Impact of Citizen Preference on State Legislator Roll Call Votes for Environmental Policy

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**Introduction**

How do we measure the policy preferences of citizens within state legislative districts and why is this important? Voter representation has been considered an important research area throughout the field of American politics, especially when considering the link between citizen preferences and legislative behavior at both the national and state levels. Due to the nature of our political system that involves indirect representation, it is logical to assume that elected officials adhere to the preferences that encompass the district he or she represents. One might assume that the representative, in fear of losing his or her elected seat, would mirror their voting behavior to the preferences of the district (Jewell 1983, Kuklinski 1978). Likewise, one might expect that the constituents within a district would elect an official who, ideologically, was on par with that district, ensuring that the districts’ interests were maintained (Kuklinski 1978).

However, logic does not necessarily mirror reality, leading some scholars to argue that elected officials act based on other factors such as the impact of partisanship on legislators leading some to explore the nature of dyadic and partisan models of representation (Masket and Noel 2012).

In this article, we build upon a long tradition of using election returns on ballot propositions as a source of information to measure citizen preferences in state legislative districts. We first explore the strengths and weaknesses of two distinct approaches to using direct democracy results to measure citizen preferences. We then develop a measure that builds off the strengths of each approach to test the impact of citizen preferences on legislator voting. This paper is the beginning of a larger project that will include several different issue positions across multiple states and localities.

In this preliminary study, we examine environmental policy issues in the state of California. We chose this state and these issues because of the importance of California as a direct democracy state and as a leader in environmental policy. California is also a leader in its usage of direct democracy. One of the advantages of using California is the presense of a significant number of separate ballot propositions on a single issue area such as the environment. Finally, we discuss future areas for this line of research.

**Approaches to measuring citizen preferences**

Scholars have used election returns on ballot propositions to estimate citizen preferences in one of two ways. The first approach employs only those ballot measures for which both the public and the legislature vote on the exact same piece of legislation such as a referral. The second approach uses all ballot measures placed before the voters to find underlying ideological dimensions, often by exploratory factor analysis, to capture the citizen preferences broadly defined. In this section, we explore both approaches before developing a hybrid approach.

The use of ballot propositions to estimate citizen preferences has a long history in political science. Arneson (1927) studied 25 ballot measures in Ohio from 1912 to 1926. This study was limited to only those pieces of legislation for which there was both a vote of the people and a roll-call vote of the legislature. It matched district votes on these legislative and citizen referenda to the votes by the legislators from these respective districts. The results found some evidence to suggest that citizen preferences matched and explained legislator voting on these measures under certain circumstances especially when the legislator voted in opposition to the legislation. White (1938) reported a replication of Arneson’s work but on ballot measures during the depression era. The impact of citizen preferences was greater on legislative behavior in support of legislation than in opposition to legislation. White concluded that during economic stress, the system might be more responsive to demands for change as opposed to the risk adverse sentiments of the public.

Later studies moved from the question of whether citizen preferences and legislator behavior were more in sync during different stages of the business cycle towards the more fundamental question of whether representatives actually represent the views of their constituents. An early study of this question is the study of daylight savings time legislation in Wisconsin by Crane (1960). Crane found a strong link between how a legislator voted on the proposed switch to daylight savings time and the votes of their constituents.

More recent studies also used voting returns on ballot propositions to predict legislator roll call voting on specific measures (Gerber 1996; Smith 2001). These studies found links between citizen preference and legislator behavior even after controlling for other district and institutional factors such as member party, member sex, term limits, and the competitiveness of the member’s previous election.

One benefit of using legislator and citizen’s votes on the same piece of legislation to explore questions of representation is the narrowness of the question. Legislators and citizens are asked to vote on the same piece of legislation and it is easy to see if legislators act in accordance with citizen preferences. There are some problems, however. For legislative referrals, some members may not be motivated solely on whether they believe the bill should pass but whether they should let the voters decide. To the extent that this practice occurs, the vote by legislators and the vote by citizens are not actually measuring behavior on an identical question. While the link between the two observed behaviors is still strong, it is not quite the direct link it may appear to be at first glance.

