question, estimated from the CES. Models (1)–(4) exclude trade as an issue area, (5)–(8) include it. Standard errors clustered by legislator in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table A.12: The relationship between lobbying activity and legislative effectiveness is robust to the addition of a range of additional fixed effects and controls

	Log bills introduced				Log bills passed into law			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log lobbying connections								
on issue	0.099*	0.188*	0.077*	0.091*	0.009*	0.013*	0.010*	0.011*
	(0.013)	(0.019)	(0.014)	(0.020)	(0.002)	(0.004)	(0.004)	(0.005)
on other issues		−0.107*		−0.017		−0.005		−0.001
		(0.018)		(0.021)		(0.004)		(0.005)
Log bills introduced					0.039*	0.039*	0.037*	0.037*
					(0.004)	(0.004)	(0.005)	(0.005)
FE: Issue x congress	x	x	x	x	x	x	x	x
- Issue x district	x	x	x	x	x	x	x	x
- Issue x legislator			x	x			x	x
N	11518	11518	11518	11518	11518	11518	11518	11518
R^2	0.493	0.495	0.715	0.715	0.190	0.190	0.354	0.354

This table shows the relationship between being lobbied on two components of legislative effectiveness: bills introduced and bills that successfully become laws. Data are at the congress-legislator-issue level. The dependent variable in models (1)–(4) is the log number of bills introduced, giving substantive bills 5 times the value of commemorative bills, and substantive and significant bills 10 times the value, as in the calculation of legislative effectiveness scores. The dependent variable in models (5)–(8) is the log number of laws enacted, weighting the content as in the other models. The independent variable is the log number of lobbying connections on that issue and period, even-numbered models also include this variable for the other issues. All models include issue-by-congress and issue-by-district fixed effects, (3), (4), (7) and (8) add issue-by-legislator fixed effects. Models examining laws enacted control for the log number of bills introduced (the dependent variable in models (1)–(4)). Standard errors clustered by legislator in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table A.13: Being lobbied on a given issue correlates with both bill sponsorship and the number of bills becoming laws

	Log legislative effectiveness				Log lobbying connections			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log share relevant constituents	0.061*	0.067*	0.061*	0.067*	0.071*	0.035*	0.076*	0.033*
	(0.012)	(0.013)	(0.012)	(0.013)	(0.029)	(0.013)	(0.028)	(0.012)
Including trade			x	x			x	x
FE: Issue x period	x	x	x	x	x	x	x	x
- Period x legislator		x		x		x		x
N	10884	10884	14700	14700	11027	11027	14739	14739
R^2	0.020	0.392	0.022	0.309	0.382	0.925	0.322	0.921

This table presents evidence of the relationship between constituency composition and issue-specific legislative effectiveness and lobbying activity. The unit of observation is a legislator-issue-session of congress combination. The independent variable is the presence of constituents for whom the issue is particularly relevant, as a log share of the constituency. For immigration, this is the log share of non-citizens, for healthcare, the log share over the age of 65, for the environment and energy, the log share employed in mining, quarrying, and oil and gas extraction, and for trade, the log share employed in manufacturing. In models (1)–(4), the dependent variable is the legislator's log issue-specific legislative effectiveness, in (5)–(8) the log number of lobbying connections on that issue with the legislator. All models include issue-by-period fixed effects, even-numbered models add fixed effects for the legislator-by-period, which account for some legislators being more effective and lobbied more across issues. Models (3), (4), (7) and (8) include trade as an issue area. Standard errors clustered by state in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table A.14: Legislators are lobbied more on a given issue if that issue is more relevant to their district

A.2 *Figures*

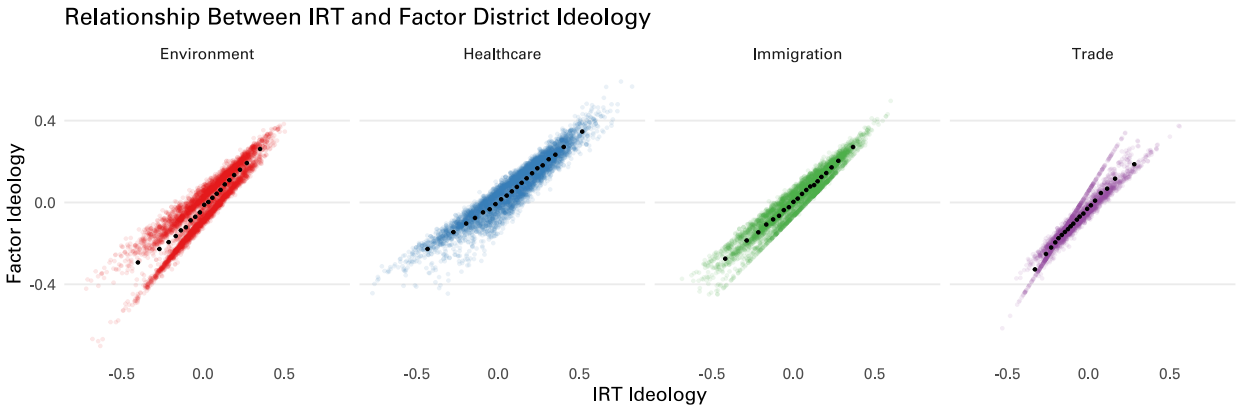


Figure A.1: Comparison of district ideology estimates using IRT and factor models

This figure compares estimates of district ideology from running an IRT model on CES survey data (x axis), to that estimated from running a factor model on the same data (y axis). Both measures correct for non-representativeness using multilevel regression with post-stratification. Black dots are binned averages.

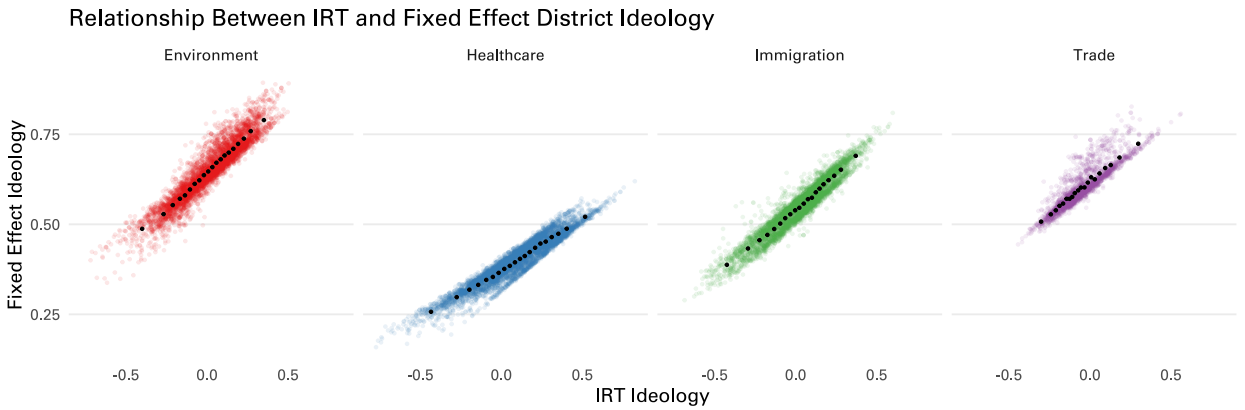


Figure A.2: Comparison of district ideology estimates using IRT and fixed effects models

This figure compares estimates of district ideology from running an IRT model on CES survey data (x axis), to that estimated from running a fixed effects model on the same data (y axis). For this fixed effects model, we regress whether the respondent agrees with the survey question on a survey question and respondent fixed effect, after first recoding the survey questions so that yes answers correspond to more Republican policy preferences. The respondent fixed effect then gives a measure of the respondent's ideology. Both measures correct for non-representativeness using multilevel regression with post-stratification. Black dots are binned averages.

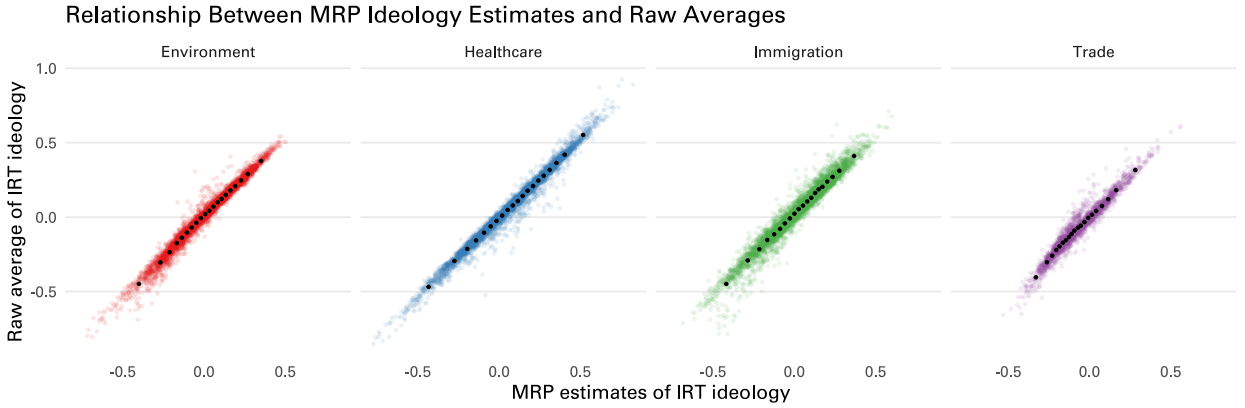


Figure A.3: Comparison of district ideology estimates using multilevel regression and post-stratification against raw averages

This figure compares estimates of district ideology based on IRT estimates from CES survey data. The x axis uses multilevel regression with post-stratification, the y axis plots the averages using CES sampling weights. Black dots are binned averages.

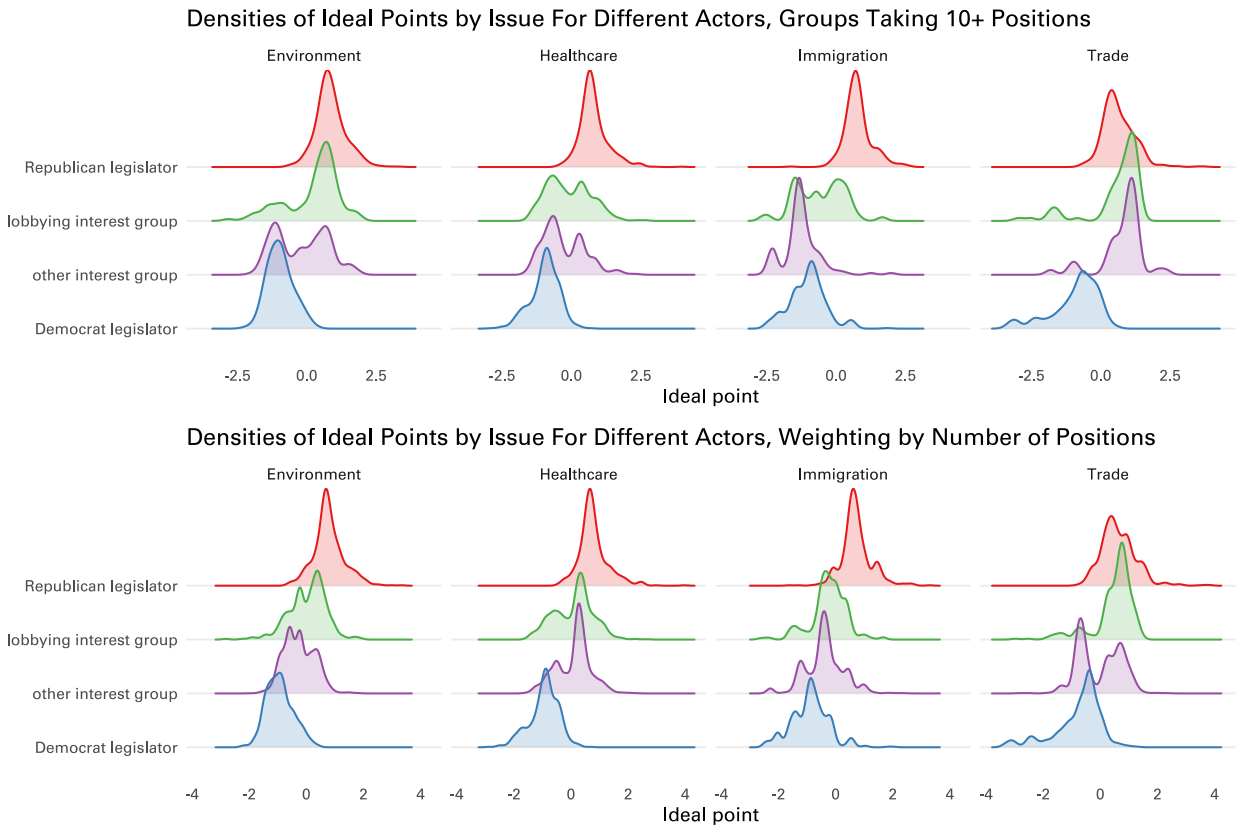


Figure A.4: Distribution of legislator and interest group ideology, dropping groups with few recorded positions or weighting by number of positions

This figure reproduces Figure 1, in the top panel excluding legislators or interest groups with fewer than 10 recorded positions used to estimate ideal points, in the bottom panel weighting legislators or interest groups by the number of rollcall votes or recorded positions.

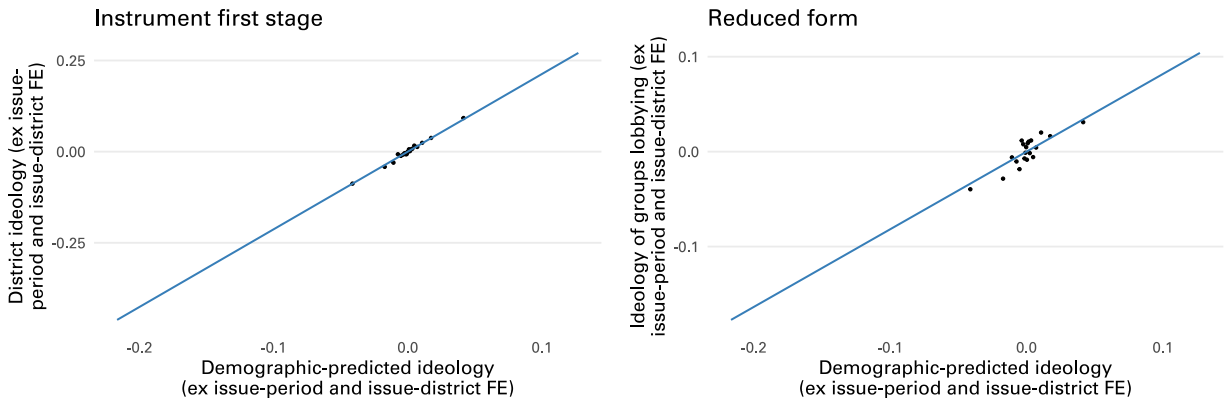


Figure A.5: First stage and reduced form for instrumental variables estimation

The left panel plots the relationship between observed district ideology and district ideology predicted from demographic composition, after residualizing out issue-period and issue-district fixed effects, as in Table 2 model (4). The relationship between the instrument and independent variable is positive and monotonic. The right panel plots the relationship between the ideology of groups lobbying a legislator and district ideology predicted from demographics. It shows that demographic-driven shifts in district ideology are associated with corresponding shifts in the ideology of interest groups lobbying that legislator. Both panels present binned scatterplots with OLS fits.

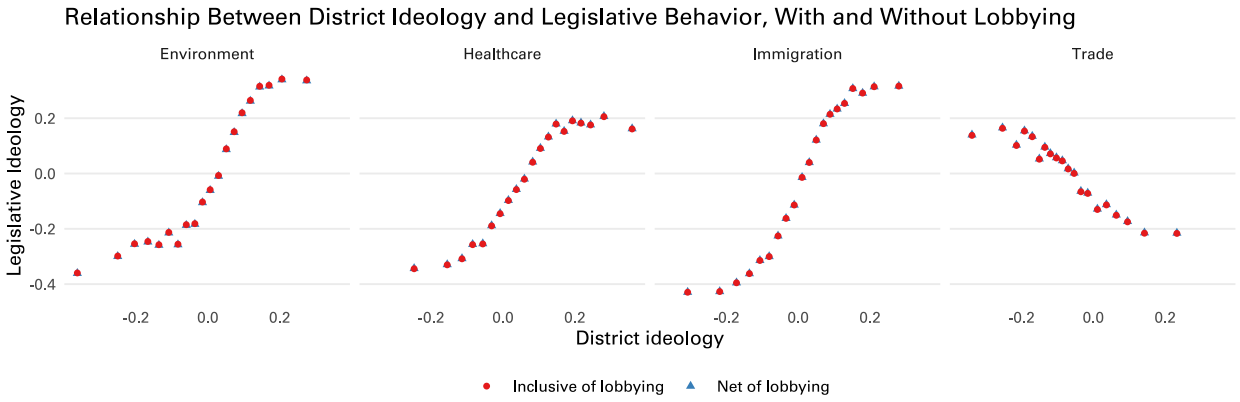


Figure A.6: District ideology and legislator preferences, with and without lobbying

Each figure shows the binned scatterplot of the relationship between district ideology and legislator ideology. Constituency ideology is estimated by running a factor model on CES survey data. Legislator ideology net of lobbying (blue triangle) is the legislator's factor loading estimated by running an interactive fixed effects model with bill fixed effects, legislator-by-bill interactive fixed effects, and covariates for lobbying for and against the bill; it gives the legislator's ideology controlling for the offsetting effects of lobbying (λ_i). Legislator ideology inclusive of lobbying is that model's predicted ideal point for a legislator who voted the same way but was not lobbied (R_i); it gives the prediction from a naive model that does not take into account lobbying.

