The Green Machine: Environmental Constituents and Congressional Voting

Sarah E. Anderson
University of California, Santa Barbara
Bren School of Environmental Science and Management
Department of Political Science
4510 Bren Hall
Santa Barbara, CA 93106-5131
sanderson@bren.ucsb.edu
Abstract

This paper quantifies the impact of environmentally-concerned constituents, as measured by original data on environmental group membership by district, on congressional voting. The new measure of constituency interest enables us to assess the role of constituents in a particular policy area for the first time. In general, members of Congress vote more pro-environmental when they have more members of environmental groups in their districts. However, there is a differential impact based on the party of the member of Congress, enhancing our understanding of representation. Moderate Republicans vote more pro-environmental than their moderate Democratic counterparts, but Democrats respond more strongly than Republicans to environmental group membership in their districts.

Acknowledgements

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If representatives are responsive to their constituents, then voting records should reflect constituent preferences. The connection is never perfect because constituent preferences are not always clear, votes are not always definitive, and representatives can ignore constituents while voting their own preferences. However, the link between constituent principals and representative agents is a key component of representative democracy and has been the focus of many theoretical and empirical studies (see, for example, Miller and Stokes 1963, Pitkin 1967, Stimson, MacKuen, and Erickson 1995, and Bartels 2005).

This study focuses more closely on one issue area, the environment. Clearly, this issue has grown in importance to voters over the last two decades. Moreover, a growing number of congressional votes consider environmental legislation and studies have found that the environmental, although a secondary issue by some accounts, can be used by politicians to attract voters (List and Sturm 2006). To assess the degree of congruence between voter preferences and representatives’ voting behavior, most studies have relied on survey data or presidential vote in the district to measure constituency opinion. This is then related to a measure of representatives’ behavior, typically roll call voting (for examples see Clinton 2006, Canes-Wrone, Brady, and Cogan 2002). However, these measures are generally broad-brush left-right measures of preferences and behavior.

Focusing on the environment results in several novel contributions to the study of representation. First, this paper uses a new measure of constituency interest, namely district-specific membership in environmental groups, which is more specific than a left-right measure
and captures more closely the preferences of the constituents. This paper finds a close connection between the level of district membership in environmental organizations and environmental voting, as measured by League of Conservation Voters’ scores, on the part of members of Congress. Moreover, membership in environmental organizations is a much stronger predictor of environmental voting behavior than a simple left-right measure of constituency interest.

Second, the focus on one issue facilitates an examination of the dynamics of the policy area. This paper explores the differential impact of constituency by party of the members of Congress. Much of the formal literature has suggested that members of the two parties should respond differently to constituent interest and this analysis assesses whether this is the case, finding that Democrats are, on average, more responsive.

The purpose of this paper is to quantify the impact of environmentally-concerned constituents, as measured by environmental group membership by district, on congressional voting, as measured by the League of Conservation Voters' Scores. Section one reviews the theories of congressional voting and develops the hypotheses to be tested. Section two presents the data, and section three uses regression analysis to estimate the impact of environmental preferences on congressional voting. The fourth section considers the ability of members of Congress to ignore their constituents and vote their ideology or party line, concluding with a discussion of the mechanisms of representation and suggestions for further research.

I. Congressional Voting Models and the Environment

Studies of congressional voting generally focus on three main variables, party affiliation, ideology, and constituent interest. Peltzman (1984), for example, finds that ideology and general constituency interest affects congressional voting. Similarly, Kingdon (1989) interviewed
members of Congress to determine their decision-making process, finding that on controversial issues, the member of Congress weighs factors such as constituency goals and the salience of those goals, party pressure, ideology, and fellow congressmen of major importance. This study follows closely his general framework, controlling for the impact of party and ideology when testing the hypothesis that constituency interest in the environment results in more pro-environmental voting.