The second approach is to use election returns to develop a more general ideological scale. Kuklinski and Elling (1977) used California referenda and initiative data from the 1968-1972 general elections to determine issue dimensions in each of the legislative districts. Using exploratory factor analysis, he found three identifiable issue dimensions: *contemporary liberalism, taxation, and government administration*. He uses these measures to test the linkage between popular will and roll call votes before the legislature.

Masket and Noel (2012) use referenda data in California for their measure. By limiting the data to referenda measures, the authors rely on only specific policy issues that both legislators and citizens were asked to consider. They use data to estimate the ideological positioning of the legislator relative to their constituents in order to identify those legislators who are more ideologically extreme than their districts.

This important and innovative work helps answer several questions about the ideological nature of legislative behavior; especially their measure of the deviance of legislator ideology relative to the district ideological preferences. In their discussion, they give the example of Lynn Daucher (an Orange County Republican) who was 0.4 units too liberal for her district. What their data cannot tell us, however, is if her legislative behavior was too liberal on social issues, taxation issues, environmental issues, women’s issues, or any combination of those and other policy areas. Therefore, while their approach provides important information about the overall ideological representation, it cannot speak to expectations for legislator voting on more specific policy areas.

A different use of direct voting on policy issues was utilized by Gerber and Lewis (2004) who used an unusual data source to develop ideal points for voters in political districts in Los Angeles County based on an analysis of individual ballots cast on state propositions in the 1992 November election. They use factor analysis to develop a measure of district preference to distinguish more politically homogenous districts from heterogeneous districts. They find that the link between overall district preference and legislator behavior is most often based upon the legislator reacting to the preferences of fellow partisans in the district.

Finally, Snyder (1996) uses exploratory factor analysis of voting returns on all California ballot propositions from 1974-1990 to determine underlying ideological dimensions. Snyder’s analysis suggests three distinct dimensions of citizen preferences in California: *Public Goods and Regulation, Income Redistribution, and Regional Conflicts.* Two of the dimensions are more generally ideological. The *Public Goods* dimension is based on citizen votes on measures related to parks and environmental concerns, education policy, AIDS policy, property taxes, crime, and various other issues of government reform and ethics. The *Income Redistribution* dimension includes votes on issues such as health benefits, social spending, labor policy, tax and spending limits, education spending, English only proposals, and even propositions described as aimed against the Democratic Party such as term limits, reapportionment, and legislative rules.

The benefit of the direct approach is the tightness of the observed relationship between citizen votes and legislator votes, however it is not very generalizable. The benefit of the kitchen-sink approach is that the measure can be used to test representativeness on a wider set of policy issues, however, the ideological measures are often so broad that they provide very little information about citizen preferences on particular issue areas.

In this study, we employ an approach that is more generalizable than those using a direct link and more focused than those who use results of all ballot measures to find broad ideological tendencies. We explore the question of legislator representation of citizen preferences by examining data on environmental issues in California as a potential influence on legislator behavior on these issues. Similar to the approach by Kuklinksi (1977) and Snyder (1996), we employ factor analysis to identify commonalities in citizen preferences on issues, however we restrict the data to only those measures related to issues that are directly related to environmental issues and those which environmental groups endorsed.

**Direct democracy & the environment: California – Leader via the “parallel legislature”**

Initiative elections are among the most critical campaigns in California and are often a harbinger of spillover issues to other states. As a result, California is a leader in the nation for what may come the way of ballot measure politics across the nation. These elections are often centered on important interests where vast sums of money are spent in support of and in opposition to ballot measures. One element of how interests battle through the initiative process reflects the use of the ballot measure process with issues tied to the long-running “culture wars” of American politics. These battles include women’s issues, anti-tax and expenditure limit measures, as well as environmental and political reform issues. This paper tests environmental issues because of their importance to the politics of California and the long history of environmental issues decided through direct legislation in the state, spilling over to the national political scene.