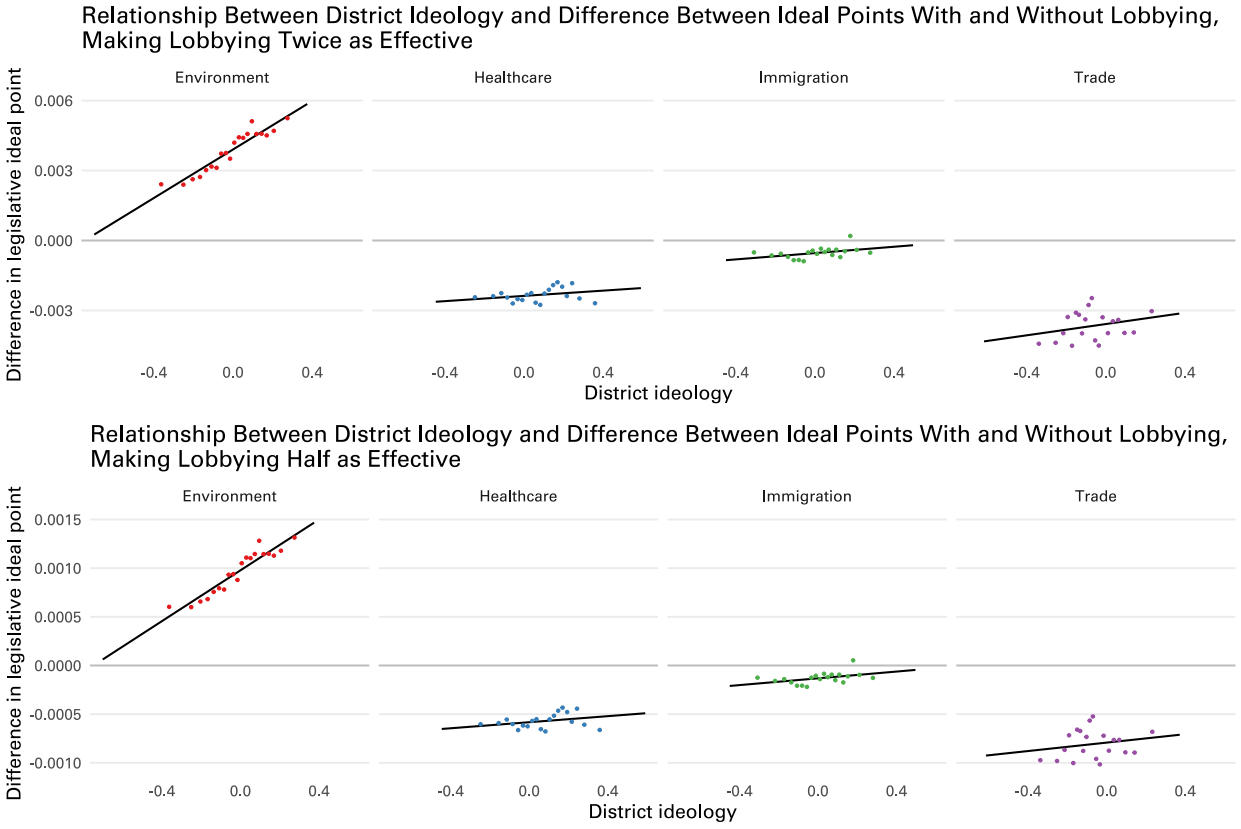


Figure A.7: District ideology and difference in legislator ideal point due to lobbying, fixing the effectiveness of lobbying

These figures reproduce Figure 4, varying the magnitude of lobbying's effects on legislative voting. Each figure shows the binned scatterplot of the relationship between district ideology and the difference in legislator ideology attributable to lobbying. The x axis is district ideology measured by running a factor model on CES data. The y axis is the legislator's ideology inclusive of lobbying, minus their ideology net of lobbying. As in Figure 4, in both sets of panels, the measures of ideology are estimated by running an interactive fixed effects model on roll-calls, adjusting for lobbying by groups supportive or opposed to the bill. Where these figures differ is in fixing the effectiveness of lobbying at twice (top) or half (bottom) the coefficients estimated in Table 3.

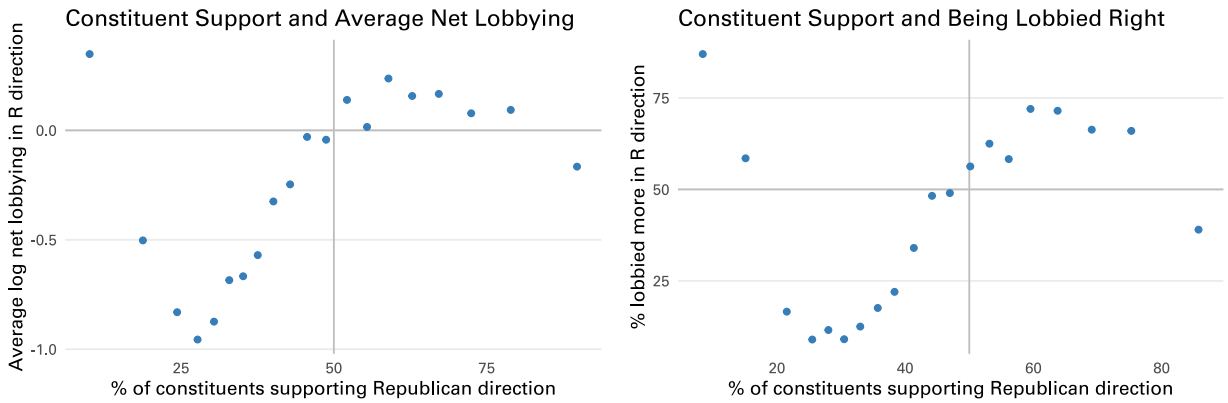


Figure A.8: District support for the Republican position on a bill correlates with legislators being lobbied in that direction on the bill

The left panel plots the average log number of lobbying connections from groups supporting the Republican position on the bill minus the log number of lobbying connections from groups supporting the opposing position, against the percentage of the legislator's constituents supporting the Republican position. We infer the direction of the bills from the discrimination parameter estimated by our ideal point model. Blue dots are binned averages. The right panel plots the percentage of legislators lobbied more by groups supporting the Republican position than those opposing it against the share of constituents taking the Republican position, excluding legislators who are not lobbied.

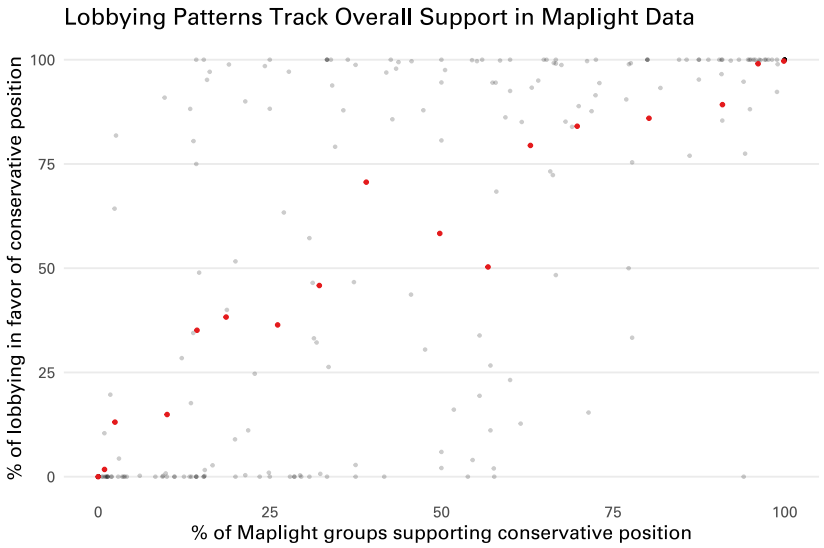


Figure A.9: Patterns of lobbying by bill track support for the bill in Maplight

The x axis in this figure is the percentage of groups in the Maplight data supporting the conservative position on a bill, relative to those supporting the liberal position, for bills which are voted on in congress and which we use to study the effects of lobbying on responsiveness. The liberal or conservative direction of the bill is inferred from the structural model's bill parameters, those that move the status quo right are coded as conservative. The y axis is the percentage of instances in which a legislator is lobbied by a group that supports the conservative position on the bill, relative to those lobbied by groups supporting the liberal position. Each gray dot is a bill, red dots are binned averages.

B IDEAL POINT ESTIMATION PARAMETERS

B.1 *Survey questions*

Table B.1: CES survey questions used to estimate environment ideal points, and discrimination parameters

Issue	Years asked	Respondents	β
Oppose strengthening of enforcement of Clean Air and Water Acts	2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023	392,894	3.01
Oppose EPA regulating carbon dioxide emissions	2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023	392,783	2.54
Immediate action on climate is not necessary	2006, 2007, 2009, 2010, 2011, 2012, 2022	225,781	2.50
Jobs are more important than environmental protection	2006, 2007, 2008, 2010, 2012, 2013	145,615	2.35
Oppose requiring states to use a minimum amount of renewable fuels	2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023	392,988	2.27
Oppose US membership of Paris Agreement	2017, 2018, 2019, 2020, 2021, 2022	241,504	2.13
Oppose carbon cap and trade (American Clean Energy and Security Act)	2010	51,241	1.46
Oppose requiring clean energy in federal agencies	2022	59,800	1.42
Support repeal of clean power plant rules	2018, 2019, 2020	129,999	1.19
Oppose halting new oil and gas leases on federal lands	2023	24,500	0.97
Oppose raising average fuel efficiency	2014, 2015, 2016, 2017, 2018, 2020, 2021, 2022	350,406	0.96
Oppose carbon tax	2008	22,372	0.94
Support increasing US fossil fuel production	2022, 2023	84,492	0.90

Note:
This table shows the CES questions used to estimate environment ideal points. β is the estimated discrimination parameter for the question, more positive values indicate that affirmative answers to the question are associated with more positive latent ideology.

Table B.2: CES survey questions used to estimate healthcare ideal points, and discrimination parameters

Issue	Years asked	Respondents	β
Oppose Affordable Care Act	2010, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023	521,066	4.37
Oppose expanding Medicare for all Americans	2018, 2019, 2020, 2021, 2022	224,353	1.65
Oppose renewing and expanding State Children's Health Insurance Program	2010	51,784	1.47
State should refuse to implement the expansion of health care for poor people, even if it costs the state federal Medicaid funds	2014	55,473	1.45
Support American Healthcare Act	2017	18,037	1.09
Oppose ACA mandate	2018, 2019, 2020, 2021	164,332	1.07
Oppose lowering Medicare eligibility age	2019, 2020	78,742	1.01
Oppose expanding Medicaid coverage	2021, 2023	50,196	0.99
Support repealing ACA mandate, and cutting Medicaid payments and reducing taxes on expensive health plans	2018	59,903	0.96
Support restricting Medicaid coverage to those employed	2021, 2023	50,197	0.80

Note:
This table shows the CES questions used to estimate healthcare ideal points. β is the estimated discrimination parameter for the question, more positive values indicate that affirmative answers to the question are associated with more positive latent ideology.

Table B.3: CES survey questions used to estimate healthcare including abortion ideal points, and discrimination parameters

Issue	Years asked	Respondents	β
Oppose abortion always being allowed as a matter of choice	2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023	636,626	3.63
Support prohibiting the use of federal funds for abortions	2014, 2015, 2016, 2017, 2018, 2019, 2020, 2022	351,112	2.83
Support allowing employers to decline coverage of abortion in insurance plans	2014, 2015, 2016, 2017, 2018, 2020, 2022	333,352	2.67
Oppose Affordable Care Act	2010, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023	521,066	1.51

Support banning abortion after 20 weeks	2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022	376,728	1.42
Oppose expanding Medicare for all Americans	2018, 2019, 2020, 2021, 2022	224,353	1.37
Oppose expanding access to abortion	2023	24,488	1.06
Support abortion being illegal in all circumstances	2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023	580,922	1.04
Oppose renewing and expanding State Children's Health Insurance Program	2010	51,784	1.00
State should refuse to implement the expansion of health care for poor people, even if it costs the state federal Medicaid funds	2014	55,473	0.95
Support allowing abortion only in cases of rape, incest, or when the woman's life is in danger	2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023	401,107	0.93
Oppose government guaranteeing health insurance for all US citizens	2008	26,935	0.83
Oppose lowering Medicare eligibility age	2019, 2020	78,742	0.82
Oppose expanding Medicaid coverage	2021, 2023	50,196	0.78
Support American Healthcare Act	2017	18,037	0.73
Oppose ACA mandate	2018, 2019, 2020, 2021	164,332	0.65
Oppose prohibiting government restrictions on abortion access	2023	24,321	0.63
Support repealing ACA mandate, and cutting Medicaid payments and reducing taxes on expensive health plans	2018	59,903	0.61
Support restricting Medicaid coverage to those employed	2021, 2023	50,197	0.53
Oppose setting up public insurance entity	2009	11,325	0.48
Oppose requiring everyone to buy health insurance	2009	10,705	0.44
Oppose prohibiting states from requiring that abortions be performed only at hospitals	2020, 2021	86,671	0.36
Oppose requiring businesses to provide health insurance	2009	11,189	0.23

Note:

This table shows the CES questions used to estimate healthcare including abortion ideal points.

Table B.4: CES survey questions used to estimate immigration ideal points, and discrimination parameters

Issue	Years asked	Respondents	β
Support building wall between US and Mexico	2007, 2017, 2018, 2020, 2021, 2022, 2023	258,997	3.45
Support increasing patrols on US-Mexico border	2007, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2019, 2020, 2021, 2022, 2023	498,720	2.51
Support identifying and deporting illegal immigrants	2014, 2015, 2016, 2017	153,250	2.38
Support allowing police to question suspected illegal immigrants	2010, 2011, 2012, 2013, 2014, 2015, 2017	235,134	2.29
Support withholding federal funding from police failing to report illegal immigrants	2017, 2018, 2019, 2020, 2021	182,698	2.22
Support reducing the number of legal immigrants	2018, 2019, 2020, 2022	197,399	1.90
Oppose path to citizenship for illegal immigrants (2006 Senate reform)	2006, 2007	42,235	1.80
Support sending to prison any person who has been deported and reenters the US	2018	59,929	1.39
Oppose granting legal status to illegal immigrants	2007, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2019, 2020, 2021, 2022, 2023	498,747	1.37
Support fining businesses that hire illegal immigrants	2007, 2010, 2012, 2013, 2014, 2015, 2016, 2017	185,116	1.33
Support denying automatic citizenship to American-born children of illegal immigrants	2012	54,535	1.28
Support prohibiting illegal immigrants from using emergency hospital care and public schools	2012, 2013	70,935	1.22
Oppose legal status for children of immigrants (DACA)	2016, 2018, 2019, 2020, 2021, 2023	253,559	1.19
Support increasing deportations	2017	18,176	1.03
Oppose increasing the number of visas for overseas workers	2015, 2016, 2017	45,719	0.61
Support increasing criminal penalties for individuals in the country illegally who are convicted of certain crimes, deported, and then re-enter the US illegally (Kate's Law)	2017	18,059	0.41
Oppose increasing the number of guest workers	2007	9,999	0.17

Note:
This table shows the CES questions used to estimate immigration ideal points. β is the estimated discrimination parameter for the question, more positive values indicate that affirmative answers to the question are associated with more positive latent ideology.

Table B.5: CES survey questions used to estimate trade ideal points, and discrimination parameters

Issue	Years asked	Respondents	β
Oppose tariffs on imports from China	2018, 2019, 2020, 2021	163,690	4.56
Oppose increasing tariffs on European aircraft and agricultural products	2020	60,053	2.66
Support US membership of Trans-Pacific Partnership	2015, 2016, 2018, 2019, 2020, 2021	242,016	1.90
Oppose tariffs on steel and aluminum, including from Canada and Mexico	2018, 2019, 2020, 2021	163,460	1.85
Oppose tariffs on steel and aluminum, except from Canada and Mexico	2018, 2019, 2020	137,920	1.28

Note:
This table shows the CES questions used to estimate trade ideal points. β is the estimated discrimination parameter for the question, more positive values indicate that affirmative answers to the question are associated with more positive latent ideology.

B.2 *Ideal points of most extreme interest groups*

Table B.6: Interest groups with most extreme environment ideal points, groups taking at least 5 positions

Most Republican		Least Republican	
Interest Group	IRT	Interest Group	IRT
American Petroleum Institute	1.93	Sierra Club	-2.82
American Energy Alliance	1.87	League of Conservation Voters	-2.23
National Mining Association	1.81	Clean Water Action	-1.99
Americans for Prosperity	1.80	Earthjustice	-1.95
Independent Petroleum Association of America	1.74	Environment America	-1.94
Americans for Tax Reform	1.71	Environmental Working Group	-1.82
National Association of Counties	1.69	Natural Resources Defense Council	-1.79
American Conservative Union Strikeforce	1.67	U.S. PIRG	-1.74
Council for Citizens Against Government Waste	1.63	EarthWorks	-1.69
Western Energy Alliance	1.56	Physicians for Social Responsibility	-1.66
Small Business & Entrepreneurship Council	1.53	Trout Unlimited	-1.59
National Cattlemen's Beef Association	1.51	U.S. Climate Action Network	-1.56
American Commitment	1.47	Asbestos Disease Awareness Organization	-1.54
National Petrochemical and Refiners Association	1.45	Defenders of Wildlife	-1.53
Petroleum Marketers Association of America	1.43	Breast Cancer Prevention Partners (BCPP)	-1.53
Less Government	1.40	Wilderness Society	-1.52
Competitive Enterprise Institute	1.39	American Rivers	-1.52
American Fuel & Petrochemical Manufacturers	1.33	Riverkeeper	-1.50
National Taxpayers Union	1.33	Environmental Integrity Project	-1.49
Club for Growth	1.28	American Lung Association	-1.48

Table B.7: Interest groups with most extreme healthcare ideal points, groups taking at least 5 positions

Most Republican		Least Republican	
Interest Group	IRT	Interest Group	IRT
Americans for Tax Reform	2.67	NARAL Pro-Choice America	-1.64
National Right to Life Committee	2.36	American Federation of State, County and Municipal Employees	-1.61
National Taxpayers Union	2.33	AARP	-1.57
National Breast Cancer Coalition	2.18	Planned Parenthood	-1.55
Association of American Physicians and Surgeons	2.12	National Consumers League	-1.51
cigar rights of america	1.86	U.S. PIRG	-1.49
International Premium Cigar & Pipe Retailers Association	1.86	American Academy of Pediatrics	-1.49
American Benefits Council	1.83	American Nurses Association	-1.45
Independent Insurance Agents & Brokers of America	1.82	National Women's Law Center	-1.44
Americans for Prosperity	1.82	American Heart Association	-1.42
Family Research Council	1.81	Health Care for America Now	-1.42
Consumer Brands Association	1.76	American Occupational Therapy Association	-1.41
International Franchise Association	1.75	Mothers Against Medical Error	-1.41
National Association of Insurance and Financial Advisors	1.67	Small Business Majority	-1.40
Competitive Enterprise Institute	1.66	National Women's Health Network	-1.39
Concerned Women for America	1.65	National Council of Jewish Women	-1.38
Retail Industry Leaders Association	1.65	AFL-CIO	-1.38
HR Policy Association	1.63	National Committee to Preserve Social Security and Medicare	-1.37
FreedomWorks	1.58	National Organization for Women	-1.36
national committee for a human life amendment	1.58	American Public Health Association	-1.35