Led by Fiorina’s (1974) concise overview of early studies regarding the influence of constituency interests, several researchers have delved more deeply into the specific question of environmental policy. These studies focus on whether party or ideology is more strongly related to environmental voting rather than on the impact of constituency interest. Some studies, such as Kenski and Kenski (1980), conclude that ideology is more salient than party affiliation (see also Mazmanian and Sabatier 1981 and Calvert 1989). Others, such as Dunlap and Allen (1976) who compare Northern Republicans to Northern Democrats, find that party is the most important indicator of voting position.

These studies disagree as to the role of constituency in voting behavior. Kenski and Kenski (1980) and Dunlap and Allen (1976) both argue that constituency characteristics, such as regional differences and urban/rural differences, influence voting. List and Sturm (2006) find that governors are responsive to environmental voters. Kalt and Zupan (1984) conclude differently that constituency characteristics influence voting only indirectly through legislator ideology. Finally, Calvert’s (1979) study of the Montana Legislature finds bipartisan support for environmental legislation among constituents and therefore concludes that "partisan differences between legislators on environmental policy did not reflect underlying and similar differences between rank-and-file party identifiers" (pp. 331-332).
Although the literature provides a strong framework from which the impact of constituent interest on environmental voting can be considered, it leaves two areas to be explored. First, it leaves disagreement as to the importance of constituency in the voting behavior of members of Congress. Second, it does not address this question of whether members of Congress respond to constituency interest with specific constituency data. This analysis provides a better measure of constituency interest than previous studies and finds that constituency interest does, on average, play a role in voting behavior.

II. Quantifying Constituency Influence

Isolating constituency preferences allows for a better understanding of the connection between constituents and congressional voting, specifically testing whether constituent membership in pro-environmental interest groups influences members of Congress to vote for more pro-environmental laws, as represented by their League of Conservation Voters scores. Following Kingdon and others, this paper tests the hypothesis that environmental voting behavior is a function of characteristics of both the district and the representative. District characteristics that legislators consider include membership in environmental groups, economic interests, and district ideology. The characteristics of the representative included in the model are party and ideology, because prior work clearly indicates that legislators look to both their party and ideology to form opinions on environmental issues.

This analysis focuses on the 105th Congress, 1997 to 1998, for two reasons. First, membership data for the environmental groups are only available for those years. Second, environmental issues were especially key to campaign strategies in these years. Clinton ran in 1992 on a strong pro-environmental platform against Bush, the incumbent. Clinton promised to
return carbon dioxide emissions levels to 1990 levels by the year 2000. Vice-President Gore contributed to the debate by writing his book, *Earth in the Balance*. During his first term, however, Clinton was not very successful in implementing any major environmental reforms. Although he initially could collaborate with a Democratic Congress, the Republicans won a majority in both houses in 1994. Only the 1994 California Desert Protection Act and the 1996 non-controversial safe drinking water amendments were passed during Clinton’s first term. As a result, Clinton’s reelection campaign in 1996 was built on a platform of environmental protection, education, and health care reform. In this setting, the 105th Congress provides a multitude of congressional votes on environmental bills in which members of Congress condition their votes on party, ideology, or constituency preferences.

**Dependent Variable**

The dependent variable is the League of Conservation Voters’ (LCV) Environmental Score for each member of the House of Representatives. This scorecard, from an organization that describes itself as “an independent political watchdog organization for all people who care about the environment”, is available for each year on the LCV’s website\(^1\) and includes not only roll call votes on environmental issues, but also co-sponsorship of environmental or anti-environmental bills and other non-voting behavior. LCV does not have an official, all-encompassing definition of pro-environment, but generally scores votes that preserve open space, reform grazing law, limit mining and timber harvests, limit dependence on nuclear energy and fossil fuels, and strengthen regulations under the Endangered Species Act as pro-

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\(^1\) [http://www.lcv.org](http://www.lcv.org)
environmental. The scores range from 0 to 100 with 100 representing complete agreement with the positions of LCV.²

Independent Variables

The independent variables encompass characteristics of the district and of the representative. Independent variables representing district characteristics include environmental group membership, economic interests related to the environment, and district ideology. Independent variables representing traits of the members of Congress are party and ideology. Summary statistics for all of the variables are included in the appendix.