One reason for the critical nature of ballot measure campaigns rests with the lineup of interests on each side of a campaign and the rules around the campaigns themselves. For example, ballot initiatives are easier to defeat than to pass. To wit, more than 60% of ballot initiatives fail as it is easier to argue against a proposal rather than in support of one. Thus, if we see interests battle through this process, we also witness that the “easy money” is on opposing ballot measures, not supporting them, or on campaigns that move “second” (in opposition) and not “first” (in support).

In addition, the politics of ballot measures makes for unusual coalitions. General interest group activism of the 1960s produced a broad shift in the initiative arena and was reflected by the combination of growing policy activism of groups and changes in California's governing institutions (Lowi 1964; Wilson 1973). First, the initiative process itself was altered when California voters authorized the appearance of ballot initiatives for primary, general and special election ballots in 1960. In 1966, the institution was further altered when the indirect initiative was eliminated through Proposition 1A. The indirect initiative was designed to allow the Legislature an opportunity to enact or reject a proposed law. If the Legislature rejected the measure or amended it, the Secretary of State submitted the proposal to the ballot at the next General Election. Signature requirements for statutory measures were also reduced in 1966 from eight percent to five percent (Magleby 1984: 68).

Scholars recognized the shift of policy activism by pointing not only to growth in ballot activity, but also to growth in campaign spending. The assumption in many cases was that campaign costs were driven by more and more expensive measures appearing before voters. However, analysis of only those measures that qualify for the ballot neglects the important dollars spent early in the process to draft, title, and circulate initiatives.

Environmental Politics at the ballot

California has a long history of ballot propositions dating back to the early 1900s. It is not a surprise that environmental issues were decided at the ballot box from those early days of direct democracy in California dating back to Proposition 11 in 1924 which, among other things, created the Klamath River Fish and Game District. In more recent times, voters have been asked to decide issues related to conservation, plastic bag usage, global warming policy, and several other environmentally related issues. During our period of study, 2002-2010, California voters were asked to vote on twelve different environmental measures. These measures are listed in Table 1.

Environmental issues also pose an interesting case for this study because of the growing partisan and ideological polarization around the issue. Although this trend is not new (Dunlap and Gale 1974; Dunlap and Allen 1976; Calvert 1979), the polarization has further developed (Uyeki and Holland 2000; Shipan and Lowry 2001; Coan and Holman 2008, Guber 2013). The polarization has been found for both citizens and among elected officials. However, some recent research shows that both Democrats and Republicans in office respond to environmental demands from constituents (Anderson 2011). Therefore, we are interested in variation among Republican office holders due to some, perhaps, being pushed towards a greener voting record due to their constituents and variation among Democratic office holders because of some who might have a less green voting record due to their constituents.

**Testing the Link between Citizen Preferences and Representation**

Our basic expectation is that voters’ preferences on policy issues help explain the policy voting of their elected representatives in the state legislature. Our model is based upon the one used by Smith (2001). In his study of the three counter-majoritarian measures in Colorado, Smith forwarded a model that stated that district characteristics and legislator characteristics explain legislator behavior on policy issues before the state legislature. The primary district characteristic of interest is how the citizens in a district voted on the policy issues brought before the legislature. Our model uses a similar approach by including aspects of both the districts and the legislators to see if citizen preferences have a direct effect on legislator behavior even after accounting for other explanations.

***Data analysis***

We utilize this model to understand legislative behavior on policy issues. We test the impact of citizen preferences about environmental issues on legislative behavior based upon the theoretical link between the two as discussed above. In order to test our hypothesis that citizen preferences impact legislative behavior, we test the following equation with the variables measured as discussed below.