Table B.8: Interest groups with most extreme immigration ideal points, groups taking at least 5 positions

Most Republican		Least Republican	
Interest Group	IRT	Interest Group	IRT
Americans for Legal Immigration	2.31	AFL-CIO	-2.63
Act for America	2.12	Leadership Conference on Civil and Human Rights	-2.48
Californians for Population Stabilization	1.98	Friends Committee on National Legislation	-2.43
progressives for immigration reform	1.84	American Federation of State, County and Municipal Employees	-2.31
FreedomWorks	1.80	National Latina Institute for Reproductive Health	-2.30
American Hospital Association	1.67	OCA - Asian Pacific American Advocates	-2.30
Heritage Foundation	1.43	International Rescue Committee	-2.30
Center for Immigration Studies	1.26	South Asian Americans Leading Together	-2.29
National Association of Police Organizations	0.98	National Korean American Service & Education Consortium	-2.29
National Restaurant Association	0.96	Asian Americans Advancing Justice	-2.29
Federation for American Immigration Reform	0.80	We Belong Together	-2.28
National Federation of Independent Business	0.74	United We Dream	-2.28
Heritage Action for America	0.62	Immigrant Legal Resource Center	-2.28
Society for Human Resource Management	0.57	National People's Action	-2.28
NumbersUSA	0.52	OneAmerica	-2.28
American Council on International Personnel	0.50	Asian Law Alliance	-2.28
Real Estate Roundtable	0.42	American-Arab Anti-Discrimination Committee	-2.28
North American Meat Institute	0.41	Alliance for Citizenship	-2.28
National Association of Home Builders	0.39	Just Foreign Policy	-2.28
American Farm Bureau Federation	0.39	Immigration Equality Action Fund	-2.28

Table B.9: Interest groups with most extreme trade ideal points, groups taking at least 5 positions

Most Republican		Least Republican	
Interest Group	IRT	Interest Group	IRT
Club for Growth	2.34	International Association of Machinists and Aerospace Workers	-2.97
FreedomWorks	2.02	International Federation of Professional & Technical Engineers	-2.52
Americans for Prosperity	1.47	American Postal Workers Union	-1.86
Heritage Foundation	1.43	American Iron and Steel Institute	-1.86
American Soybean Association	1.36	Sierra Club	-1.82
United Parcel Service (UPS)	1.35	United Steelworkers	-1.80
Information Technology Industry Council	1.33	AFL-CIO	-1.70
Americans for Tax Reform	1.33	International Brotherhood of Teamsters	-1.63
USA Poultry and Egg Export Council	1.33	Public Citizen	-1.59
Taxpayers Protection Alliance	1.31	International Brotherhood of Electrical Workers	-1.59
International Dairy Foods Association	1.30	Presbyterian Church (U.S.A.)	-1.51
National Fisheries Institute	1.28	U.S. Business & Industry Council	-1.51
Pacific Coast Council of Customs Brokers & Freight Forwarders	1.28	Communications Workers of America	-1.50
Securities Industry and Financial Markets Association	1.28	American Federation of State, County and Municipal Employees	-1.50
North American Meat Institute	1.27	UNITE HERE	-1.44
American Chemistry Council	1.26	Progressive Democrats of America	-1.44
National Cattlemen's Beef Association	1.26	Coalition for a Prosperous America	-1.35
National Council of Farmer Cooperatives	1.25	Service Employees International Union	-1.35
Johnson & Johnson	1.24	Electronic Frontier Foundation	-1.35
Distilled Spirits Council of the United States	1.24	Food And Water Watcg	-1.35

Table B.10: Parameters of bills used to estimate legislator and interest group environment ideal points, 10 least and most Republican

Code	Bill	α	β
hr9-116	Climate Action Now Act	-0.95	-10.42
sjres14-117	A joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of the rule submitted by the Environmental Protection Agency relating to Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Review.	-0.55	-10.07
hr3585-111	Solar Technology Roadmap Act	1.27	-8.6
hr2467-117	PFAS Action Act of 2021	-0.1	-8.58
s940-112	Close Big Oil Tax Loopholes Act	-1.29	-8.48
hr4715-111	Clean Estuaries Act of 2010	0.53	-8.44
hr720-110	Water Quality Financing Act of 2007	1.14	-8.22
hr535-116	PFAS Action Act of 2019	0.14	-8.19
hr1262-111	Water Quality Investment Act of 2009	1.29	-8.04
hr3029-111	A bill to establish a research, development, and technology demonstration program to improve the efficiency of gas turbines used in combined cycle and simple cycle power generation systems.	0.7	-8.01
⋮	⋮	⋮	⋮
hr1582-113	Energy Consumers Relief Act of 2013	2.01	10.45
hr806-115	Ozone Standards Implementation Act of 2017	1.13	10.48
hr1430-115	Honest and Open New EPA Science Treatment Act of	1.26	10.57
hjres36-115	Providing for congressional disapproval under chapter 8 of title 5, United States Code, of the final rule of the Bureau of Land Management relating to Waste Prevention, Production Subject to Royalties, and Resource Conservation.	0.85	10.58
hr1422-113	EPA Science Advisory Board Reform Act of 2014	1.49	10.65
hr910-112	Energy Tax Prevention Act of 2011	2.42	10.71
hr3893-109	Gasoline for America's Security Act of 2005	1.03	10.91
sjres23-114	A joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of a rule submitted by the Environmental Protection Agency relating to Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units.	1.25	11.14

hr1030-114	Secret Science Reform Act of 2015	1.83	11.26
sjres24-114	A joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of a rule submitted by the Environmental Protection Agency relating to Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units.	1.77	11.61
hr4480-112	Domestic Energy and Jobs Act	1.88	12.46

Table B.11: Parameters of bills used to estimate legislator and interest group healthcare ideal points, 10 least and most Republican

Code	Bill	α	β
hr2-111	Children's Health Insurance Program Reauthorization Act of 2009	3.74	-11.99
hr3963-110	Children's Health Insurance Program Reauthorization Act of 2007	3.5	-11.41
hr3-116	Elijah E. Cummings Lower Drug Costs Now Act	1.56	-10.6
s610-117	Protecting Medicare and American Farmers from Sequester Cuts Act	2.28	-10.45
hr987-116	Strengthening Health Care and Lowering Prescription Drug Costs Act	1.99	-10.44
hr3755-117	Women's Health Protection Act of 2021	1.15	-10.36
hr8296-117	Women's Health Protection Act of 2022	1.17	-10.31
hr1425-116	Patient Protection and Affordable Care Enhancement Act	1.67	-10.25
hr8542-117	Mental Health Justice Act of 2022	1.56	-10.04
hr8297-117	Ensuring Access to Abortion Act of 2022	1.57	-10.02
⋮	⋮	⋮	⋮
hr3-112	No Taxpayer Funding for Abortion Act	-0.18	9.69
hr1101-115	Small Business Health Fairness Act of 2017	-0.74	9.72
hr7-113	No Taxpayer Funding for Abortion and Abortion Insurance Full Disclosure Act of 2014	-1.09	9.89
hr596-114	To repeal the Patient Protection and Affordable Care Act and health care-related provisions in the Health Care and Education Reconciliation Act of 2010, and for other purposes.	-1.39	9.97
hr6079-112	Repeal of Obamacare Act	-1.03	10.09
hr45-113	To repeal the Patient Protection and Affordable Care Act and health care-related provisions in the Health Care and Education Reconciliation Act of 2010.	-1.43	10.59

hjres43-115	Joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of the final rule submitted by Secretary of Health and Human Services relating to compliance with title X requirements by project recipients in selecting subrecipients	-1.52	10.96
hr2-112	Repealing the Job-Killing Health Care Law Act	-1.34	11.01
hr3134-114	Defund Planned Parenthood Act of 2015	-1.59	11.22
hr3762-114	To provide for reconciliation pursuant to section 2002 of the concurrent resolution on the budget for fiscal year 2016.	-1.51	11.36
hr1217-112	To repeal the Prevention and Public Health Fund.	-1.42	11.45

Table B.12: Parameters of bills used to estimate legislator and interest group immigration ideal points, 10 least and most Republican

Code	Bill	α	β
hr6-116	American Dream and Promise Act of 2019	2.69	-14.71
hr1573-117	Access to Counsel Act of 2021	1.45	-14.21
hr2203-116	Homeland Security Improvement Act	1.49	-14.08
hr1333-117	NO BAN Act	1.55	-14.03
hr6-117	American Dream and Promise Act of 2021	2.45	-13.77
hr7946-117	Veteran Service Recognition Act of 2022	1.69	-13.33
hr3525-116	U.S. Border Patrol Medical Screening Standards Act	1.63	-13.32
hr3239-116	Humanitarian Standards for Individuals in Customs and Border Protection Custody Act	1.62	-13.17
hres489-116	Condemning President Trump's racist comments directed at Members of Congress.	1.96	-13.03
hr1603-117	Farm Workforce Modernization Act of 2021	3.15	-12.77
⋮	⋮	⋮	⋮
hr418-109	REAL ID Act of 2005	-0.47	10.53
hr2131-113	SKILLS Visa Act	0.67	10.71
hr2164-112	Legal Workforce Act	-2.45	11.22
hr3009-114	Enforce the Law for Sanctuary Cities Act	-1.06	11.46
hr5272-113	To prohibit certain actions with respect to deferred action for aliens not lawfully present in the United States, and for other purposes.	-1.84	12.23
hr6095-109	Immigration Law Enforcement Act of 2006	0.43	12.46
hr3004-115	Kate's Law	-0.04	13.13
hr5759-113	Preventing Executive Overreach on Immigration Act of 2014	-1.77	13.31
hr3003-115	No Sanctuary for Criminals Act	-1.52	13.4
hr3697-115	Criminal Alien Gang Member Removal Act	-0.66	14.16

hr4760-115	Securing America's Future Act of 2018	-4.43	16.69

Table B.13: Parameters of bills used to estimate legislator and interest group trade ideal points, 10 least and most Republican

Code	Bill	α	β
hr3920-110	Trade and Globalization Assistance Act of 2007	1.59	-17.05
hr4863-116	United States Export Finance Agency Act of 2019	1.23	-15.97
s1619-112	Currency Exchange Rate Oversight Reform Act of 2011	1.35	-10.7
hr597-114	Export-Import Bank Reform and Reauthorization Act of 2015	2.31	-10.59
hr2378-111	Currency Reform for Fair Trade Act	2.08	-10.57
hr639-112	Currency Reform for Fair Trade Act	0.64	-10.44
s328-112	Currency Reform for Fair Trade Act	0.64	-10.44
hr4476-117	DHS Trade and Economic Security Council Act of 2021	2.96	-10.19
hr4105-112	To apply the countervailing duty provisions of the Tariff Act of 1930 to nonmarket economy countries, and for other purposes.	3.48	-9.86
hres1168-117	Reaffirming the economic partnership between the United States and the Caribbean nations and recognizing the need to strengthen trade and investment between the United States and the Caribbean nations, our Third Border.	3.02	-9.25
⋮	⋮	⋮	⋮
s1307-109	Dominican Republic-Central America-United States Free Trade Agreement Implementation Act	-0.81	9.97
s1641-112	United States-Colombia Trade Promotion Agreement Implementation Act	-0.99	10.33
hr2146-114	Defending Public Safety Employees' Retirement Act	0.12	10.39
s3569-109	United States-Oman Free Trade Agreement Implementation Act	-0.34	10.89
s1900-113	Bipartisan Congressional Trade Priorities Act of 2014	-0.18	11.89
hr3045-109	Dominican Republic-Central America-United States Free Trade Agreement Implementation Act	-0.66	13.75
hr1890-114	Bipartisan Congressional Trade Priorities and Accountability Act of 2015	-0.6	14.26
hr3079-112	United States-Panama Trade Promotion Agreement Implementation Act	1.56	14.62
s995-114	Bipartisan Congressional Trade Priorities and Accountability Act of 2015	-0.7	15.51
hr3078-112	United States-Colombia Trade Promotion Agreement Implementation Act	0.34	17.45

hr5684-109	United States-Oman Free Trade Agreement Implementation Act	-0.66	19.4

C ADDITIONAL DETAIL ON LEGISLATORS' TRADE PREFERENCES

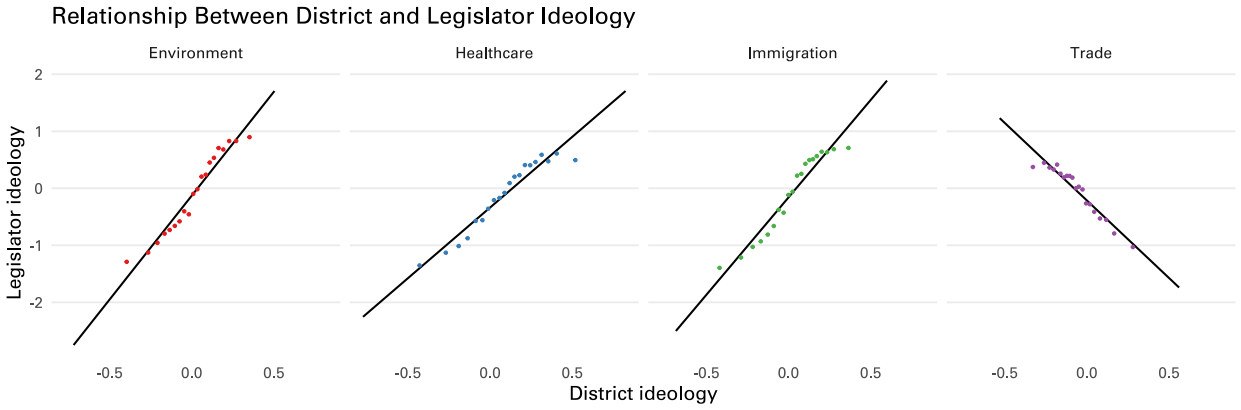


Figure C.1: District and legislator ideology are positively correlated, except for trade

The figure reproduces Figure 2, adding trade as an issue area. Each panel shows the binned scatterplot of the relationship between district ideology and legislator ideology. Constituency ideology is estimated by running an IRT model on CES survey data; legislator ideology is estimated by running an IRT model on roll-call votes. Lines show OLS fits.

Figure C.1 reproduces Figure 2, including trade as an issue area. A striking feature of the ideal point estimates is that voters' ideal points for trade—rotated so that higher values are more pro-trade—are negatively correlated with their representatives' trade ideal points. In this appendix we investigate why this is the case.

Note that the rotation of both sets of ideal points is broadly correct: higher legislative ideal points are associated with more pro-trade stances. We verify the rotation two ways. First, we examine voting on Trade Promotion Authority for the Trans Pacific Partnership in the 114th Congress. The CES asks voters about support for the TPP, which is one of the questions used to estimate trade ideal points. Figure C.2 plots the Senate's roll-calls against senators' trade ideal points and voter support for TPP, and shows a strong positive relationship with the senators' ideal points, but not with voters' preferences. Voter support for TPP in this Congress does correlate with voter support for trade more broadly. Figure C.3 plots state-level voters' trade ideal points against voter support for TPP in the 114th Congress and shows a strong and positive correlation over time.

Second, we examine the relationship between legislators' trade ideal points and ratings by Public Citizen/Global Trade Watch. Public Citizen/Global Trade Watch is a pressure group that in its own words "has led the fight against corporate-rigged 'trade' agreements that provide special powers for Big Pharma to raise medicine prices, promote the outsourcing of jobs to low-wage countries and undermine the food safety and other safeguards on which our families rely."[15] We would therefore expect the legislators rated as sharing Public Citizen's

[15] https://www.citizen.org/article/about-public-citizens-global-trade-watch/

preferences on trade to be more protectionist. Figure C.4 plots Public Citizen's trade ratings against the two measures of trade ideal points used in this paper. Both ideal point measures are negatively correlated with Public Citizen's scores, suggesting we are correct to infer higher ideal points as corresponding to more free-trade positions. The valence of the bills given large and positive discrimination parameters, such as the US Colombia Trade Promotion Agreement and US-Oman Free Trade Agreement, further supports this interpretation (Table B.13).

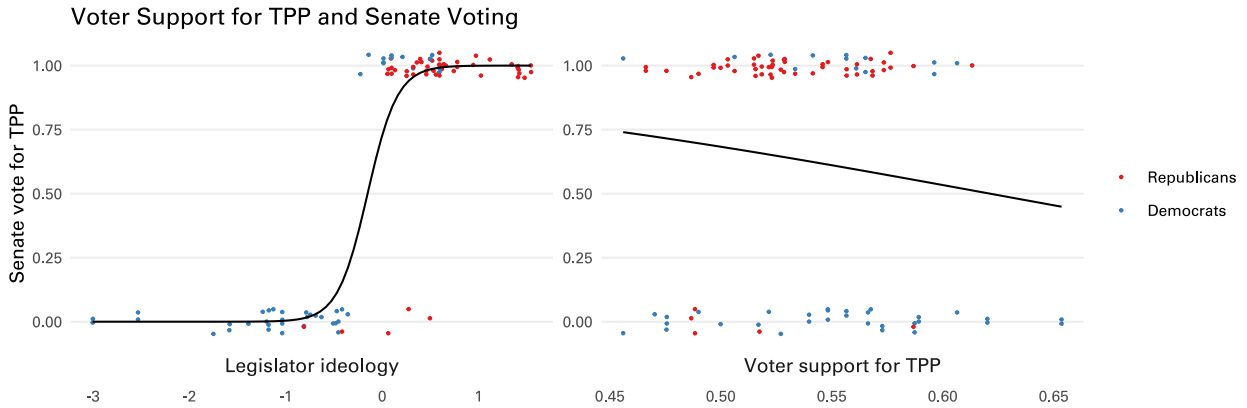


Figure C.2: Senate voting on TPP correlates strongly with legislator ideology, but not with voter support for TPP

This figure plots how a senator voted on HR-2146, which granted Trade Promotion Authority for the Trans Pacific Partnership, in the 114th Congress, against the legislator's issue-specific ideology and voter support for TPP in the CES. Each dot corresponds to a senator, points are jittered to increase legibility. Black lines are logit fits.