District Independent Variables

Environmental group membership in the Sierra Club (SC), the Nature Conservancy (TNC), the National Wildlife Federation (NWF), and the National Resources Defense Council

² Although LCV calls itself an “independent political watchdog group”, using its rating as a dependent variable can introduce bias into the statistical analysis. Snyder (1992) outlines the problems with interest groups ratings in technical terms when he discusses the commonly bimodal distribution of interest group scores and its effect on studies using the scores as variables. He states that "If interest group ratings are biased measures of representatives’ actual voting positions, then the regression adjusted r-squareds found in the studies will typically understate the true degree of correspondence between constituency preferences and representatives' voting positions" (p. 334). However, this understatement biases the results in favor of not finding an impact of constituency interest on voting, so any findings are actually stronger than they appear. Additionally, this analysis uses heteroskedasticity-robust standard errors throughout. See also Herron (1999) for the impact of bimodal interest group scores.
(NRDC) serves as a direct and novel measure of constituent interest in environmental issues. Following the advice of Jackson and Kingdon (1992), who argue that “[r]elying on aggregate economic or demographic variables as indicators of constituency interest does violence to this actual constituency complexity” (pp. 807-808), this more specific measure captures constituency interest much better than previous measures of constituent interest (such as presidential vote share, discussed later).

A potential problem with this measure is that membership of a given group could reflect particularities of the recruitment strategies of the group, rather than underlying preferences of the constituents. For example, the Sierra Club may have higher membership in California not because Californians are particularly interested in environmental issues, but because the group began in California and has maintained a strong presence there.

The best indication that the membership data are not specifically related to group recruitment policies is that levels of membership of the three groups are highly correlated (see Table 1). Nonetheless, using a combination of the four environmental groups provides a better measure of constituent interest that just one group, because the groups employ a wide range of tactics, from the political lobbying to grass roots organizing, which should appeal to a broad range of people.3

The actual independent variable is an aggregation of the natural log of each group’s membership as a percentage of district population. Principle components factor analysis was

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3 In addition to the four groups from whom I received data, I contacted the Environmental Defense Fund, Friends of the Earth, Greenpeace, the National Audubon Society, and the World Wildlife Fund. Most environmental groups that I contacted either did not have their membership levels broken down by congressional district or zip code or were not willing to release the information.
used to aggregate the membership data, by combining the four separate measures of constituent interest into one factor. This factor analysis accounts for 90.6 percent of the underlying variance in constituent interest indicated by the four measures of membership. The high level of variance explained by the principle-components factor analysis indicates that one factor can be used in the model to combine the memberships in the four environmental groups. If this measure of constituent interest in the environment is related to environmental voting, it should carry a positive sign.

If pro-environmental sentiment affects congressional voting, anti-environmental sentiment might also be influential. Since there are no anti-environmental groups comparable in scope and purpose to the environmental groups measured here, district employment in several industries derived from the 1990 Census serve as proxies for anti-environmental sentiment in this analysis. Employment in industries disproportionately burdened by environmental regulations, mining and agriculture in this case, measures the reliance of each district’s economy on sectors that are tied closely to environmental regulations. The log of employment as a percentage of the district’s labor force provides a more normal distribution of values. If environmental regulations are costly to industry and lead to job losses, these independent variables should be negatively correlated with pro-environmental voting.

In order to replicate the standard examinations of constituency preferences and congressional voting, this analysis includes the percentage of people in each district voting for the Democratic candidate (Clinton) in the 1992 and 1996 elections. This also controls for the effect of

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4 The scoring coefficients from the factor analysis are NRDC – 0.51487, NWF – 0.49269, TNC – 0.50947, and SC –0.48230. The eigenvalue is 3.62362.
underlying political leanings of a district on congressional voting behavior. The hypothesized sign
on this variable is positive.