*Support for Environmental Legislation = Citizen Preferences on Environmental Issues + Democratic Voter Registration by District + Legislators Prior Vote Margin + Legislator Ideology + Female Legislator + Term Limits*

*Dependent Variable—Support for Environmental Legislation*

In our attempt to understand legislative support for environmental issues, we use information from the Sierra Club of California to measure legislative support for such issues. Specifically, we use the organization’s legislative scorecard for the 2011 legislative cycle. We use 2011 because it is the session at the end of the redistricting period when there was more information about district preferences through the initiative process due to the previous series of elections within the same district boundaries. Their legislative scorecards can be accessed at [the Sierra Club website linked here.](http://www.sierraclub.org/sites/www.sierraclub.org/files/sce/sierra-club-california/PDFs/final%202011%20report%20card%20for%20web%20site.pdf) The scorecard is based on legislator voting on 15 different pieces of legislation ranging from clean electricity, parks, regulations about environmental impact reports, public transportation, and other related issues. The scale ranges from 0-100 with higher values indicating a more pro-environmental voting record.

We believe that the use of these scorecards is a solid measure of legislators’ support for environmental issues. Environmental issues include a comprehensive agenda of policies that could produce different types of non-environmental support or opposition. It is not hard to imagine a different type of debate surrounding AB 1319 that would regulate a toxic substance in baby bottles than what might occur surrounding AB 900 that impacts the process concerning the environmental impact statements of a potential football stadium in Los Angeles. Interest group reports provide the researcher with a scale for actual legislative votes on a variety of issues instead of focusing solely on one or two issues.

*Independent Variables*

*Citizen preferences*

As stated above, we measure citizen preferences by conducting a factor analysis of legislative district level election returns for ballot propositions focused on issues of environmental politics. During the period of study, 2002-2010, there were twelve ballot measures that dealt with various aspects of environmental politics. These measures and the election result for each is presented in Table 1.

To develop a measure of the underlying citizen preferences on environmental issues by district, we conducted separate factor analyses of the election returns for both Assembly districts and Senate districts. By limiting our focus to environmental issues, we are able to identify underlying tendencies that could be used to explain preferences on a broader environmental policy agenda than what is possible by just focusing on a specific measure. As discussed above, this approach is more generalizable than the direct approach of using only those referrals that asked legislators and voters to approve the exact same policy and it is more focused than the pure exploratory factor analysis of every measure ever placed before the voters. The factor analysis of these twelve measures produced one factor loading with an acceptable eigenvalue. Ten of the twelve measures loaded onto a single dimension. That scale was saved for each legislative district to be used as the primary independent variable of interest in our analysis. The factor loadings and rotated factor loadings are presented in Table 2.

It is interesting to note that two of the environmental measures did not load with the others. Neither Proposition 7 nor Proposition 10 from 2008 loaded onto the factor for environmental preferences by district. Proposition 7 (2008), the Standards for Renewable Energy Resource Portfolios Initiative, would also be characterized more broadly as “environmental,” requiring utility firms and governmental regulators involved with energy generation to increase their renewable resources used to produce energy in the state. Largely seen as “consumer-generated,” this measure was conceived and funded by one political consultant, Jim Gonzalez, of Gonzalez and Associates. Proposition 10 (2008), the Alternative Fuels Initiative, would also be characterized as an “environmental” ballot measure in an attempt to clean up the air through alternative fuels, solar and renewable technologies, but classification of this ballot measure as “green,” would also ignore the reality of the supporters and funders of just such a measure such as T. Boone Pickens who was the major supporter.

Both of these measures were opposed by leading environmental groups such as the Sierra Club and Natural Resources Council who argued that the measures were confusing because they appeared to be pro-environmental but were better described as narrowly beneificial to a few individuals and potentially confusing to voters who wished to support pro-environmental measures. Given the confusion surrounding these measures it is not surprising that they are the two measures that did not load on the environmental factor in our analysis.