While the rotation of the ideal points is on average correct, their interpretation is complicated by the positions of the parties changing on trade during the period we study. As an alternative measure of pro-trade roll-calls, we use Maplight data on the public positions of the US Chamber of Commerce. The Chamber of Commerce is widely considered to be supportive of free trade (Kim and Osgood, 2019). If a legislator votes on trade bills in the direction supported by the Chamber of Commerce, they can reasonably be assumed to be voting on the free trade direction. We calculate these scores at the legislator-congress level. Figure C.5 plots these scores against the legislators' trade ideal points, over time. In the 109th-112th congress, higher ideal points are associated with an increased probability of voting with the Chamber of Commerce. From the 113th Congress onwards, the two are negatively correlated. Despite this shift in partisan orientation towards trade, throughout the period, voter preferences are positively correlated with legislators voting in line with the Chamber of Commerce, though given the sparseness of the data some of these relationships are noisy. Figure C.6 plots the rate of legislators voting with the Chamber of Commerce on trade in each session of Congress against the raw percentage of voters giving the pro-trade answer to CES survey questions in that session of Congress (we use this measure rather than our estimated voter ideal points because it covers a longer period, with the caveat that the voter scores are not comparable over time).

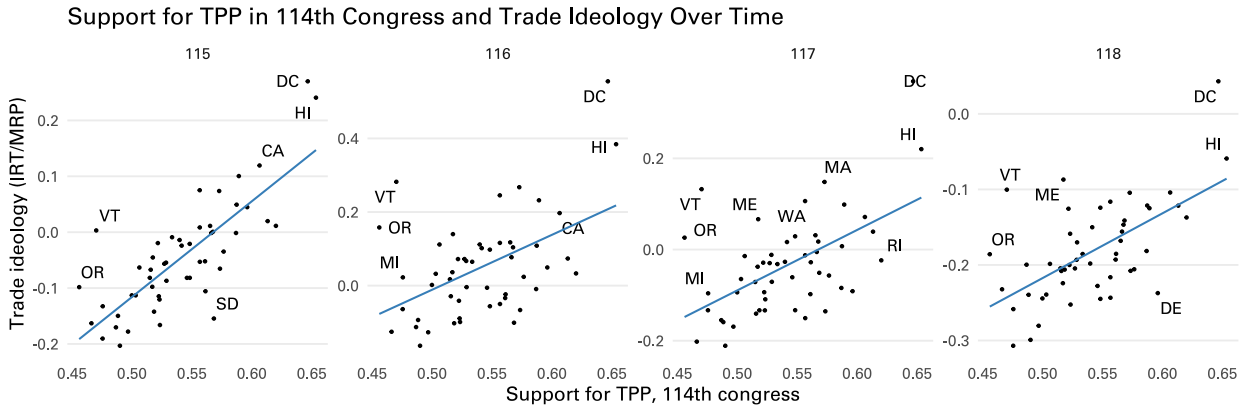


Figure C.3: Voter support for TPP in 114th Congress correlates strongly with subsequent trade ideology

This figure plots average trade ideology among voters by state, estimated by fitting an IRT model to CES data and subsequently using multilevel regression and post-stratification to correct for nonrepresentativeness, in various Congresses, against average support for the Trans Pacific Partnership among voters in the 114th Congress.

The non-relationship between voters' and legislators' trade ideal points explains why, in Figure **??**, we find no relationship between the distance between interest groups and voters, and lobbying. In that figure, we calculate distance by first regressing legislator ideal points against voter ideal points, to place voter ideal points on the same scale as interest group and legislator ideal points. Because the two ideal point measures are negatively correlated, a negative relationship between this distance measure and lobbying would in fact indicate that on trade, interest groups lobby legislators with voters who have the opposite preferences. Figure C.8 shows that, in fact, interest groups tend to lobby legislators who are ideologically close to them. The left panel shows the null result from regressing legislator ideal points against voter ideal points, and then taking the difference between the interest group's ideal point and this fitted value. The middle panel uses the legislator's ideal points, and shows that interest groups do tend to lobby idealogically close legislators. The right panel places interest group and voter ideal points on a common scale by Z-scoring both, the assumption being that the means and variances of the two are the same, and then takes the difference between the Z-scored interest group and voter ideal points. This measure of distance is negatively correlated with lobbying, indicating—consistent with Figure 3—that pro-trade interest groups tend to lobby legislators with pro-trade constituents.

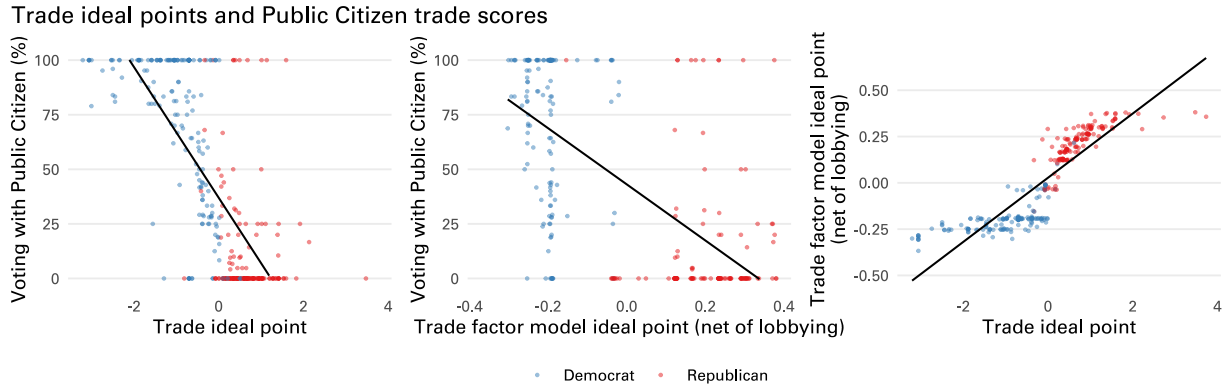


Figure C.4: Trade ideal points are negatively correlated with Public Citizen's "commitment to fair trade and the public interest" scores of legislators

The left panel plots Public Citizen/Global Trade Watch's measure of the percentage of the time that a legislator votes with their preferred position, against the estimated trade ideal point. The center panel plots Public Citizen's scores against the measures of legislative ideal points net of lobbying from a factor model. The right panel plots the two sets of trade ideal points against one another. Each dot is a legislator in the 116th Congress. The black lines are OLS fitted values.

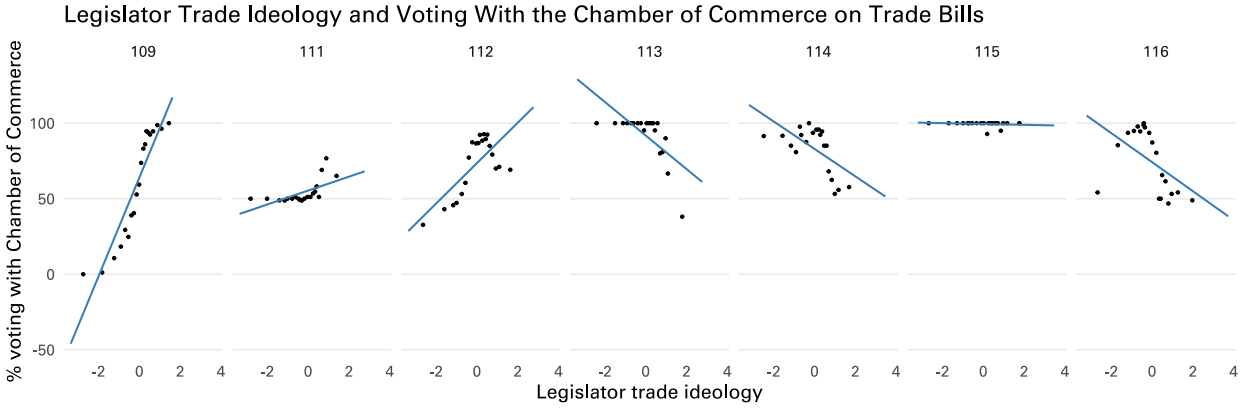


Figure C.5: The relationship between legislator ideal points on trade and voting with the Chamber of Commerce flips over time

Each panel plots the binned average percentage of legislators voting in the direction supported by the U.S. Chamber of Commerce on trade bills against the legislator's estimated ideal point on trade, in a different Congress.

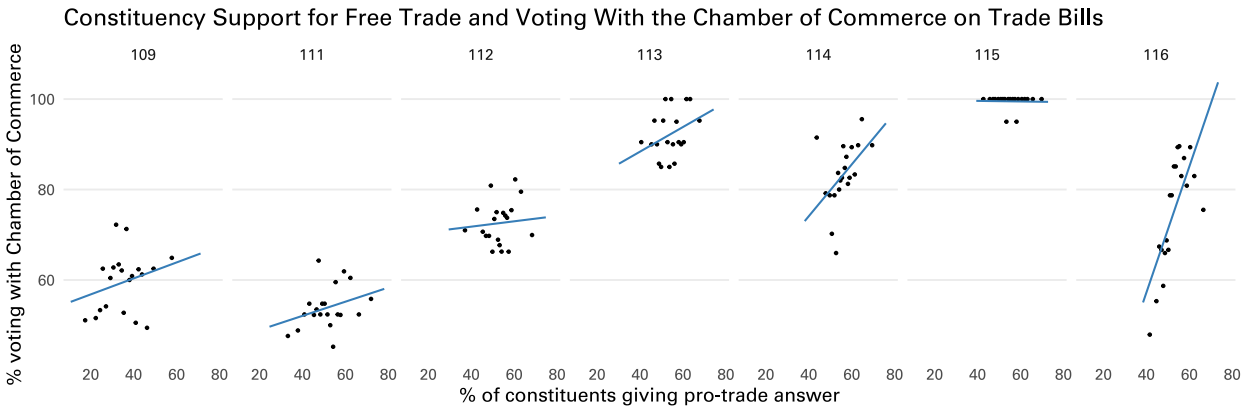


Figure C.6: District support for free trade consistently correlates with legislators voting with the Chamber of Commerce on trade bills, but the relationship strengthens in recent Congresses

Each panel plots the binned average percentage of legislators voting in the direction supported by the U.S. Chamber of Commerce on trade bills against the raw share of survey respondents in the district giving the pro-free trade answer to survey questions about trade.

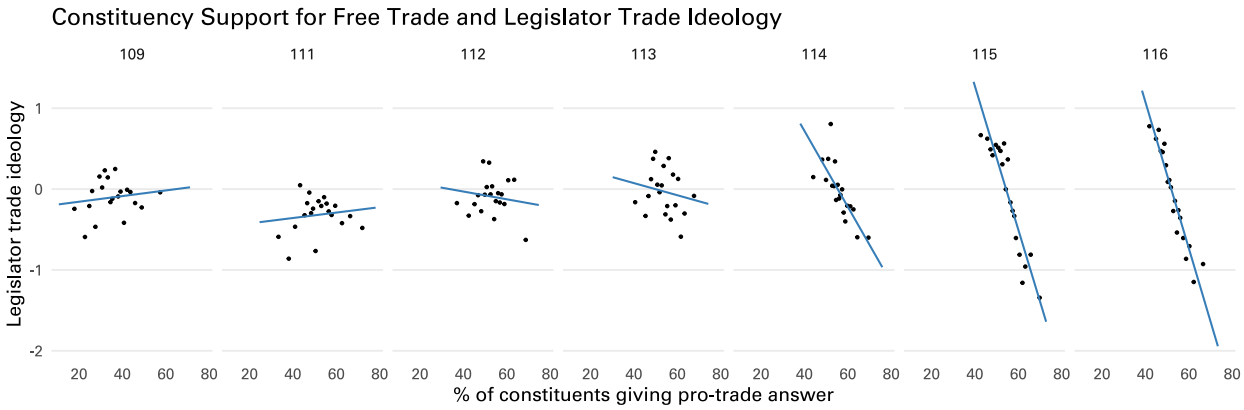


Figure C.7: The relationship between district support for free trade and legislator ideology on trade flips over time

Each panel plots the binned average of legislator trade ideal points against the raw share of survey respondents in the district giving the pro-free trade answer to survey questions about trade.

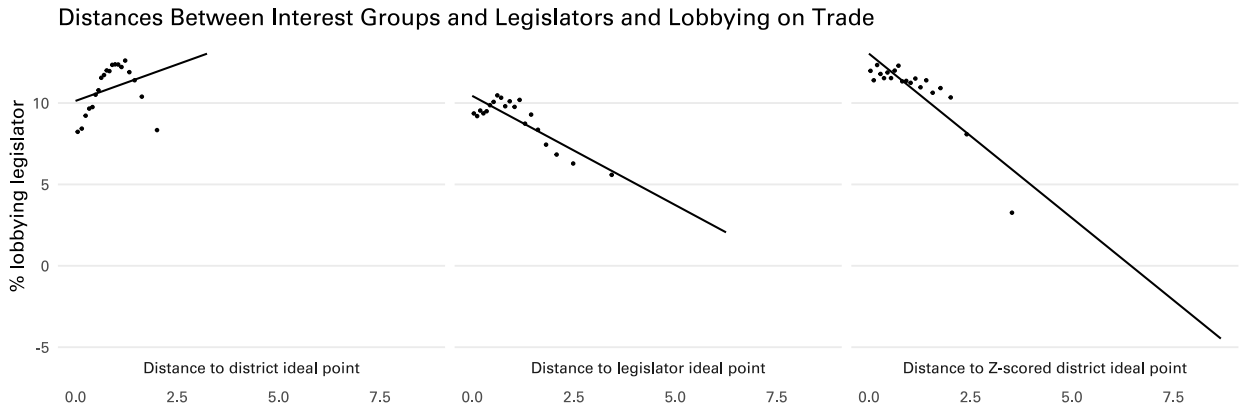


Figure C.8: Interest groups do lobby legislators on trade with aligned constituencies

Each panel plots the binned average percentage of interest groups lobbying a legislator on trade against a different measure of distance between the interest group and the legislator. In the left panel this measure is the difference between the interest group's trade ideal point, and the predicted value from regressing the legislators' trade ideal points against district trade ideal points. In the middle, the difference between the interest group and legislators' ideal points. In the right, the difference between the district ideal point and the interest group's ideal point, where both are Z-scored to (at the interest group or district level) have a mean of 0 and variance of 1. This figure shows that the apparent nonlinear relationship in the left panel is an artifact of the negative relationship between district and legislator ideology.

D VALIDATING LOBBYING CONNECTIONS MEASURE WITH FARA DATA

This appendix presents evidence to validate our measure of lobbying connections as a measure of lobbying. Under the Lobbying Disclosure Act, interest groups have to disclose the lobbyists they hired but not who those lobbyists met with. As a result we do not directly observe lobbying. To circumvent this problem, we construct a measure of lobbying connections, defined as the number of contributions to a legislator by lobbyists hired by the interest group, counting each report as a separate lobbying instance.

When lobbyists act on behalf of foreign entities, however, they do have to disclose the legislators they contact. As a result, for foreign entities, we observe both the lobbyists hired, and the actual meetings that took place. In these cases, we can compare our measure of lobbying connections to contact between a foreign interest group's lobbyists and legislators.

Table D.1 presents the relationship between lobbyist donations and contact patterns. The dependent variable takes a value of 1 if the lobbyist meets or otherwise contacts the legislator, the independent variable takes a value of 1 if the lobbyist ever makes a contribution to the legislator. Model (1) shows that a lobbyist is 11 percentage points more likely to contact a legislator in a given year if they make a contribution. This difference corresponds to a 540% increase over the baseline rate of contact. The other models show this relationship is largely unchanged adjusting for the propensity of individual lobbyists to contact or legislators to be contacted. This table validates our core assumption that contributions by lobbyists relate to lobbying contact.

	Contact with legislator			
	(1)	(2)	(3)	(4)
Donated	0.113*	0.105*	0.106*	0.098*
	(0.028)	(0.022)	(0.027)	(0.021)
Intercept	0.018*			
	(0.004)			
FE: Lobbyist × year		x		x
- Legislator × year			x	x
N	189646	189646	189646	189646
R^2	0.006	0.088	0.032	0.114

This table reports linear probability models of the relationship between lobbyist donations and lobbying contact. An observations is a lobbyist-legislator-year triad. The dependent variable takes a value of 1 if the lobbyist had a FARA-disclosed contact with the legislator in a given year, and the independent variable takes a value of 1 if they donated money to the legislator in that year. (2) and (3) add legislator-by-year fixed effects, (3) lobbyist-by-year. Standard errors clustered by legislator and lobbyist in parentheses. $^{**}p < 0.01$;$^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table D.1: Lobbyists are more likely to contact legislators to whom they donate

Table D.2 directly validates our measure of lobbying connections by regressing the log

number of instances in which lobbyists hired by clients in a particular country meet with a legislator against the log number of lobbying connections. In model (1), on average a 1% increase in lobbying connections corresponds to a 2% increase in the number of contacts. (2) and (3) add fixed effects for the client country-by-year and legislator-by-year. These fixed effects adjust for the propensity for some clients to lobby more in a given year, and for some legislators to be lobbied more. With these fixed effects, there is a roughly one-to-one relationship between lobbying connections and actual contact. We estimate these models by Poisson Pseudo-Maximum Likelihood because there is a large number of zeros in the dependent variable. Note that the sample size drops in (3) because a legislator-year combination in which no lobbying occurs is perfectly predicted by the legislator-year fixed effects. Model (4) adds client country-by-legislator fixed effects and so accounts for the propensity of some clients to specifically target certain legislators. Doing so massively reduces the available variation. However, the relationship is still positive and substantively large.