Following Dunlap and Allen (1976) and others, several economic and geographic variables
are included in the analysis to ensure that any effect of environmental membership on
congressional voting is not spurious. Dunlap and Allen find that “environmental awareness and
concern generally have been found to be positively associated with socioeconomic status and
urban residence” (p. 392). Because increased income can be expected to correlate with increased
environmental group membership, due at least in part to the membership fees charged by such
groups, including the median household income (in thousands of dollars) should help to parcel out
the effect of environmental group membership. Finally, a variable measuring the urbanization
level in a district is included because districts with fewer people living in urban areas are more
likely to be adversely affected by environmental legislation, and this may be reflected in the votes
of the representatives. The measure is the percentage of people in a district who live in urban
areas, which should be positively associated with pro-environmental voting.

*Representative Independent Variables*

In addition to district characteristics, the party and ideology of the representatives should
play a major role in determining environmental voting behavior. To test whether ideology
influences environmental voting, this analysis uses the first dimension of the NOMINATE scores
from Poole and Rosenthal (1997) for the 105th Congress, ranging from –1 to 1, with the sign

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5 These scores use all non-unanimous roll call votes in each Congress to place members in a two-
dimensional space representing their spatial voting behavior. These scores can be found at
reversed so that strong liberals have scores nearer 1 and strong conservatives have scores near -1. More liberal representatives tend to support government intervention in environmental and land use issues and vote pro-environment, while more conservative representatives tend to vote against governmental regulations and restrictions on public land use. As a result, ideology should be positively correlated with pro-environmental voting behavior.

Party affiliation is also likely to influence congressional voting behavior, especially on issues such as the environment where the parties have clearly elaborated positions. Because the structure of the party system, with majority and minority whips, tends to pull the legislators into line with their parties, Democrats should have higher LCV scores than Republicans.

III. Results

Regressing the main variables and confounding variables from the model on LCV scores reveals significant relationships between environmental voting behavior and environmental group membership in the district, party, ideology, mining employment, agricultural employment, urbanization, and median household income (Table 2). Moreover, the simple linear model yields an R-squared of 0.83 suggesting that these factors explain much of the variation in environmental voting.

Model 1 in Table 2 is consistent with the hypothesis that members of Congress are influenced by characteristics of their districts, including environmental membership and economic interests, and their own party and ideology. The most important result of the analysis is that the district level of membership in environmental groups is significantly related to the environmental voting behavior of members of Congress; representatives appear to respond to the level of environmental interest in their district by voting accordingly.
For a more concrete manifestation of this effect, consider Representative Jose Serrano’s Bronx district, where there were only 25 Sierra Club members. Should the Sierra Club increase this to 374 members, a not unreasonable change, the model would predict that Representative Serrano’s LCV score would increase from a predicted value of 74 (his actual score is 71) to 85, a vote for one more of the bills the LCV considered of environmental significance. Such a membership increase could reasonably be expected from a well-organized membership drive, given the relatively low number of members in this district. Table 3 shows these predictions.

As expected, ideology also plays a large role in determining the environmental votes of members of Congress. More conservative representatives tend to have lower LCV scores, indicating that environmental issues separate along ideological lines in many cases. For example, moving from an ideologically more centrist Democrat at the 25th percentile (Kleczka D-WI) to the median Democrat (McGovern D-MA) is associated with a 13 point LCV score increase. As Jackson and Kingdon (1992) argue, this may simply be a result of NOMINATE scores tapping the same or a related dimension of voting as LCV scores. Employing the most conservative interpretation of the coefficient on ideology, Models 1 and 2 show that environmental voting taps generally the same dimension as all other voting in the House of Representatives. Moreover, Jackson and Kingdon note that the inclusion of a vote-based measure of ideology leads to an attenuation of the importance of the other inputs to voting. Even with this underestimation of the impact of constituent interest, this study finds an impact

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6 While the independent variable used is a factor combining membership in the different environmental groups, for simplicity this example assumes that the same relationship holds for membership in the Sierra Club alone.
of constituent interest on voting, indicating that the impact of constituency is likely even greater than these results show.