The factor loading was saved and the resulting measure creates a scale of citizen preference on cultural issues with higher values indicating a more pro-environment position among voters. For Senate districts, the score ranged from a high of 2.23 in District 3 in the San Francisco area to a low of -2.23 in District 36 in the Inland Empire and inland San Diego county areas. For Assembly districts, the score ranged from a high of 2.98 in District 13 in San Francisco to a low of -1.76 in District 32 in Kern County around Tehachapi.

This measure is used to test our core hypothesis. We expect a positive relationship between citizen preferences on environmental issues and a legislator’s support for environmental policies voted on in the legislature.

*Additional variables for district characteristics*

In addition to *Citizen Preferences,* we include two additional variables for district characteristics. The first is a measure of district partisanship based upon the percentage of voters registered as Democrats in 2010. As discussed above, much has been written about the partisan divide in environmental politics with Democrats holding a more pro-environmental perspective. If a relationship exists between this control variable and legislator voting on environmental issues, we should see a positive relationship. The next district characteristic considered is the competitiveness of the previous district election. Following the lead of Smith (2001), legislators from more competitive districts should be more likely to act in accordance with citizen preferences.

*Legislator Characteristics*

Because past research suggests that legislator behavior is impacted by both characteristics of the districts and characteristics of the individual legislators, we also include variables measuring characteristics of the legislators themselves. In this study, we include measures for a legislator’s political ideology, sex, and whether the legislator is in the last term for that office before being term-limited out of office.

Until recently, it was very difficult to measure state legislator ideology. However, recent work by Shor and McCarthy (2011) produced a measure for all state legislators that is similar to the d-nominate scores used to measure ideology of members of Congress. The variable is measured with higher values indicating a more conservative ideology. For reasons discussed above about ideology and environmental issues, it is expected that this variable will be negatively associated with support for environmental issues.

Unfortunately, as the parties have become more ideologically cohesive and polarized, including measures for both legislator ideology and legislator partisanship creates a potential problem with multi-collinearity. In fact, the results from estimating the equation that included measures of both ideology and party did show problems with multi-collinearity based on an analysis of the variable inflation factor. Because ideology is a more precise measurement than the dichotomous nature of partisanship, we opted to use legislator ideology instead of relying on legislator partisanship. In addition, some studies suggest the stronger impact of ideology (Nelson 2002; Chupp 2011). To be thorough, we estimated the equations using only the ideological measurement and compared it to the results generated by using only legislator partisanship. Estimated separately, the results for both ideology and partisanship were substantially the same and there was no substantial difference on the other variables.

Past research also explores the impact of legislator sex on voting for issues including environmental issues. Steel (1996) found evidence to suggest that women were more likely to engage in environmental activism, and there is evidence that women are more concerned than men are about local environmental issues (Blocker & Eckberg 1989). However, Gerrity et al (2007) and others (Reingold 2000) found that the gender of the elected official does not impact action on policy. For this study, we include a variable that indicates whether the legislator is female to account for any relationship that might exist. If there is a relationship, the expected direction is a positive relationship between being a female legislator and support for environmental issues.

The final legislator characteristic we include in the analysis is a dichotomous measure indicating whether the legislator is near the end of the term-limited allotted time in the legislative chamber. Smith (2001) found that legislators about to be term limited out of office approach representation differently than those who will face reelection in a given district. This variable is included as a control to capture any effects it might exert on the dependent variable.

***Results Environmental Policy in California***

We estimated the equation listed above separately for the California Assembly and the California Senate. After conducting factor analysis on the initiatives to construct our measure of citizen preferences, we saved that value and used it as the primary independent variable to test the equation listed above using OLS regression. Our analysis of California legislators’ support for environmental issues is presented in Table 3.

The results presented in Table 3 support the expectations of this study. Citizen preferences on environmental issues are a predictor of legislator voting on environmental issues even after taking into account other influences such as legislator ideology, district partisanship, and other variables. According to the results, legislators representing districts with citizens that demonstrate a more pro-environmental preference through their voting patterns on ballot measures are more likely to support an environmental agenda in the legislature.