	Log contact with legislator			
	(1)	(2)	(3)	(4)
Log lobbying connections	1.931*	1.153*	1.149*	0.514*
	(0.144)	(0.124)	(0.129)	(0.194)
FE: Client × year		x	x	x
- Legislator × year			x	x
- Client × legislator				x
N	72424	72424	42632	5207

This table reports regressions of lobbying contact against our measure of lobbying connections. An observations is a client country-legislator-year triad. The dependent variable is the log number of lobbying contacts—meetings, phone calls etc.—between lobbyists hired by the client and the legislator in the year in question. The independent variable is the log (1+) number of lobbying connections, here the number contributions to the legislator in the year from of lobbyists hired. Models (2)–(4) add client country-by-year fixed effects. (3) and (4) add legislator-by-year fixed effects, (4) client-by-legislator fixed effects. Model (1) also includes an intercept. Models are estimated by Poisson pseudo-maximum likelihood. Standard errors clustered by client country and lobbyist in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table D.2: Lobbying connections predict actual lobbying

E REPRESENTATIVENESS AND STRATEGIC DISCLOSURE IN THE MAPLIGHT DATA

The Maplight data provides information on a subset of interest groups. How concerned should we be about the representativeness of this data? Two specific concerns are, first, that the interest groups picked up by Maplight are unrepresentative of the pool of lobbying interest

groups, and, second, that the public positions recorded by Maplight substitute for lobbying or are otherwise unrelated to lobbying.

On the first point, we can examine how, at the interest group-issue-congress level, groups for which we can estimate ideology from Maplight differ from those for which we cannot. Figure E.1 shows that groups in the Maplight data lobby more, on all issues. This form of unrepresentativeness is benign; we are more concerned about the lobbying behavior of groups that lobby more. Figures E.2 and E.3 show that groups in or not in the Maplight data follow similar distributions in terms of the ideologies of the districts of the legislators that they lobby. Table E.1 presents regression estimates of these relationships. Maplight groups lobby much more, but do not tend to lobby representatives of ideologically different districts, except on the environment, where they tend to be slightly more conservative. Maplight groups do not tend to lobby representatives of more or less extreme districts. At the legislator-issue level, lobbying by Maplight groups correlates extremely closely with lobbying by non-Maplight groups. In particular, Figure E.4 shows that for all issues, above a certain size, the relationship between log Maplight lobbying connections and log non-Maplight lobbying connections is essentially one-to-one.

Kim et al. (2025) use a graph neural network to infer the positions of interest groups on bills from lobbying patterns, after first using the texts of lobbying reports and Maplight data to estimate the positions of some groups on some bills. That project provides an alternative source of data on groups' positions. Because this paper's focus is on studying who groups lobby, it is inappropriate to use the Kim et al. (2025) data for our primary analyses for the groups' positions, given that data is also generated by voting patterns. That said, we can use this data to investigate the representativeness of the Maplight data. We estimate issue-specific ideal points using legislators, Maplight interest groups, and interest groups in the Kim et al. (2025) data. We treat groups appearing in the Maplight and Kim et al. (2025) datasets as separate entities. Figure E.5 plots the distributions ideology for these different groups. The distribution of ideology for interest groups that lobby in the Maplight data is similar to that for interest groups in the Kim et al. (2025) data.

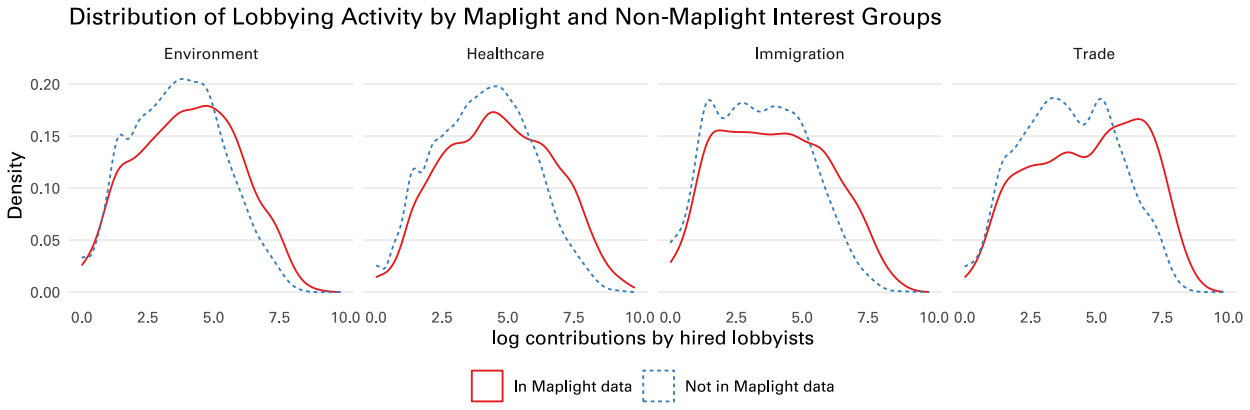


Figure E.1: Interest groups in the Maplight data are larger and lobby more intensively

Each figure plots the distribution of the log number of contributions to legislators by lobbyists hired to lobby on a given issue by an interest group, separating out groups linked to the Maplight dataset for whom we are able to estimate a district-specific ideology.

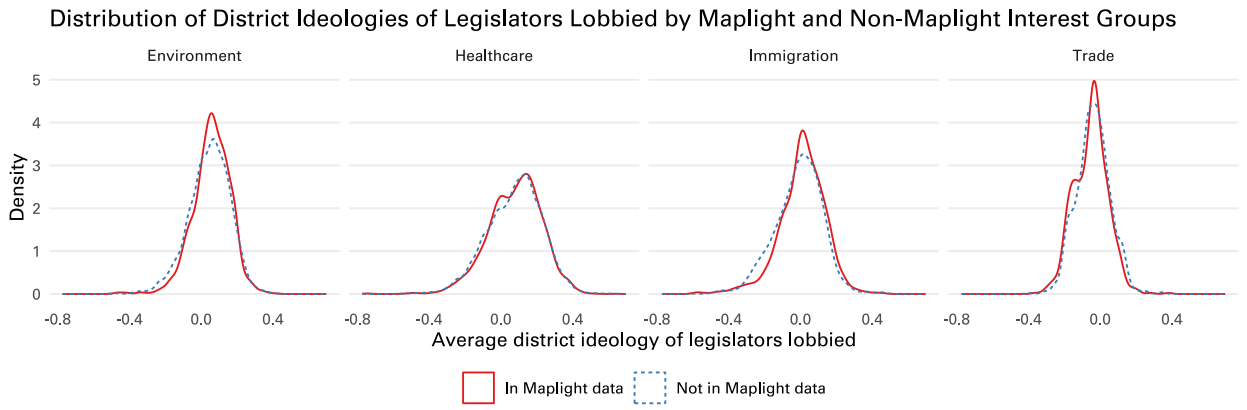


Figure E.2: Interest groups in the Maplight data lobby legislators representing similar districts to those not in the Maplight data

Each figure plots the distribution of the average district ideology of the legislators that a group hires lobbyists connected to, weighted by the number of contributions by hired lobbyists, separating out groups linked to the Maplight dataset for whom we are able to estimate a district-specific ideology.

Another concern is that groups take public positions strategically and that this strategic behavior complicates our analysis. If groups tended to take public stances to influence policy on one issue, and privately lobby on another, then our conclusions about the relationship between group preferences and lobbying would be incorrect. Table E.2 shows this is not the case. At the bill level, if a group takes a public stance on a bill, the probability that it lobbies on it is extremely close to 1. This suggests that public position taking and lobbying are complements, not substitutes.

We also use the Kim et al. (2025) data to investigate this concern. Figure E.6 plots group ideology estimated from Maplight against group ideology estimated from the Kim et al. (2025) data. The two are strongly positively correlated, with a slope close to 1. This positive relationship indicates that groups public positions are closely related to those inferred from their lobbying behavior. It is therefore unlikely that interest groups use public pronouncements to advance positions at odds with their lobbying.

	log contributions		district ideology		district extremism	
	(1)	(2)	(3)	(4)	(5)	(6)
In Maplight data	0.583*		0.002		0.000	
	(0.059)		(0.003)		(0.001)	
× issue = Environment		0.417*		0.014*		−0.002
		(0.095)		(0.004)		(0.002)
× issue = Healthcare		0.617*		−0.004		0.003
		(0.080)		(0.004)		(0.002)
× issue = Immigration		0.608*		0.010		−0.005
		(0.140)		(0.007)		(0.003)
× issue = Trade		0.727*		−0.003		−0.001
		(0.136)		(0.003)		(0.002)
FE: Issue x congress	x	x	x	x	x	x
N	28245	28245	28245	28245	28245	28245
R^2	0.038	0.038	0.376	0.376	0.253	0.253

This table presents evidence of differences in lobbying behavior between interest groups linked to the Maplight data and those not linked. Data is at the interest group-congress-issue level. In models (1) and (2), the dependent variable is the log number of contributions to legislators by lobbyists hired to lobby by the interest group on the issue in the specific congress. In (3) and (4), it is the average district ideology of legislators lobbied by the interest groups, weighted by the number of contributions by lobbyists hired, in (5) and (6) the average absolute value of district ideology of legislators lobbied. The independent variable is whether the group is in the Maplight data, in even-numbered models, this is allowed to vary by issue. All models include issue-by-congress fixed effects. Standard errors clustered by interest group in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table E.1: Differences between Maplight and non-Maplight interest groups

	Lobbies on bill		
	(1)	(2)	(3)
Supports bill	0.968*	0.942*	0.880*
	(0.006)	(0.014)	(0.012)
Opposes bill	0.971*	0.941*	0.808*
	(0.005)	(0.009)	(0.027)
FE: Issue x congress	x		
- Issue x congress x group		x	x
- Issue x bill			x
N	64503793	64503793	64503793
R^2	0.091	0.126	0.201

This table presents evidence of the relationship between interest group public position-taking (in the Maplight data) and lobbying. Data is at the issue-bill-interest group level, with bills nested in congresses. The sample consists of groups in the Maplight data who lobby on the issue in question in the congress in question, and bills lobbied on with the relevant issue code during the congress in question. The dependent variable is 1 if the interest group lobbies on the bill, 0 otherwise, the independent variables measure if the interest group is coded as publicly supporting or opposing the bill. Model (1) includes issue-congress fixed effects, (2) and (3) issue-congress-group fixed effects, (3) issue-bill fixed effects. OLS estimates, with standard errors clustered by interest group in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table E.2: Interest groups lobby on the bills they express public positions regarding

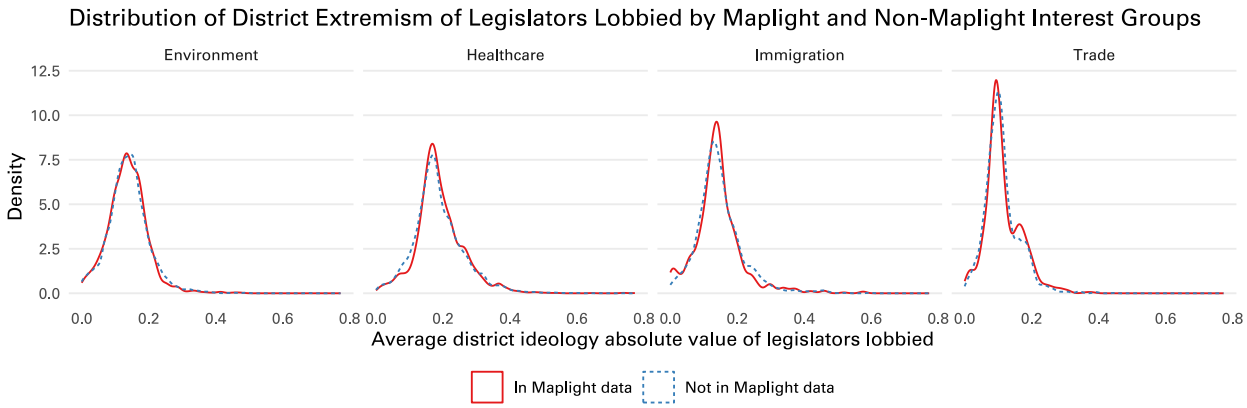


Figure E.3: Interest groups in the Maplight data lobby legislators representing similarly extreme districts to those not in the Maplight data

Each figure plots the distribution of the average absolute value of district ideology of the legislators that a group hires lobbyists connected to, weighted by the number of contributions by hired lobbyists, separating out groups linked to the Maplight dataset for whom we are able to estimate a district-specific ideology.

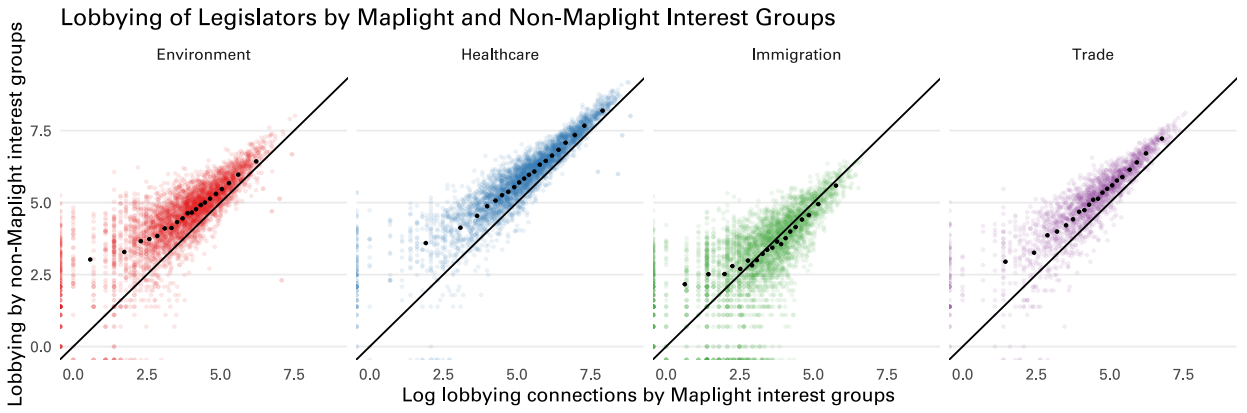


Figure E.4: Legislators are lobbied similarly by interest groups in or not in the Maplight data

Data is at the legislator-issue-congress level. The x axis is the number of contributions by lobbyists hired by Maplight interest groups to lobby on the issue. The y axis is the log number of contributions by lobbyists hired by non-Maplight interest groups. Black lines show the 45 degree line, black dots are binned averages.

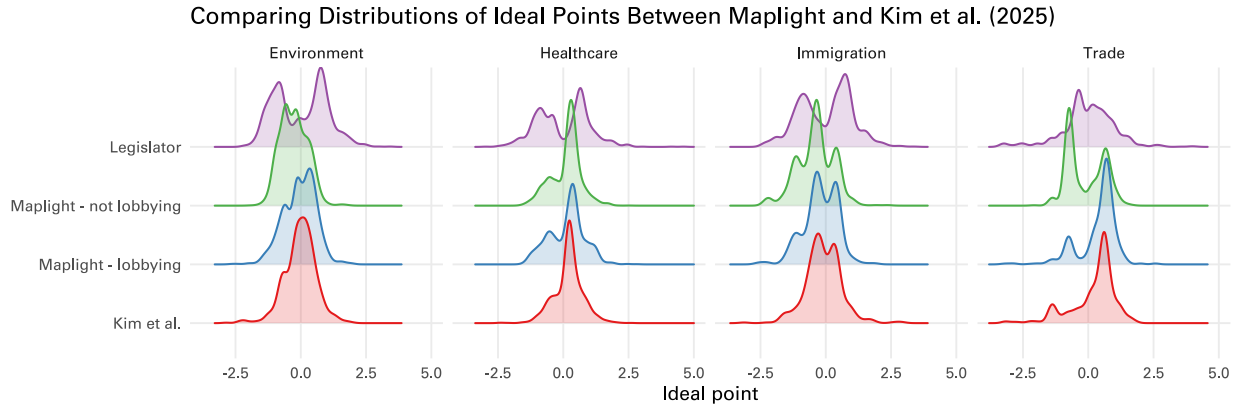


Figure E.5: Ideal points estimated from Maplight data have similar distributions to those estimated from Kim et al. (2025) data

Data is at the interest group-issue level. We jointly estimate issue-specific ideal points using roll-calls, Maplight positions, and positions from Kim et al. (2025). An interest group in the Maplight data is treated as a separate entity to one in the Kim et al. (2025) dataset. The figure shows the densities on each issue area of ideal points for legislators, Maplight groups not linked to lobbying data, Maplight groups linked to lobbying data, and groups in Kim et al. (2025).

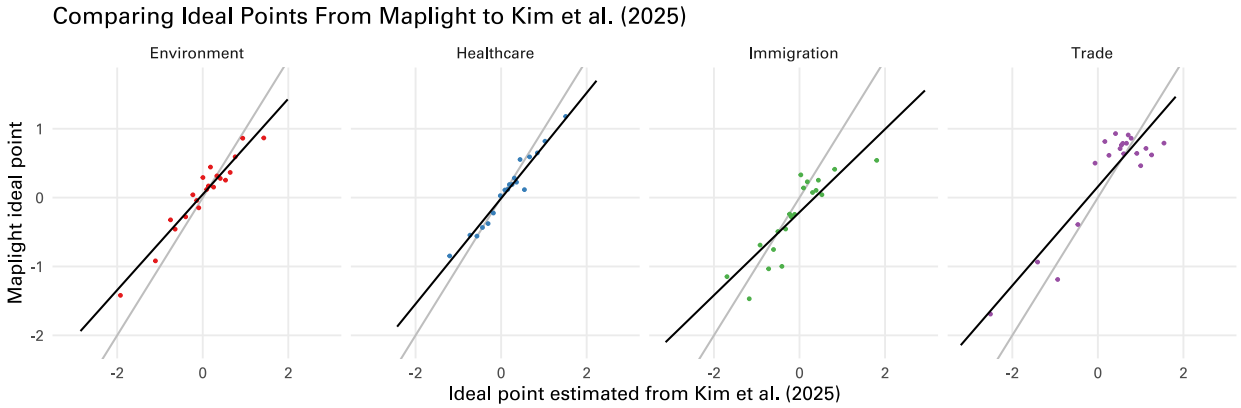


Figure E.6: Ideal points estimated from Maplight data strongly correlate with those estimated from Kim et al. (2025) data

Data is at the interest group-issue level. We jointly estimate issue-specific ideal points using roll-calls, Maplight positions, and positions from Kim et al. (2025). An interest group in the Maplight data is treated as a separate entity to one in the Kim et al. (2025) dataset. The x axis is the ideal point for the group in inferred from positions in the Kim et al. (2025) dataset, the y axis, its ideal point inferred from Maplight positions. Gray lines show the 45 degree line, black lines are OLS fits, dots are binned averages.