At first glance, the negative coefficient on party is surprising, but given the control for ideology, it provides interesting information as to the behavior of representatives. A representative with the same ideology but a different party (going from Republican to Democrat) has a 25 point lower LCV ranking; a moderate Republican with the same ideology as a moderate Democrat votes more pro-environmental. This is particularly interesting for those in the middle of the ideological spectrum who might, in reality, share the same ideology, but come from different parties. For example, Connie Morella (R-MD) has a NOMINATE score of 0.147 and a LCV Score of 93. The Democrats with the closest NOMINATE scores, Charlie Stenholm (D-TX) with a score of 0.108 and Gene Taylor (D-MS) with a score of 0.251 have LCV scores of 10 and 23 respectively, much lower than Morella’s high score. The data show that the moderate Republicans vote more pro-environmental than the moderate Democrats.

Finally, mining and agriculture levels are significantly related to LCV scores. As expected, the more employment in mining and agriculture, the lower the LCV score of the representative. A twofold increase in mining employment yields a representative with a two point lower LCV score. While this coefficient is not very large, its effect in those districts substantially dependent on mining is strong. Similarly, a twofold increase in agricultural employment yields a 3 point lower LCV score.

One further interesting, and expected if the measure of ideology presented here is superior, result in this analysis regards the coefficient that is not significant in the regression (See Table 2). The ideology of the district, as represented by the percentage of the district voting for Clinton in the 1992 and 1996 elections, is not significantly different from zero when
the more specific environmental ideology variable is included. The Poole-Rosenthal ideology measure and membership in environmental groups appears to account for most of this variation. The baseline left-right ideology of a district has probably already been manifested in the election of a representative sharing the ideology of the constituents, as indicated by the correlation of 0.76 between those two measures. This measure of constituent ideology is left out of further regressions, including Table 2, Model 2.

This model includes several confounding variables, but the relationship between voting behavior and membership in environmental groups persists. Urbanization and per capita income are included in the specification. Both are related to environmental voting, but with their inclusion the main determinants of environmental voting, constituent interest, party and ideology, remain excellent predictors. This indicates that the impact of environmental group membership is not simply urban or wealthy constituents’ demands for environmental amenities. The results also do not change substantially when regional fixed effects are included.

7 Median household income is correlated with environmental group membership; I find a correlation of 0.643 between median household income and environmental group membership. This correlation occurs in part because environmental group membership is by definition those who contribute money. Additionally, most researchers find environmental interest to be highly positively correlated with socioeconomic factors. This correlation leads to underestimation of the coefficient for environmental group membership in the regressions explaining environmental voting behavior, biasing the results toward null findings, but I continue to include it in the model to distinguish between the effect of income and of environmental group membership. Importantly, when it is included, membership in environmental groups remains significantly related to environmental voting, indicating that the impact of environmental group membership is not simply a manifestation of the higher income of those districts with many members of environmental groups.
The main result here is heartening for representative democracy. On average, members of Congress are responsive to environmental group membership in their district. They vote more pro-environmental when there are more members of environmental groups in their district.

**IV. Party, Ideology and Environmental Voting**

Models 1 and 2 constrain the impact of environmental constituents to be the same for Democrats and Republicans, but several studies (Ansolabehere and Snyder 1998, Ansolabehere, Snyder and Stewart 2001, Groseclose 2001, and Egan 2007) have suggested that the parties may behave differently on different issues. Variously considered in the context of valence issues and issue ownership, these studies suggest that, based on their party membership, members of Congress may be differentially responsive to their constituencies. Focusing specifically on the environment with this superior measure of constituent ideology provides an opportunity to delve deeper into the voting behavior of members of Congress.