To illustrate the effect, we used the coefficient, held all the other variables constant, and computed the change in the support for environmental issues based upon a district’s environmental support score. In the Assembly, the difference between a member at the 25th percentile and the 75th percentile on the measure of citizens’ environmental preferences is a score of 6.93 on the legislative scorecard of the Sierra Club. In the Senate, the difference between the 25th and 75th percentile on citizens’ environmental preferences is more pronounced with a score of 12.06 on the Sierra Club’s legislative scorecard.

In addition to our primary independent variable of interest, the results show that ideology also seems to have an effect in the expected direction. Using the interquartile range of member ideology for each party in each chamber, we can compute the effect ideology has on the voting record of members of the state legislature. The interquartile range for ideology of Democratic senators, for example, is 0.489 which suggests that the difference between a Democratic senator at the 25th percentile on ideology among Democrats and one at the 75th percentile is a difference of approximately 10 points on the Sierra Club support scale. For Republican senators that difference is approximately 5 points. The comparable numbers for those in the Assembly are approximately 8.5 points for Republicans members of the Assembly and 5.5 points for Democrats in the Assembly.

Combined with the results above, these findings suggest that deviations from the expected ideological polarization on these issues by members can, in part, be explained by the preferences of the citizens in their respective districts. These findings provide support for the belief that legislative behavior is based upon influences that fit with both the *trustee and delegate* models of representation.

The results for the other control variables showed mixed results. For the Senate, both district partisanship and term limits had an impact on support for environmental policy. Senators about to be term-limited out of office are more likely to support environmental policies, perhaps as they look to a broader constituency for even higher office. For Senate districts, Democratic registration had a slight negative effect after taking into consideration legislator ideology which is, perhaps, surprising. Although this is not a primary variable of interest, more research could be conducted to determine why this relationship exists. For the Assembly, those members with smaller margins of victory are more likely to support environmental policies. Perhaps, this is due to the importance of rallying support from important environmental groups for the more competitive campaigns.

***Conclusion and Future Research***

With this research, we investigate a classic question, *Do Representatives Represent*? We build from past studies that use election returns on ballot measures to estimate citizen preferences by utilizing an approach that is more directed than those that use all measures and more generalizable than those that match legislator voting and citizen preferences on specific referenda. We use this measure to predict legislator behavior on environmental issues in California and find evidence to suggest that citizen preferences do help us explain how legislators vote even after taking into consideration important factors such as ideology or partisanship.

These findings provide evidence that the classic alternatives between the *trustee* and *delegate* models of representation are both helpful in understanding legislator behavior. Legislators appear to be influenced by forces such as partisan constraints, their personal ideological leanings, and the preferences of their citizens on policy issues.

In states with frequent usage of direct democracy, this measure of citizen preferences to explore questions of representation can be helpful in determining preferences for a number of issue areas. In this study, we explored environmental policies and representation because of the issue importance in California and to better understand the relatively green Republicans and red Democrats. To the extent that this type of divergence from normal ideological voting patterns can be explained by citizen preferences, the study suggests some support for the presence of some delegate form of representation.

Finally, this approach might be even more useful for local politics. Using election return data at the precinct level, it is possible to test the impact of citizen preferences on the behavior of elected officials for city offices and even special districts. This approach can potentially enhance our understanding of representation at many understudied levels of government.