F SELECTION INTO LOBBYING

We study the lobbying activities of interest groups in the Maplight dataset that lobby and hire lobbyists who donate to legislators. This strategy entails two levels of selection: not all interest groups lobby, and not all interest groups that lobby hire connected lobbyists. This appendix quantifies how the sample of interest groups changes at each stage. This exercise differs from that in Appendix E, which examines selection into the Maplight dataset among interest groups that lobby. Here we study the opposite process: selection into lobbying among groups in Maplight. Our core findings are that lobbying interest groups tend to be more conservative and more politically active, and, less likely to be charities or advocacy groups. Among interest groups that lobby, hiring a connected lobbyist is best predicted by the lobbying intensity of the group. After controlling for the number of lobbying reports files, we do not find clear evidence of group ideology or characteristics predicting whether a group hires a connected lobbyist.

Figure F.1 plots the distribution of ideology among interest groups, broken out between those that do not lobby (6,562 interest group-issue combinations), those that lobby but do not hire a lobbyist connected to a legislator (355), and those that hire a connected lobbyist (1,721). Groups that hire connected lobbyists are more conservative than lobbying groups without connected lobbyists on the environment and trade, but there are no clear ideological differences on healthcare and immigration. Non-lobbying groups fall somewhere between the two groups.

Table F.1 examines the first layer of selection, regressing lobbying activity on group characteristics, among the sample of interest groups with measurable ideology on a given issue in the Maplight dataset. The dependent variable is whether the group lobbies congress on the relevant issue, regardless of whether it hires a connected lobbyist. Groups that lobby are more conservative and are less likely to be charity or advocacy groups.[16] Groups that are more politically active—as inferred from the number of positions that they take in the MapLight dataset—are more likely to lobby. These pattern help explain why lobbying groups are more conservative on the environment and trade than others. These are issue areas where business is more conservative (i.e. opposed to environmental regulation and pro-free trade) than NGOs and advocacy groups, and businesses and business associations are more likely to engage in lobbying.

Table F.2 examines the second layer of selection: whether groups that lobby hire connected lobbyists. The dependent variable is an indicator that the interest group hires a connected lobbyist on the issue in question. The sample comprises interest groups that lobby congress on the issue. Raw correlations indicate that more conservative groups are more likely to hire connected lobbyists, while charities and business associations are less likely to. However, these correlations largely reflect groups that are more politically active—as inferred from Maplight position taking, lobbying reports filed, and spend on lobbying—being more likely to hire connected lobbyists. Controlling for the log number of lobbying reports, there are not clear correlates of hiring a connected lobbyist.

[16] inferred by whether the group's name contains the terms "foundation," "center," "centre," "advocacy," "network," "nonprofit," "action," "project," "league," "environment," "conservation," "rights," "policy," "watch" or "committee."

	Lobbying on issue				
	(1)	(2)	(3)	(4)	(5)
Ideology	0.077*				0.084*
	(0.009)				(0.008)
Absolute value of ideology		0.047*			−0.072*
		(0.014)			(0.013)
Business association			0.075*		0.012
			(0.013)		(0.012)
Charity/advocacy group			−0.098*		−0.085*
			(0.013)		(0.012)
Labor union			0.058		0.013
			(0.067)		(0.064)
University			0.091*		0.106*
			(0.034)		(0.032)
Log Maplight positions				0.140*	0.154*
				(0.005)	(0.005)
FE: Issue	x	x	x	x	x
N	8638	8638	8638	8638	8638
R^2	0.032	0.021	0.038	0.139	0.173

This table presents evidence of predictors of filing a lobbying report reporting lobbying congress on the issue area, among interest groups for which we estimate ideology from Maplight positions. Data is at the interest group-issue level. The dependent variable takes a value of 1 if the group lobbies congress, including if it does not hire a lobbyist connected to a legislator, 0 if not. The independent variable in (1) is the ideology estimated from the group's positions, (2) the absolute value of that ideology, (3) the type of group it is, as inferred from the words in the group's name, the reference category is individual businesses, in (4) the log number of bills on the issue that the group takes a position on. (5) includes all these predictors. All models include issue fixed effects. Standard errors clustered by interest group in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table F.1: Predictors of lobbying in the Maplight data

	Hiring lobbyist who donates to a legislator						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ideology	0.044*						0.014
	(0.015)						(0.015)
Absolute value of ideology		−0.017					−0.016
		(0.024)					(0.024)
Business association			−0.070*				−0.031
			(0.020)				(0.020)
Charity/advocacy group			−0.139*				−0.031
			(0.039)				(0.038)
Labor union			−0.101				−0.073
			(0.092)				(0.086)
University			0.011				−0.003
			(0.036)				(0.034)
Log Maplight positions				0.015*			−0.017*
				(0.007)			(0.008)
Log lobbying reports					0.103*		0.076*
					(0.007)		(0.013)
Log lobbying spend						0.051*	0.017*
						(0.004)	(0.007)
FE: Issue	x	x	x	x	x	x	x
N	2076	2076	2076	2076	2076	1995	1995
R^2	0.011	0.005	0.018	0.007	0.137	0.109	0.139

This table presents evidence of predictors of hiring a lobbyist connected to a legislator, among those filing relevant lobbying reports and appearing in the Maplight data. Data is at the interest group-issue level. The dependent variable takes a value of 1 if the group hires a connected legislaor, 0 if not. The independent variable in (1) is the ideology estimated from the group's positions, (2) the absolute value of that ideology, (3) the type of group it is, as inferred from the words in the group's name, the reference category is individual businesses, in (4) the log number of bills on the issue that the group takes a position on, in (5) the log number of LDA reports filed on behalf of the group for the issue that report lobbying congress, in (6) the spending reported in these reports. (7) includes all these predictors. All models include issue fixed effects. Standard errors clustered by interest group in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table F.2: Predictors of hiring connected lobbyists among those in the Maplight data lobbying

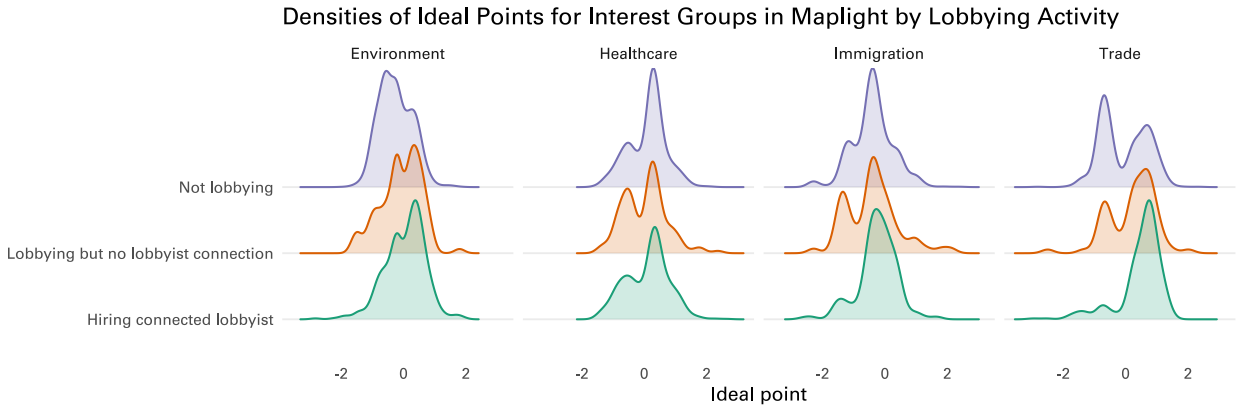


Figure F.1: Interest groups in Maplight that lobby are more conservative on the environment and trade

This figure plots the distribution of issue-specific ideology for interest groups on each issue. The top row shows interest groups that do not file an LDA report mentioning the issue in question over the period post 2008. The middle row shows interest groups that do lobby, but do not hire a lobbyist connected to a legislator. The bottom row shows interest groups that lobby and hire a connected lobbyist.

G Model Extensions and Additional Estimates

G.1 *Model Extension: Microfounding The Ideology Weights*

A key part of the empirical application of the model involves estimating the relationship between district ideology and legislator ideal points. Here we show that this relationship,

$$\lambda_i = \gamma v_i + (1-\gamma)\xi_i,$$

where v_i is district ideology, can be derived from an extended version of the model in which legislators make tradeoffs between their constituents' preferences and their own idiosyncratic preferences. In this extended model, γ, the coefficient on district ideology, corresponds to the weight that legislators' place on voter preferences when deciding how to vote.

Legislator i has private ideal point ξ_i, and voter k in the district represented by i has ideal point v_{ki}. The average ideal point of voters in i's district is v_i. Legislator i's district has N_i constituents.

Legislators vote on a number of bills. Bill j would establish policy p_j, replacing status quo s_j. The utility that voter k receives if the bill passes is $u^p_{kij} = -(v_{ki} - p_j)^2$, and if the bill fails, she receives her utility from the status quo policy: $u^s_{kij} = -(v_{ki} - s_j)^2$.

Legislators care about their voters' preferences and their own policy preferences, and are influenced by lobbying. The utility legislator i receives from bill j passing is

$$u^p_{ij} = -(1-\gamma)(\xi_i - p_j)^2 + \frac{\gamma}{N_i}\sum_{k=1}^{N_i} u^p_{kij} + \beta f_{ij}$$

where f_{ij} is the log number of groups that lobby i *for* the bill. $\gamma \in (0,1)$ is the relative weight

the legislator places on the average utility of her constituents, $\frac{1}{N_i}\sum_{k=1}^{N_i} u^p_{kij}$, relative to her own preferences. The utility she receives if the bill fails is

$$u^s_{ij} = -(1-\gamma)(\xi_i - s_j)^2 + \frac{\gamma}{N_i}\sum_{k=1}^{N_i} u^s_{kij} + \beta a_{ij} + \varepsilon_{ij},$$

where a_{ij} is the log number of groups that lobby *against* the bill, and $\varepsilon_{ij} \sim G$ is an idiosyncratic preference shock that legislator i has for the status quo on issue j.

i votes for the bill if she receives more utility if it passes than if it fails:

$$\begin{aligned} P(i \text{ votes for } j) = P\Bigg(& \varepsilon_{ij} < -(1-\gamma)\left((\xi_i - p_j)^2 + (\xi_i - s_j)^2\right) \\ & - \frac{\gamma}{N_i}\sum_{k=1}^{N_i}\left((v_{ki} - p_j)^2 - (v_{ki} - s_j)^2\right) + \beta(f_j - a_j)\Bigg) \\ & = G\left(2\left(\gamma v_i + (1-\gamma)\xi_i\right)(p_j - s_j) + s_j^2 - p_j^2 + \beta(f_j - a_j)\right). \end{aligned}$$

Note that for $\lambda_i = (\gamma v_i + (1-\gamma)\xi_i)$, this expression is isomorphic to that derived in the main text.

Under the assumption that ξ_i is uncorrelated with v_i, $\mathbb{E}[(\xi_i - \bar{\xi})v_i] = 0$, a regression of λ_i on v_i estimates γ. This assumption is reasonable if one thinks of ξ_i as capturing the component of legislator ideology that is not influenced by voters, that is, if voters systematically elect legislators who share their preferences and so vote in line with them, but if there are idiosyncratic deviations from that tendency.

A regression of R_i against v_i then estimates the welfare weight that legislators appear to place on voter preferences, inclusive of lobbying distorting their behavior.

All these derivation assume that voter preferences are measured on the same scale as legislator preferences. In our context that assumption is not satisfied. Nonetheless, the difference in coefficients between regressions of legislative ideology incorporating lobbying (R_i) and legislative ideology netting out lobbying (λ_i) against district opinion still captures a difference in implied welfare weights.

Instead of observing v_i, we observe a measure of voter preferences on a different scale, *District ideology*$_i$. We assume the following linear relationship:

$$v_i = \delta \, \textit{District ideology}_i + e_i,$$

where e_i is the component of v_i uncorrelated with m_i. Inserting this identity, we have

$$\lambda_i = \gamma\delta \, \textit{District ideology}_i + \gamma e_i + (1-\gamma)\xi_i.$$

Regressing λ_i on *District ideology*$_i$, the coefficient on *District ideology*$_i$ corresponds to $\gamma\delta$ and the intercept and error correspond to $\gamma e_i + (1-\gamma)\xi_i$, a mix of components of voter preferences not captured by *District ideology*$_i$, and the legislator's preferences. Regressing R_i and λ_i against *District ideology*$_i$, the δ component would be the same across specifications; the only difference would be in γ, the weight that legislators appear to place on voter welfare.

G.2 *Decomposing Estimated Effects*

LEGISLATOR-LEVEL To gain more intuition about the variation driving our estimates of the legislator-level effects of lobbying, note that the loss function being minimized for λ_i is

$$\sum_{i=1}^{N}\sum_{j=1}^{J}\left(y_{ij}-\beta\left(f_{ij}-a_{ij}\right)-\alpha_j-\lambda_i F_j\right)^2.$$

Taking the derivative with respect to λ_i gives the following first order condition

$$-2\sum_{j=1}^{J}\left(y_{ij}-\beta\left(f_{ij}-a_{ij}\right)-\alpha_j-\lambda_i F_j\right)F_j=0$$

which we can rearrange to give

$$\lambda_i=\frac{\sum_{j=1}^{N}\left(y_{ij}-\beta\left(f_{ij}-a_{ij}\right)-\alpha_j\right)F_j}{\sum_{j=1}^{J}F_j^2}.$$

If i's propensity to vote for a bill, net of average support for the bill and the effects of lobbying $(y_{ij}-\beta\left(f_{ij}-a_{ij}\right)-\alpha_j)$ is positively correlated with the direction of the bill (F_j), then i's ideology (λ_i) is more positive. Applying the same derivation to the estimation of R_i, which uses the estimated values of F_j and α_j from estimating λ_i, gives

$$R_i=\frac{\sum_{j=1}^{J}\left(y_{ij}-\alpha_j\right)F_j}{\sum_{j=1}^{J}F_j^2}.$$

The difference between the two, which isolates the effect of lobbying, is then

$$R_i-\lambda_i=\frac{\beta\sum_{j=1}^{J}\left(f_{ij}-a_{ij}\right)F_j}{\sum_{j=1}^{J}F_j^2}.$$

If i tends to be lobbied more in favor $(f_{ij}-a_{ij})$ of bills which shift the status quo up $(F_j>0)$, the difference between R_i and λ_i will be more positive.

BILL-LEVEL The average difference between legislator ideal points inclusive and net of lobbying is the average over legislators:

$$\frac{1}{N}\sum_{i=1}^{N}\left(R_i-\lambda_i\right)=\frac{\beta}{N}\sum_{i=1}^{N}\frac{\sum_{j=1}^{J}\left(f_{ij}-a_{ij}\right)F_j}{\sum_{j=1}^{J}F_j^2}=\underbrace{\frac{\beta}{\sum_{j=1}^{J}F_j^2}}_{\text{issue-specific constant}}\sum_{j=1}^{J}\underbrace{\sum_{i=1}^{N}\frac{\left(f_{ij}-a_{ij}\right)F_j}{N}}_{\text{directional effect of lobbying on bill } j}.$$

This difference can thus be decomposed into a sum over bills of the average over legislators of lobbying for or against the bill $(f_{ij}-a_{ij})$, multiplied by the direction and dispersion of the bill (F_j). These derivations assume that all legislators vote on all bills. With differences in

legislator presence the equivalent expression is

$$\beta \sum_{j=1}^{N} \sum_{i=1}^{N} \frac{(f_{ij} - a_{ij})\, F_j \mathbf{1}_{\{i \text{ votes on } j\}}}{N \sum_{j=1}^{J} F_j^2 \mathbf{1}_{\{i \text{ votes on } j\}}}.$$

To measure the bill-level effect on the average difference betwee ideal points inclusive and net of lobbying, we calculate the average of

$$\frac{(f_{ij} - a_{ij})\, F_j}{\sum_{j=1}^{J} F_j^2}$$

for legislators who vote on bill j.

Tables G.1–G.4 give the average values of this parameter for each bill, as well as the factor loading for the bill (F_j) and the average net lobbying on the bill ($\frac{1}{N}\sum_{i=1}^{N} f_{ij} - a_{ij}$). We see that the protectionist average effect of lobbying on trade is due to lobbying in favor of the US Export Finance Agency Act of 2019, the Export-Import Bank Reform and Reauthorization Act of 2015, and the American Manufacturing Competitiveness Act of 2016 (though note there are few bills on trade in this period). The leftwards net effect of healthcare lobbying is due to lobbying for bills like the Children's Health Insurance Program Reauthorization Act of 2009, which extended the Children's Health Insurance Program to cover certain children of legal immigrants, the Family Smoking Prevention and Tobacco Control Act, and lobbying against the American Health Care Act of 2017 which would have partially repealed the Affordable Care Act.