Formal models of candidate behavior have led to divergent predictions. Both Ansolabehere and Snyder (1998) and Groseclose (2001) suggest that the candidate with the valence advantage will moderate his position. On the issue of the environment, Democrats clearly have the valence advantage; polls generally find that the public trusts the Democrats’ ability to handle the environment more than the Republicans.  

Thus, Democrats can be expected to take the more

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8 See, for example, the ABC News/Washington Post poll from September 2002 finding that 70% of independents trust the Democrats more to handle the environment.
moderate position and be more responsive to their constituents.\textsuperscript{9} Egan (2007), on the other hand, predicts that issue-owning party (in this case clearly the Democrats) will be less responsive to constituency because it has “earned” the right to do what it pleases in this area.

This section tests these two models by considering whether members of the two parties are differentially responsive to their constituents using two interaction terms. Table 2, Model 3 shows the results of a regression including the interaction of party with district membership in environmental groups and with ideology.\textsuperscript{10} The results suggest that the Democrats are somewhat more responsive to membership in environmental groups than the Republicans; the coefficient on the interaction between party and environmental membership is positive. This is consistent with the valence predictions of Ansolabehere and Snyder and Groseclose, rather than the issue-ownership predictions of Egan. More generally, it is consistent with our understanding of electoral pressures. Republicans are less likely to get the votes of members of environmental groups than Democrats. Thus, they can be less responsive to that portion of their constituency.

V. Discussion

The major contribution of this paper is the use of environmental membership as a measure of the constituency interest of a district, which is surely a better proxy than a simple left-

\textsuperscript{9} Since these are models of candidate behavior, it is somewhat difficult to translate them into predictions about representatives’ voting. This assumes that moderation (or moving toward the center) is equivalent to voting with the median member of that representative’s district, yielding the prediction that the candidate choosing the moderate position will be more responsive to his constituents’ preferences.

\textsuperscript{10} Interactions of party with the economic and control variables indicate that Democrats and Republicans do not respond significantly differently to those pressures.
right survey question or Presidential vote. Although the measure of environmental interest captures much of the range of national environmental groups, the measure is still not without error. This leaves open the possibility for improvement in the model by finding a more direct measure of constituency environmental preferences, particularly one that measures the range of opinion, as well as the salience of the issues.

The mining and agricultural employment measures also fail to entirely capture the anti-environmental sentiment in districts. A more effective variable would directly measure such opinions or use more specific measures of industry employment. For example, a measure of the district’s reliance on power production or heavy industry might be more directly related to environmental issues, because those industries are larger polluters than most. However, mining employment is a very specific extractive industry and probably represents anti-environmental economic interests well.

The results presented here raise interesting questions about the mechanisms of representation. How exactly is membership in environmental organizations linked to voting behavior of members of Congress? There are several possibilities. First, the reelection incentive clearly dictates that members of Congress gather information about their constituents in order to be responsive enough to get reelected. Thus, members of Congress themselves may gauge the environmental interest of their district and vote accordingly.

Second, it is possible that the environmental groups themselves provide the connection between environmental interest in the district and voting. They may either lobby members of Congress or, as Hansen (1991) argues, provide the members of Congress with the information they need to get reelected in their district (in this case the degree of environmental interest) in exchange for access to those members. Sierra Club Executive Director Carl Pope recently said
that “. . . we will remain active to hold the Bush administration and Congress accountable. Congress will face the judgment of the voters in two years.” Clearly he believes that the Sierra Club has a role in the interaction between the voters and members of Congress.

Finally, the link between the constituency and voting may occur, at least in part, through campaign finance. Those who join environmental groups are likely to be the same constituents who give to political campaigns. Either through retrospective or prospective means, they may influence the choice of a member of Congress who represents their views.