Table 1: Direct Democracy Measures for environmental dimension in California, 2002-2010.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Measure | Description | Election | Percent Voting Yes | Type of Proposition |
| Proposition 40 | Parks and recreation | 2002 | 56.9 | Bond |
| Proposition 50 | Water projects | 2002 | 55.3 | Bond |
| Proposition 1B | Highway Safety, Traffic Control, Air Quality, Port Security | 2006 | 61.4 | Bond |
| Proposition 84 | Flood Control and Water Supply | 2006 | 53.8 | Bond |
| Proposition 87 | Alternative Energy Tax | 2006 | 45.4 | Initiative Const Amend / Initiative Statute |
| Proposition 1A | High Speed Rail | 2008 | 52.7 | Bond |
| Proposition 2 | Safe confines for farm animals | 2008 | 63.5 | Initiative Statute |
| Proposition 7 | Renewable Resource | 2008 | 35.5 | Initiative Statute |
| Proposition 10 | Alternative Fuels | 2008 | 40.5 | Initiative Statute |
| Proposition 21 | Vehicle License Fee for Parks | 2010 | 42.7 | Initiative Statute |
| Proposition 23 | Suspension of Global Warming Solutions Act of 2006 | 2010 | 38.4 | Initiative Statute |
| Proposition 26 | Supermajority for taxes | 2010 | 52.5 | Initiative Const Amendment |

Table 2. Factor Analysis for Citizen Preferences on Environmental Issues.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Assembly Districts | | Senate Districts | |
| Measure | Factor Loading | Rotated Loading | Factor Loading | Rotated Loading |
| Proposition 40 | 0.95 | 0.77 | 0.95 | 0.74 |
| Proposition 50 | 0.83 | 0.50 | 0.93 | 0.63 |
| Proposition 1B | 0.87 | 0.60 | 0.87 | 0.62 |
| Proposition 84 | 0.98 | 0.80 | 0.98 | 0.81 |
| Proposition 87 | 0.91 | 0.90 | 0.97 | 0.93 |
| Proposition 1A | 0.84 | 0.79 | 0.84 | 0.83 |
| Proposition 2 | 0.88 | 0.77 | 0.88 | 0.72 |
| Proposition 7 | 0.43 | 0.01 | 0.37 | -0.01 |
| Proposition 10 | 0.55 | 0.07 | 0.50 | 0.06 |
| Proposition 21 | 0.78 | 0.95 | 0.79 | 0.95 |
| Proposition 23 | -0.94 | -0.96 | -0.95 | -0.96 |
| Proposition 26 | -0.87 | -0.98 | -0.89 | -0.99 |

|  |  |
| --- | --- |
| Assembly Data; n = 80 | Senate Data: n = 40 |
| Eigenvalue for Environmental Factor: 8.34 | Eigenvalue for Environmental Factor: 8.60 |
| % of Total Variance explained: 76.37 | % of Total Variance explained: 76.12 |
| LR Test: Chi2(66) = 1670.15; Prob > Chi2 = 0.000 | LR Test: Chi2(66) = 959.96; Prob > Chi2 = 0.000 |

Table 3. Impact of Citizen Preferences on Environmental Issues on Legislative Scorecards by Sierra Club, 2011.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Assembly Districts | | Senate Districts | |
| Variable | Coefficient | Standard Error | Coefficient | Standard Error |
| Citizen Preferences Environmental Issues | 4.50 | 1.58\*\*\* | 12.06 | 5.14\*\* |
| Legislator Conservatism | -13.90 | 1.21\*\*\* | -20.46 | 3.53\*\*\* |
| Female Legislator | 1.94 | 2.14 | 2.84 | 6.13 |
| Democratic voter registration in district | -0.03 | 0.19 | -0.95 | 0.43\*\* |
| Term Limits | -3.75 | 2.55 | 14.43 | 4.58\*\*\* |
| Prior Vote Margin | -0.44 | 0.14\*\*\* | 0.21 | 0.31 |
| Constant | 81.70 | 8.38\*\*\* | 61.70 | 27.46\*\* |
|  | \*\*\* p < 0.01; \*\* p < 0.05; n = 79 | | \*\*\* p < 0.01; \*\* p < 0.05; n = 40 | |
|  | R-square = 0.90 | | R-square = 0.89 | |
|  | Prob > F = 0.0000 | | Prob > F = 0.0000 | |

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