Table G.1: Bills ordered by average contribution to difference in legislator ideal points with and without lobbying, for environment

Code	Bill	F_j	$\frac{1}{N}\sum_{i=1}^{N}(f_{ij} - a_{ij})$	$\frac{1}{N}\sum_{i=1}^{N}\frac{(f_{ij}-a_{ij})F_j}{\sum_{j=1}^{J}F_j^2}$
hr5019-111	Home Star Energy Retrofit Act of 2010	-1.201	0.157	-0.004
hr2454-111	American Clean Energy and Security Act of 2009	-1.182	0.156	-0.004
hr9-116	Climate Action Now Act	-1.258	0.104	-0.003
hr3585-111	Solar Technology Roadmap Act	-0.891	0.07	-0.001
sjres37-112	A joint resolution to disapprove a rule promulgated by the Administrator of the Environmental Protection Agency relating to emission standards for certain steam generating units.	1.321	-0.015	-0.001
hr2417-112	Better Use of Light Bulbs Act	1.259	-0.049	-0.001
hr4480-112	Domestic Energy and Jobs Act	1.294	-0.045	-0.001
hr2126-113	Energy Efficiency Improvement Act of 2014	-0.181	0.336	-0.001
hr6190-112	Asthma Inhalers Relief Act of 2012	1.029	-0.051	-0.001

hjres36-115	Providing for congressional disapproval under chapter 8 of title 5, United States Code, of the final rule of the Bureau of Land Management relating to Waste Prevention, Production Subject to Royalties, and Resource Conservation.	1.281	-0.031	0
⋮	⋮	⋮	⋮	⋮
hr2218-113	Coal Residuals Reuse and Management Act of 2013	1.136	0.415	0.005
hr3826-113	Electricity Security and Affordability Act	1.297	0.393	0.005
hr5682-113	To approve the Keystone XL Pipeline.	1.192	0.454	0.005
sjres26-111	A joint resolution disapproving a rule submitted by the Environmental Protection Agency relating to the endangerment finding and the cause or contribute findings for greenhouse gases under section 202(a) of the Clean Air Act.	1.322	0.094	0.006
hr2250-112	EPA Regulatory Relief Act of 2011	1.167	0.473	0.007
hr2401-112	Transparency in Regulatory Analysis of Impacts on the Nation Act of 2011	1.297	0.442	0.007
hr535-116	PFAS Action Act of 2019	-1.127	-0.183	0.007
hr1941-116	Coastal and Marine Economies Protection Act	-1.211	-0.201	0.008
hr2467-117	PFAS Action Act of 2021	-1.158	-0.146	0.009
sjres23-114	A joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of a rule submitted by the Environmental Protection Agency relating to Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units.	1.282	0.477	0.012

sjres24-114	A joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of a rule submitted by the Environmental Protection Agency relating to Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units.	1.297	0.558	0.014

Table G.2: Bills ordered by average contribution to difference in legislator ideal points with and without lobbying, for healthcare

Code	Bill	F_j	$\frac{1}{N}\sum_{i=1}^{N}(f_{ij}-a_{ij})$	$\frac{1}{N}\sum_{i=1}^{N}\frac{(f_{ij}-a_{ij})F_j}{\sum_{j=1}^{J}F_j^2}$
hr2-111	Children's Health Insurance Program Reauthorization Act of 2009	-1.43	0.804	-0.033
hr1256-111	Family Smoking Prevention and Tobacco Control Act	-1.017	0.661	-0.019
s610-117	Protecting Medicare and American Farmers from Sequester Cuts Act	-1.558	0.405	-0.011
hr1628-115	American Health Care Act of 2017	1.573	-0.397	-0.006
hr987-116	Strengthening Health Care and Lowering Prescription Drug Costs Act	-1.608	0.228	-0.005
hr3922-115	Continuing Community Health And Medical Professional Programs to Improve Our Nation, Increase National Gains, and Help Ensure Access for Little Ones, Toddlers, and Hopeful Youth by Keeping Insurance Delivery Stable Act of 2017	1.553	-0.321	-0.005
hr1425-116	Patient Protection and Affordable Care Enhancement Act	-1.618	0.212	-0.005
hr2-114	Medicare Access and CHIP Reauthorization Act of 2015	-0.237	1.184	-0.004
hjres43-115	Joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of the final rule submitted by Secretary of Health and Human Services relating to compliance with title X requirements by project recipients in selecting subrecipients	1.669	-0.16	-0.004

hr2339-116	Protecting American Lungs and Reversing the Youth Tobacco Epidemic Act of 2020	-1.49	0.189	-0.004
⋮	⋮	⋮	⋮	⋮
hr849-115	Protecting Seniors Access to Medicare Act	1.029	0.166	0.002
hr2667-113	Authority for Mandate Delay Act	1.5	0.139	0.002
hr6082-115	Overdose Prevention and Patient Safety Act	0.416	0.522	0.002
hr2-112	Repealing the Job-Killing Health Care Law Act	1.66	0.125	0.003
hr1190-114	Protecting Seniors' Access to Medicare Act of 2015	1.586	0.2	0.003
hr4-110	Medicare Prescription Drug Price Negotiation Act of 2007	-1.501	-0.129	0.003
hr3590-111	Patient Protection and Affordable Care Act	-1.802	-0.061	0.004
hr3-116	Elijah E. Cummings Lower Drug Costs Now Act	-1.62	-0.22	0.005
hr5-112	Protecting Access to Healthcare Act	1.567	0.272	0.005
hr1215-115	Protecting Access to Care Act of 2017	1.525	0.384	0.007
hr3762-114	To provide for reconciliation pursuant to section 2002 of the concurrent resolution on the budget for fiscal year 2016.	1.684	0.639	0.014

Table G.3: Bills ordered by average contribution to difference in legislator ideal points with and without lobbying, for immigration

Code	Bill	F_j	$\frac{1}{N}\sum_{i=1}^{N}(f_{ij}-a_{ij})$	$\frac{1}{N}\sum_{i=1}^{N}\frac{(f_{ij}-a_{ij})F_j}{\sum_{j=1}^{J}F_j^2}$
hr4760-115	Securing America's Future Act of 2018	1.156	-0.632	-0.03
s744-113	Border Security, Economic Opportunity, and Immigration Modernization Act	-1.218	0.059	-0.009
hr6-117	American Dream and Promise Act of 2021	-1.269	0.18	-0.008
hr6-116	American Dream and Promise Act of 2019	-1.273	0.169	-0.008
hr4038-114	American Security Against Foreign Enemies Act of 2015	1.02	-0.137	-0.007
hr3004-115	Kate's Law	1.183	-0.135	-0.007
hr3003-115	No Sanctuary for Criminals Act	1.284	-0.115	-0.006

hr1603-117	Farm Workforce Modernization Act of 2021	-1.147	0.141	-0.006
hr3012-112	Fairness for High-Skilled Immigrants Act of 2011	-0.092	0.589	-0.004
hr1044-116	Fairness for High-Skilled Immigrants Act of 2020	-0.339	0.138	-0.002
⋮	⋮	⋮	⋮	⋮
s3157-117	Bridging the Gap for New Americans Act	-0.307	0	0
s3245-112	A bill to extend by 3 years the authorization of the EB-5 Regional Center Program, the E-Verify Program, the Special Immigrant Nonminister Religious Worker Program, and the Conrad State 30 J-1 Visa Waiver Program.	-0.008	0	0
s504-115	An act to permanently authorize the Asia-Pacific Economic Cooperation Business Travel Card Program	-0.01	0	0
s5168-117	Energy Security and Lightering Independence Act of 2022	-0.139	0	0
sjres46-117	A joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of the rule submitted by the Department of Justice and the Department of Homeland Security relating to Procedures for Credible Fear Screening and Consideration of Asylum, Withholding of Removal, and CAT Protection Claims by Asylum Officers.	1.334	0	0
sjres54-116	A joint resolution relating to a national emergency declared by the President on February 15, 2019.	-1.231	0	0
hr6136-115	Border Security and Immigration Reform Act of 2018	0.654	0.007	0
hr3401-116	Emergency Supplemental Appropriations for Humanitarian Assistance and Security at the Southern Border Act, 2019	0.548	0.024	0.001
hr158-114	Visa Waiver Program Improvement and Terrorist Travel Prevention Act of 2015	0.153	0.263	0.002

hr5038-116	Farm Workforce Modernization Act of 2019	1.253	0.153	0.008
hr6429-112	STEM Jobs Act of 2012	1.15	0.548	0.047

Table G.4: Bills ordered by average contribution to difference in legislator ideal points with and without lobbying, for trade

Code	Bill	F_j	$\frac{1}{N}\sum_{i=1}^{N}(f_{ij}-a_{ij})$	$\frac{1}{N}\sum_{i=1}^{N}\frac{(f_{ij}-a_{ij})F_j}{\sum_{j=1}^{J}F_j^2}$
hr4863-116	United States Export Finance Agency Act of 2019	-2.107	0.365	-0.063
hr597-114	Export-Import Bank Reform and Reauthorization Act of 2015	-1.444	0.448	-0.055
hr4923-114	American Manufacturing Competitiveness Act of 2016	-0.036	1.556	-0.005
hr2142-115	An act to improve the ability of U.S. Customs and Border Protection to interdict fentanyl, other synthetic opioids, and other narcotics and psychoactive substances that are illegally imported into the United States, and for other purposes	0.003	0	0
hr4324-115	Strengthening Oversight of Iran's Access to Finance Act	2.028	0	0
hr4476-117	DHS Trade and Economic Security Council Act of 2021	-0.867	0	0
hr5841-115	Foreign Investment Risk Review Modernization Act of 2018	-0.012	0	0
hr6968-117	Ending Importation of Russian Oil Act	-0.103	0	0
hr7108-117	Suspending Normal Trade Relations with Russia and Belarus Act	-0.044	0	0
hr8351-117	Formula Act	-0.062	0	0
hres1168-117	Reaffirming the economic partnership between the United States and the Caribbean nations and recognizing the need to strengthen trade and investment between the United States and the Caribbean nations, our Third Border.	-0.921	0	0
hr5788-115	STOP Act of 2018	0.751	0.277	0.018
hr5430-116	United States-Mexico-Canada Agreement Implementation Act	0.428	1.382	0.05

G.3 *Regression-Based Estimates*

As an alternative, less parametric way to study how lobbying affects the alignment between voters and legislators, we can regress roll-call votes on district ideology, with and without controls for lobbying. Specifically, we estimate the following regressions:

As an alternative way to study how lobbying affects representation, we can run the following two regressions:

$$y_{ij} = \theta \,\text{district ideology}_{ik(j)} + \beta \,\text{lobbied}_{ij} + \alpha_j + \varepsilon_{ij} \tag{6}$$

and

$$y_{ij} = \theta' \,\text{district ideology}_{ik(j)} + \alpha'_j + \varepsilon'_{ij},$$

where y_{ij} is 1 if legislator i votes in the Republican direction on bill j, 0 if not, lobbied_{ij} is a measure of net lobbying of i in the Republican direction on j, $\text{district ideology}_{ij}$ is i's district's ideology on issue k of which bill j is an example, α_j and α'_j are bill fixed effects, and ε_{ij} is the error term. θ is then a measure of the relationship between district ideology and legislative voting, net of the effects of being lobbied. θ' is a measure of that relationship inclusive of the effects of being lobbied. The difference $\theta' - \theta$ thus provides a measure of how lobbying changes the relationship between district preferences and legislative behavior.

Table G.5 shows the resulting estimates, using both OLS and logit estimators. The slope of the relationship between district ideology and legislative voting is less steep when controlling for lobbying. This difference indicates that lobbying likely serves to push legislators' votes in the direction of their voters' preferences. Table H.8 shows this result is robust to including roll-call votes and lobbying on trade.

Note however that this estimation strategy requires stronger and less plausible assumptions about roll-call voting than the main estimation strategy in Section 5. Take the model from Section 5. Suppose that legislators' ideal points λ_i can be written as a linear function of district ideology and an unobserved component uncorrelated with district preferences: $\lambda_i = \delta \,\text{district ideology}_i + \xi_i$. Such a functional form could emerge if legislators care about their voters' own quadratic preferences, and have their own ideal point orthogonal to those of their voters, as in Appendix G.1. Inserting these into (3) gives

$$P(i \text{ votes for } j) = (\delta \,\text{district ideology}_i + \xi_i)F_j + \beta\,(f_{ij} - a_{ij}) + \alpha_j.$$

If the bills have beeen recoded so that voting for the bill means voting in the Republican direction, this equation is equivalent to (6), if the magnitude of F_j does not vary across bills. This assumption is strong and unlikely to hold in the data; Tables B.10–B.13 indicate that there is substantial variation across bills in how far bills divide left from right-wing legislators. The substantive interpretation of F_j is the distance between the bill proposed and status quo policy $F_j = 2(p_j - s_j)$; there is no reason ex-ante to assume that would not vary across bills.

In addition, the estimate of β, the effect of lobbying, requires stronger assumptions in this specification, though that difference would not affect conclusions about the relationship between district preferences and legislative voting. Specifically, this estimation assumes lobbying is uncorrelated with the component of legislative ideology not attributable to district ideology (ξ_i). If lobbying has no effect on legislative voting, but interest groups target

	Vote in R direction					
	(1)	(2)	Difference (x100)	(3)	(4)	Difference (x100)
District ideology	0.885*	0.883*	0.208*	9.372*	9.360*	1.193*
	(0.027)	(0.027)	[0.125; 0.296]	(0.398)	(0.397)	[0.195; 2.102]
log net lobbying in R direction		0.042*			0.246*	
		(0.006)			(0.045)	
Estimator	OLS	OLS		Logit	Logit	
FE: Bill	x	x		x	x	
N	165505	165505		165505	165505	
R^2	0.484	0.485				
Pseudo-R^2				0.519	0.520	

This table presents evidence of the relationship between district ideology and voting behavior. Data is at the legislator-bill level. The dependent variable is coded as 1 if the legislator votes in the Republican direction, inferred using the discrimination parameters from estimating ideal points, 0 if they vote against the Republican direction. The independent variable is district ideology, estimated by fitting an IRT model to survey data and adjusting with MRP. Models (2) and (4) controls for the log number of groups lobbying the legislator that support the Republican position on the bill, minus the log number lobbying that oppose the Republican position. Models (1) and (2) are estimated by OLS, (3) and (4) are logits. The columns between (2) and (3) and after (4) give the differences in the coefficients on district ideology, multiplied by 100 for legibility. A positive difference indicates that lobbying strengthens the relationship between district ideology and legislative voting. Standard errors clustered by state in parentheses. For the difference, we report the 95% percentile confidence interval, calculated with a fractional random weight bootstrap clustered by state. $^*p < 0.05$; $^\dagger p < 0.1$.

Table G.5: Regression evidence of lobbying aligning legislator behavior with voter preferences

legislators who share their preferences for reasons other than district ideology, this estimation strategy would estimate a positive β coefficient. Consistent with that account, the coefficient on lobbying in Table G.5 model (2) is larger than those in Table 3.

H ROBUSTNESS OF RESULTS TO INCLUDING TRADE

This appendix reproduces results from Sections 4–6 of the main text, including trade as an issue area in addition to the environment, healthcare, and immigration. The key takeaway is that the aggregate results are unchanged, despite difficulties in measuring ideology consistently for trade. Most tables and figures in previous appendices report results including trade separately. This appendix also shows that those which do not are also robust to adding trade.

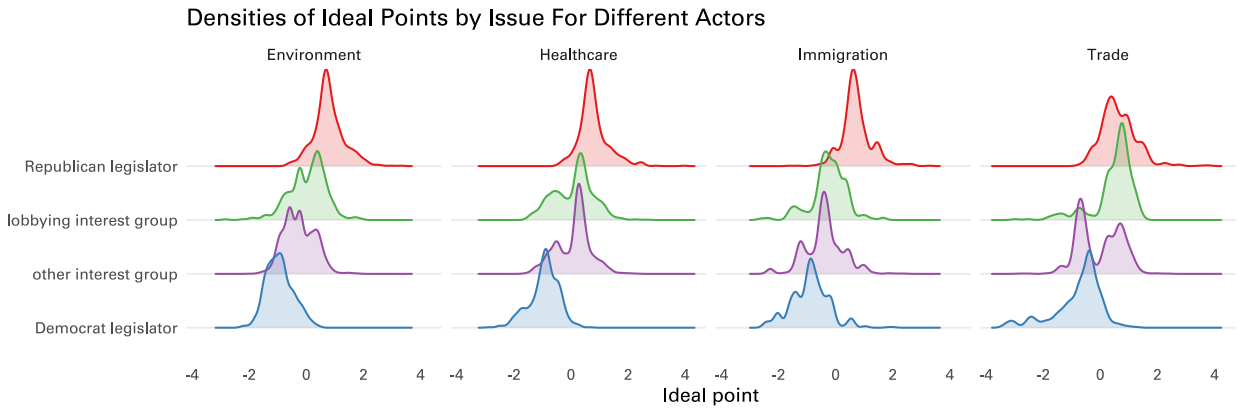


Figure H.1: Legislators are more extreme than interest groups, with trade

This figure reproduces Figure 1, adding trade as an issue area.