Focusing on one area, such as this study of the environment, highlights these questions of the mechanism of representation, but also provides the opportunity to speculate about ways to answer the questions. For example, it would be valuable to know whether members of Congress have at least a relative sense of environmental interest in their district. Do they know how many members of environmental groups reside in their districts? Do they hear from those members? Do they hear from the environmental groups? What types of messages are conveyed?

These findings indicate that members of Congress do respond to their constituents’ interest in environmental issues. In particular, Democrats consistently respond to their constituents’ membership in the four environmental groups. These results highlight two dynamics of congressional voting on the environment. First, among the moderates in Congress, Republicans actually vote more pro-environmental than Democrats. The liberal Republicans appear to use the environment as an issue on which they can reach out to non-traditional Republican voters. Conservative Democrats, on the other hand, do not tend to vote as pro-environmental. Second, Democrats in general respond more strongly to constituency interest in the environment, suggesting that models of valence advantage in policy areas have the upper
hand in representing the behavior of the political parties with respect to the environment. On average, the results are reassuring for representative, and responsive, government. Members of Congress tend, on average, to respond to increased environmental group membership in their district by voting more pro-environmental. They do respond to their constituents’ interests by voting accordingly.
References


Table 1: Correlation Matrix of Membership in Four Environmental Groups.

<table>
<thead>
<tr>
<th></th>
<th>Natural Resources Defense Council</th>
<th>National Wildlife Federation</th>
<th>Nature Conservancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Wildlife Federation</td>
<td>0.8965</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature Conservancy</td>
<td>0.9290</td>
<td>0.9180</td>
<td></td>
</tr>
<tr>
<td>Sierra Club</td>
<td>0.9037</td>
<td>0.7534</td>
<td>0.8419</td>
</tr>
<tr>
<td>Table 2: Models of Environmental Voting Across All Members of Congress</td>
<td>Model 1: Basic Model with Presidential Vote</td>
<td>Model 2: Basic Model without Presidential Vote</td>
<td>Model 3: Interaction of Party with Environmental Group Membership and Ideology</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Factor combining Environmental Group Membership</td>
<td>2.28 (0.477)**</td>
<td>2.28 (0.477)**</td>
<td>1.35 (0.656)*</td>
</tr>
<tr>
<td>Dimension 1 NOMINATE score</td>
<td>66.3 (4.15)**</td>
<td>67.4 (3.50)**</td>
<td>93.9 (6.10)**</td>
</tr>
<tr>
<td>Binary party (1=D; 0=R)</td>
<td>-23.3 (3.96)**</td>
<td>-23.8 (3.78)**</td>
<td>-38.3 (4.59)**</td>
</tr>
<tr>
<td>Ln of % employment in mining</td>
<td>-1.89 (0.637)**</td>
<td>-1.94 (0.626)**</td>
<td>-2.00 (0.611)**</td>
</tr>
<tr>
<td>Ln of % employment in agriculture</td>
<td>-3.67 (1.23)**</td>
<td>-3.83 (1.18)**</td>
<td>-3.84 (1.15)**</td>
</tr>
<tr>
<td>Median Household income in thousands</td>
<td>0.610 (0.124)**</td>
<td>0.590 (0.116)**</td>
<td>0.479 (0.115)**</td>
</tr>
<tr>
<td>% of district living in urban area</td>
<td>-8.094 (3.313)**</td>
<td>-9.71 (3.46)**</td>
<td>-6.19 (3.45)**</td>
</tr>
<tr>
<td>Ave. % voting for Clinton in 92 and 96</td>
<td>4.67 (1.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Party* NOMINATE Score</td>
<td></td>
<td>-38.3 (7.26)**</td>
<td></td>
</tr>
<tr>
<td>Party * Environmental Membership</td>
<td></td>
<td></td>
<td>1.57 (0.732)*</td>
</tr>
<tr>
<td>Constant</td>
<td>-24.1 (8.59)**</td>
<td>26.5 (6.85)**</td>
<td>45.8 (7.66)**</td>
</tr>
<tr>
<td>Observations</td>
<td>434</td>
<td>434</td>
<td>434</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.83</td>
<td>0.83</td>
<td>0.84</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%