	Average ideology of groups lobbying					
	(1)	(2)	(3)	(4)	(5)	(6)
District ideology	0.240*	0.231*	0.203*	0.363*	0.081†	0.288*
	(0.020)	(0.027)	(0.049)	(0.069)	(0.044)	(0.139)
Model	OLS	TSLS	OLS	TSLS	OLS	TSLS
FE: Issue x period	x	x	x	x	x	x
- Issue x district			x	x	x	x
- Issue x legislator					x	x
First stage F-stat		132.1		162.7		29.7
N	13935	13930	13935	13930	13935	13930
R^2	0.585	0.578	0.676	0.675	0.771	0.771

This table replicates Table 2 adding trade as an additional issue. The table presents evidence of the relationship between issue-specific district ideology and the ideology of groups lobbying a legislator, instrumenting for district ideology with ideology predicted based on district demographics. Data is at the congress-legislator-issue level. The dependent variable is the average issue-specific ideal point for groups hiring lobbyings to lobby on the issue who have contributed to the legislator, weighted by the number of such lobbyist contributions. The indepenent variable is district ideology estimated from CES data. Even-numbered models instrument using the weighted average of district ideology for different demographic groups in the first period used in the analysis, weighted by the share of those groups in the district population. All models include issue-congress fixed effects. (3)–(6) add fixed effects for the district (e.g. Utah 1st) interacted with the issue in question, (5)–(6) add legislator-issue fixed effects. Standard errors clustered by state in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table H.1: Changes to district ideology due to demographics correlate with changes in the ideology of groups lobbying the representative, including trade

	Average ideology of groups lobbying													
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
District ideology	0.188*	0.346*	0.209*	0.434*	0.202*	0.390*	0.201*	0.358*	0.180*	1.284*	0.176*	0.354*	0.157*	1.342†
	(0.042)	(0.084)	(0.053)	(0.074)	(0.049)	(0.067)	(0.051)	(0.068)	(0.046)	(0.478)	(0.077)	(0.148)	(0.071)	(0.736)
Model	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS
FE: Issue x period	x	x	x	x	x	x	x	x	x	x	x	x	x	x
- Issue x district	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Controls: % College x issue	x	x							x	x			x	x
- % Black x issue			x	x					x	x			x	x
- % Hispanic x issue					x	x			x	x			x	x
- % Male x issue							x	x	x	x			x	x
- District x issue trends											x	x	x	x
First stage F-stat		339.2		102.4		393.5		143.3		10.7		53.5		20.7
N	13930	13930	13930	13930	13930	13930	13930	13930	13930	13930	13935	13930	13930	13930
R^2	0.676	0.676	0.676	0.675	0.676	0.676	0.676	0.675	0.677	0.676	0.750	0.749	0.750	0.750

This table shows that the results of Table A.6 are robust to adding trade as an issue area. The table reports the relationship between issue-specific district ideology and the ideology of groups lobbying a legislator, instrumenting for district ideology with values predicted from district demographics. The data are at the congress-legislator-issue level. The dependent variable is the average issue-specific ideal point of groups lobbying the legislator on the issue in question. The indepenent variable is district ideology estimated from CES data. Even-numbered models use an instrumental variable equal to the weighted average of ideological positions of different demographic groups in the first period of the analysis, weighted by each group's population share in the district. All models include issue-by-congress and district-by-issue fixed effects, as in Table H.1, models (3) and (4). Models (1) and (2) control for the share of college graduates in the district, allowing the slope of that relationship to vary by issue area, (3) and (4) do the same for the share of Black residents, (5) and (6) for the share of Hispanic residents, (7) and (8) for the share of male residents. (9) and (10) control for all of these demographic shares, allowing each coefficient to vary by issue area. (11) and (12) adds district-by-issue time trends. (13) and (14) include all these additional controls. Standard errors clustered by state in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table H.2: Robustness of the relationship between district ideology and the ideology of groups lobbying the representative, including trade

	Ideology of groups lobbying (5+ positions)				(10+ positions)				(20+ positions)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
District ideology	0.260*	0.251*	0.239*	0.447*	0.232*	0.244*	0.195*	0.451*	0.258*	0.245*	0.153*	0.318*
	(0.027)	(0.049)	(0.053)	(0.072)	(0.034)	(0.057)	(0.056)	(0.089)	(0.042)	(0.077)	(0.063)	(0.131)
Model	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS
FE: Issue x period	x	x	x	x	x	x	x	x	x	x	x	x
- Issue x district			x	x			x	x			x	x
First stage F-stat		134.5		170.1		132.3		154.5		122.9		118.4
N	13346	13342	13346	13342	12638	12634	12638	12634	10843	10839	10843	10839
R^2	0.571	0.564	0.665	0.665	0.593	0.589	0.686	0.685	0.515	0.510	0.632	0.632

This table reproduces Table A.7, including trade as an issue area. This table reports the relationship between issue-specific district ideology and the ideology of groups lobbying a legislator, instrumenting for district ideology with values predicted from district demographics. The data are at the congress-legislator-issue level. The dependent variable is the average issue-specific ideal point of groups lobbying the legislator on the issue in question, restricting to those interest groups with 5 or more recorded positions on the issue used to estimate ideal points in (1)–(4), 10 or more in models (5)–(8), and 20 or more in (9)–(12). The indepenent variable is district ideology estimated from CES data. Even-numbered models use an instrumental variable equal to the weighted average of ideological positions of different demographic groups in the first period of the analysis, weighted by each group's population share in the district. All models include issue-by-congress fixed effects. Models (3), (4), (7), (8), (11) and (12) add district-by-issue fixed effects. Standard errors clustered by state in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table H.3: Robustness of the relationship between district ideology and the ideology of groups lobbying the representative, restricting to groups with many stated positions and including trade

Issue	$\beta \times 100$	95% CI
Environment	0.900	[0.393, 1.476]
Healthcare	1.818	[1.267, 2.455]
Immigration	0.701	[-0.519, 1.97]
Trade	3.050	[1.791, 4.433]

This table reproduces Table 3, adding trade as an issue area. The table reports estimates of β, the effect of net lobbying by groups supporting a bill on voting for that bill. Estimates are from an interactive fixed effects model. We estimate separate βs for different issues. Coefficients are multiplied by 100 to aid interpretation. 95% confidence intervals are calculated using the percentile bootstrap method, clustered by state.

Table H.4: Estimated effects of net lobbying on voting for a bill, including trade

Legislator ideal point:	Inclusive of lobbying (R_i)		Net of lobbying (λ_i)		Difference $(R_i - \lambda_i) \times 100$	
	(1)	(2)	(3)	(4)	(5)	(6)
District ideology	1.426^*		1.425^*		0.090^*	
	$[1.367; 1.536]$		$[1.366; 1.536]$		$[0.031; 0.140]$	
× issue = Environment		1.804^*		1.802^*		0.230^*
		$[1.718; 1.932]$		$[1.714; 1.929]$		$[0.090; 0.393]$
× issue = Healthcare		1.291^*		1.291^*		0.018
		$[1.209; 1.418]$		$[1.209; 1.418]$		$[-0.048; 0.084]$
× issue = Immigration		1.864^*		1.864^*		0.033
		$[1.774; 2.015]$		$[1.775; 2.014]$		$[-0.033; 0.132]$
× issue = Trade		-0.963^*		-0.963^*		0.044
		$[-1.083; -0.860]$		$[-1.083; -0.861]$		$[-0.150; 0.261]$
FE: Issue-period	x	x	x	x	x	x
N	15751	15751	15751	15751	15751	15751
R^2	0.370	0.465	0.370	0.465	0.379	0.383

This table reproduces Table 4 including rollcall votes and lobbying on trade. The table presents evidence of the relationship between district ideology and legislator ideal points, estimated using factor models. Data is at the legislator-congress-issue level. In models (1) and (2), the dependent variable is the legislator's revealed preference ideal point inclusive of the effects of lobbying (R_i), in (3)–(4) the legislator's ideal point net of lobbying (λ_i), in (5)–(6) the difference between them ($R_i - \lambda_i$), multiplied by 100 for legibility. The independent variable is the district's ideology, in even-numbered models, this is allowed to vary by issue. All models include issue-by-congress fixed effects. 95% percentile bootstrap confidence intervals clustered by state in brackets. * Null hypothesis value outside the confidence interval.

Table H.5: Lobbying aligns legislator behavior with voter preferences, including trade

	% rollcalls classified correctly	95% CI
With lobbying	74.391	[70.547, 75.569]
Without lobbying	74.339	[70.499, 75.529]
Difference	0.052	[0.019, 0.094]

This table reproduces Table 5, adding trade as an issue area. The table reports the results of simulating roll-call votes from data generating processes including or excluding lobbying and then predicting these roll-calls using district ideology on the issue in question. The first row gives the percentage of roll-calls correctly predicted by a logit using district ideology, where roll-calls are generated in a data generating process that includes lobbying, as in Equation (3). The second row uses roll-calls generated by the same data generating process but setting lobbying to zero. The third row gives the difference between the two. The right column gives 95% bootstrap percentile confidence intervals, clustered by state.

Table H.6: Roll-call votes from a data generating process including lobbying are slightly more easily predicted by district ideology, including trade

	Log issue-specific legislative effectiveness					
	(1)	(2)	(3)	(4)	(5)	(6)
Log lobbying connections						
on issue	0.066*	0.050*	0.044*	0.145*	0.090*	0.047*
	(0.005)	(0.005)	(0.006)	(0.010)	(0.008)	(0.010)
on other issues				−0.091*	−0.047*	−0.004
				(0.009)	(0.009)	(0.010)
FE: Issue x congress	x	x	x	x	x	x
- Issue x district		x	x		x	x
- Issue x legislator			x			x
N	15724	15724	15724	15724	15724	15724
R^2	0.031	0.280	0.503	0.040	0.281	0.503

This table replicates Table 6, adding trade as an issue area. This table shows the relationship between being lobbied on different issues and issue-specific legislative effectiveness. Data are at the congress-legislator-issue level. The dependent variable is the legislator's log issue-specific legislative effectiveness score. The independent variable in models (1)–(3) is the log number of lobbying connections on that issue and period, that is, the number of contributions made to the legislator by lobbyists hired to lobby on that issue, (4)–(6) include the same but for the other three issues. All models include issue-by-congress fixed effects, (2)–(3) and (5)–(6) add issue-by-district fixed effects, (3) and (6) issue-by-legislator fixed effects. Standard errors clustered by legislator in parentheses. $^*p < 0.05$; $^\dagger p < 0.1$.

Table H.7: Being lobbied on a given issue correlates with legislative effectiveness, while lobbying on other issues is negatively associated with legislative effectiveness, including trade as an issue area

	Vote in R direction					
	(1)	(2)	Difference (x100)	(3)	(4)	Difference (x100)
District ideology	0.857*	0.855*	0.202*	8.875*	8.863*	1.214*
	(0.026)	(0.026)	[0.122; 0.287]	(0.367)	(0.366)	[0.22; 2.105]
log net lobbying in R direction		0.043*			0.257*	
		(0.006)			(0.042)	
Estimator	OLS	OLS		Logit	Logit	
FE: Bill	x	x		x	x	
N	172147	172147		172147	172147	
R^2	0.482	0.483				
Pseudo-R^2				0.511	0.512	

This table reproduces Table G.5, including trade as an issue area. The table presents evidence of the relationship between district ideology and voting behavior. Data is at the legislator-bill level. The dependent variable is coded as 1 if the legislator votes in the Republican direction, inferred using the discrimination parameters from estimating ideal points, 0 if they vote against the Republican direction. The independent variable is district ideology, estimated by fitting an IRT model to survey data and adjusting with MRP. Models (2) and (4) controls for the log number of groups lobbying the legislator that support the Republican position on the bill, minus the log number lobbying that oppose the Republican position. Models (1) and (2) are estimated by OLS, (3) and (4) are logits. The columns between (2) and (3) and after (4) give the differences in the coefficients on district ideology, multiplied by 100 for legibility. A positive difference indicates that lobbying strengthens the relationship between district ideology and legislative voting. Standard errors clustered by state in parentheses. For the difference, we report the 95% percentile confidence interval, calculated with a fractional random weight bootstrap clustered by state. $^*p < 0.05$; $^\dagger p < 0.1$.

Table H.8: Regression evidence of lobbying aligning legislator behavior with voter preferences, including trade

Table H.9: Being lobbied on a given issue correlates with both bill sponsorship and the number of bills becoming laws, including trade

	Log bills introduced				Log bills passed into law			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log lobbying connections on issue	0.083*	0.172*	0.070*	0.062*	0.009*	0.014*	0.009*	0.013*
	(0.010)	(0.017)	(0.012)	(0.020)	(0.002)	(0.003)	(0.003)	(0.004)
on other issues		−0.105*		0.010		−0.006†		−0.004
		(0.017)		(0.021)		(0.004)		(0.004)
Log bills introduced					0.034*	0.034*	0.032*	0.032*
					(0.003)	(0.003)	(0.004)	(0.004)
FE: Issue x congress	x	x	x	x	x	x	x	x
- Issue x district	x	x	x	x	x	x	x	x
- Issue x legislator			x	x			x	x
N	15724	15724	15724	15724	15724	15724	15724	15724
R^2	0.467	0.468	0.682	0.682	0.188	0.188	0.350	0.350

This table reproduces Table A.13, adding trade as an issue area. The table shows the relationship between being lobbied on two components of legislative effectiveness: bills introduced and bills that successfully become laws. Data are at the congress-legislator-issue level. The dependent variable in models (1)–(4) is the log number of bills introduced, giving substantive bills 5 times the value of commemorative bills, and substantive and significant bills 10 times the value, as in the calculation of legislative effectiveness scores. The dependent variable in models (5)–(8) is the log number of laws enacted, weighting the content as in the other models. The independent variable is the log number of lobbying connections on that issue and period, even-numbered models also include this variable for the other issues. All models include issue-by-congress and issue-by-district fixed effects, (3), (4), (7) and (8) add issue-by-legislator fixed effects. Models examining laws enacted control for the log number of bills introduced (the dependent variable in models (1)–(4)). Standard errors clustered by legislator in parentheses. $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

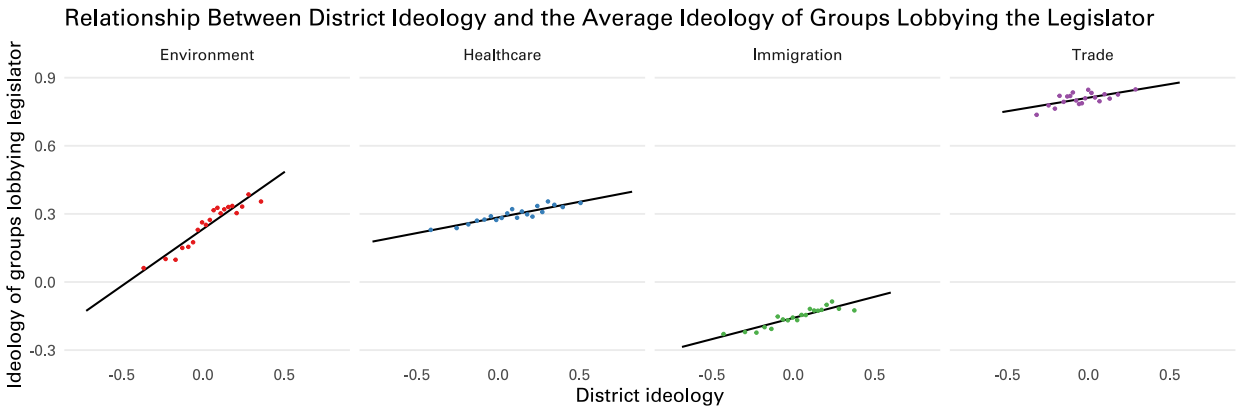


Figure H.2: Representatives of more liberal districts tend to be lobbied by more liberal interest groups, including trade

This figure reproduces Figure 3, adding trade as an issue area. Each figure shows the binned scatterplot of the relationship between district ideology and the average ideology of groups lobbying the legislator, weighted by the number of contributions made by lobbyists hired by each group. Constituency ideology is estimated by running an IRT model on CES survey data; interest group ideology is estimated by running an IRT model on stances on roll-call votes. Note that the district and interest group ideologies are not on the same scale: interest group ideology is scaled so that legislator ideal points have mean 0 and standard deviation 1. Lines show OLS fits.

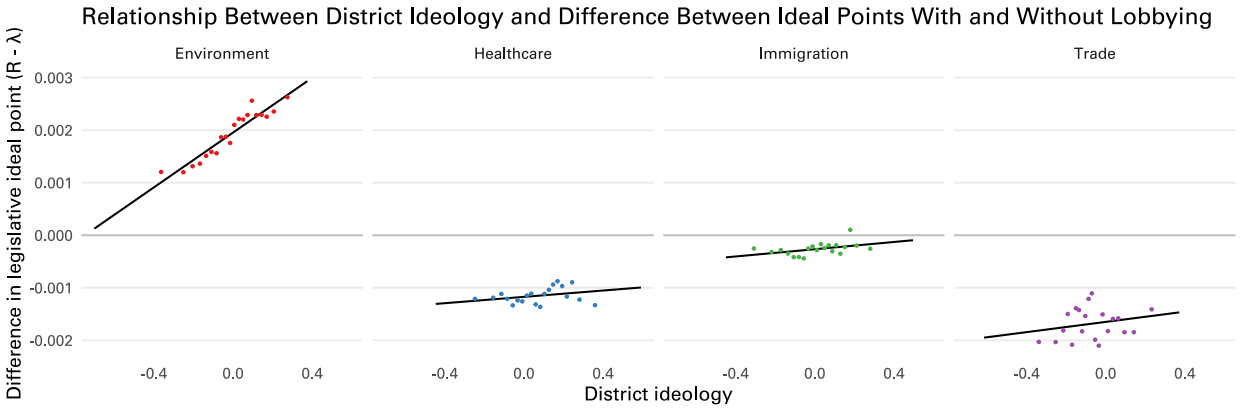


Figure H.3: District ideology and difference in legislator ideal point due to lobbying, adding trade

This figure reproduces Figure 4, adding trade as an issue area. Each figure shows the binned scatterplot of the relationship between district ideology and the difference in legislator ideology attributable to lobbying. The x axis is district ideology measured by running a factor model on CES data. The y axis is the legislator's ideology inclusive of lobbying, minus their ideology net of lobbying. Both are estimated by running an interactive fixed effects model on roll-calls, controlling for lobbying by groups supportive or opposed to the bill; the measure net of lobbying is the estimated factor loading, the measure inclusive of lobbying is the factor loading one would estimate given the same voting behavior but assuming no lobbying.

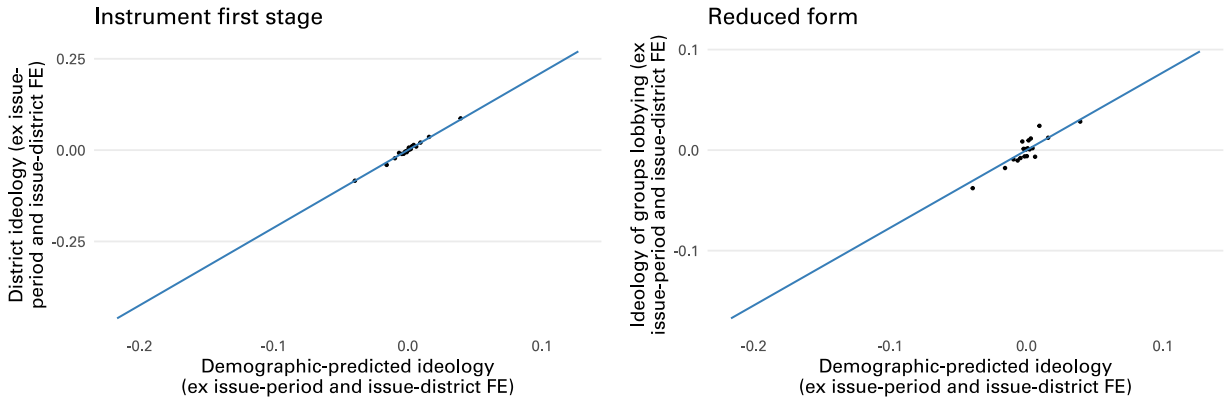


Figure H.4: First stage and reduced form for instrumental variables estimation, including trade

This figure reproduces Figure A.5, adding trade as an issue area. The left panel plots the relationship between district ideology and district ideology predicted based on demographic mix, after residualizing out issue-period and issue-district fixed effects, as in Table H.1 model (4). This shows that the relationship between the instrument and independent variable is positive and monotonic. The right panel plots the relationship between the ideology of groups lobbying the legislator and district ideology predicted based on demographic mix, again after residualizing out fixed effects. It shows that shifts in district ideology due to demographics correlate with shifts in the ideology of interest groups lobbying a legislator. The figures show binned scatterplots and OLS fits.