Dependent Variable: LCV score on 0-100 scale.
Table 3: Jose Serrano’s Bronx District Example

<table>
<thead>
<tr>
<th>Quantile</th>
<th>0</th>
<th>25</th>
<th>50</th>
<th>75</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCV Score</td>
<td>74</td>
<td>85</td>
<td>88</td>
<td>91</td>
<td>98</td>
</tr>
<tr>
<td># Sierra Club Members</td>
<td>25</td>
<td>374</td>
<td>690</td>
<td>1245</td>
<td>9196</td>
</tr>
</tbody>
</table>
### Appendix: Summary Statistics for Variables

#### Table A1: Summary Statistics for Main Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCV Score</td>
<td>435</td>
<td>46.72</td>
<td>41</td>
<td>33.22</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Party (Dem=1) **</td>
<td>434</td>
<td>0.4747</td>
<td>0</td>
<td>0.4999</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Dimension 1 NOMINATE Score</td>
<td>435</td>
<td>0.1743</td>
<td>0.394</td>
<td>0.5704</td>
<td>-0.996</td>
<td>0.997</td>
</tr>
<tr>
<td>% Employed in Agriculture</td>
<td>435</td>
<td>0.01259</td>
<td>0.009122</td>
<td>0.01144</td>
<td>0.000635</td>
<td>0.09393</td>
</tr>
<tr>
<td>Ln of % Employed in Agriculture</td>
<td>435</td>
<td>-4.704</td>
<td>-4.697</td>
<td>0.8376</td>
<td>-7.362</td>
<td>-2.365</td>
</tr>
<tr>
<td>% Employed in Mining</td>
<td>435</td>
<td>0.002907</td>
<td>0.000821</td>
<td>0.00545</td>
<td>0.0000723</td>
<td>0.04084</td>
</tr>
<tr>
<td>% Living in urban areas</td>
<td>435</td>
<td>0.6337</td>
<td>0.6665</td>
<td>0.3158</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Median Household Income (000s)</td>
<td>435</td>
<td>30.67</td>
<td>28.98</td>
<td>8.29</td>
<td>15.06</td>
<td>57.22</td>
</tr>
<tr>
<td>Average of % Voting for Clinton in 1992 and 1996</td>
<td>435</td>
<td>0.5465</td>
<td>0.5320</td>
<td>0.1283</td>
<td>0.2803</td>
<td>1.23437</td>
</tr>
<tr>
<td>Membership in National Wildlife Federation</td>
<td>435</td>
<td>1326</td>
<td>1253</td>
<td>615.1</td>
<td>199</td>
<td>3178</td>
</tr>
<tr>
<td>Membership in The Nature Conservancy</td>
<td>435</td>
<td>2298</td>
<td>1952</td>
<td>1455</td>
<td>244</td>
<td>8810</td>
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<tr>
<td>Membership in the Natural Resources Defense Council</td>
<td>435</td>
<td>784.4</td>
<td>638.7</td>
<td>554.0</td>
<td>111</td>
<td>3956</td>
</tr>
<tr>
<td>Membership in the Sierra Club</td>
<td>435</td>
<td>1030</td>
<td>689</td>
<td>1147</td>
<td>25</td>
<td>9196</td>
</tr>
<tr>
<td>Factor Combining Environmental Group Membership</td>
<td>435</td>
<td>-0.00383</td>
<td>0.1663</td>
<td>1.888</td>
<td>-6.027</td>
<td>4.633</td>
</tr>
</tbody>
</table>

**Leaves out Bernie Sanders, Vermont’s at-large representative, who is an Independent. This results in regressions with 434 observations.**