USING MULTI-MEMBER-DISTRICT ELECTIONS
TO ESTIMATE THE SOURCES
OF THE INCUMBENCY ADVANTAGE [1]

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Abstract

In this paper we use a novel research design that exploits unique features of multi-member districts to estimate and decompose the incumbency advantage in state legislative elections. Like some existing related studies we also use repeated observations on the same candidates to account for unobserved factors that remain constant across observations. Multi-member districts have the additional feature of co-partisans competing for multiple seats within the same district. This allows us to identify both the direct office holder benefits and the incumbent quality advantage over non-incumbent candidates from the same party. We find that the overall incumbency advantage is of similar magnitude as that found in previous studies. We attribute approximately half of this advantage to incumbents' quality advantage over open seat candidates and the remainder to direct office holder benefits. However we also find some evidence that direct office holder benefits are larger in competitive districts than in safe districts and in states with relatively large legislative budgets per capita.

1. Introduction

The incumbency advantage is one of the most studied features of U.S. elections. The size and growth of the incumbency advantage has been estimated using numerous methods and data sets.[1] We now estimate that the overall incumbency advantage to be around 4% for low level state offices to around 8% for high level federal and statewide offices since the 1980s.

What is often missing from the existing literature are good estimates of the sources of this advantage. The degree to which the incumbency advantage is a normative concern is likely to depend upon the cause of the advantage. An advantage derived from being a high quality candidate who works hard at using her office resources on behalf of her constituency is likely to have different implications for representation than an advantage that arises from unremarkable incumbents somehow deterring the entry of high quality challengers.

This paper has two goals. First, we provide estimates of the incumbency advantage exploiting a new research design. This research design does not suffer from the same biases that plague some other approaches. Our estimates are nonetheless comparable to those in previous studies, and thus reinforce our confidence that the incumbency advantage is not simply a statistical artifact.

Our second goal is to uncover the sources of the incumbency advantage. In particular we estimate the magnitude of three components of the incumbency advantage commonly discussed in the literature: (1) the electoral benefits from being in office (e.g., Mayhew 1974; Cover 1977; Fiorina, 1977; Cain, Ferejohn and Fiorina, 1987; Ansolabehere, et al., 2000); (2) the quality of incumbents (e.g., Erikson, 1971; Zaller, 1993; Ashworth and Bueno de Mesquita, 2007); and (3) the deterrence of high quality challengers (e.g., Jacobson and Kernell, 1983; Jacobson, 1989; Banks and Kieweit, 1989; Cox and Katz, 1996; Gordon, et al., 2007).[2]

To accomplish these two goals we exploit unique features of multi-member district elections for state legislatures between 1972 and 2001. As in a few existing studies, we use repeated observations on the same candidates to account for variables that are difficult to

measure, such as the normal vote, candidate quality and partisan tides (e.g., Levitt and Wolfram, 1997; Ansolabehere, et al., 2000; Ansolabehere and Snyder, 2002). In multi-member districts candidates from the same party compete for state legislative seats under essentially equal circumstances – i.e. in the same district, at the same time and with the same opponents. Paying special attention to cases where one of the co-partisans is an incumbent and the other is not, we can estimate both the direct office holder benefits and the quality differential between incumbents and non-incumbents from the same party.

We also exploit features of multi-member districts to provide a new way to estimate the "scare-off" effect. In particular these districts can have multiple incumbents. By comparing cases where the number of incumbents changes but at least one of the incumbents remains in office, we can estimate the change in challenger quality relative to the "fixed" incumbents. Changes in challenger quality can be attributed to changes in the incumbency status of the "non-fixed" candidates.

We estimate that the overall incumbency advantage in two-member districts is approximately 5.2 percentage points.[3] This advantage appears to have grown slightly between the 1970s and the 1990s – from less than 5 to about 6 percentage points. Our estimates are of similar magnitude and have a similar pattern of growth as those in Cox and Morgenstern (1993).[4]

We find that most of the incumbency advantage in state multi-member district elections can be attributed to two components – direct office holder benefits and incumbent quality advantages. We attribute less than half of the incumbency advantage to direct office holder benefits. This is similar but slightly smaller than estimates for Congress (Ansolabehere, et al., 2000).[5]

We attribute the remaining half of the incumbency advantage to the higher quality of incumbents over open seat candidates from the same party. This is larger than the Levitt and Wolfram (1997) estimate, which finds no evidence that incumbents are higher quality than the average non-incumbents. However, our findings are consistent with the literature that suggests that a large component of the incumbency advantage is due to the selection

of high quality candidates (Erikson, 1971; Zaller, 1993; Ashworth and Bueno de Mesquita, 2007). For example Erikson (1971, 396) writes:

> Although being an incumbent may increase a candidate's share of the vote, it is the candidates with the greatest appeal who have the best chance of becoming incumbents....Thus, even if incumbency does not offer an electoral advantage, incumbent candidates should tend to be stronger vote getters than their party's other candidates on the ballot.

This finding also provides a rationale for why we might expect the sophomore surge to be smaller than other incumbency advantage estimates even after accounting for the well known bias in the sophomore surge (Gelman and King, 1990).

We find little evidence that increasing the number of incumbents "scares-off" high quality challengers. Note that our estimate is a "marginal" scare-off effect. That is we estimate what happens to challenger quality in one party when the number of incumbents increases from one to two in the other party. This might be smaller than the scare-off when increasing the number of incumbents from zero. On the other hand, we do find some evidence of a marginal scare-off effect in terms of the number of challengers.

We also examine claims in the literature regarding how the size and sources of the incumbency advantage vary by district competitiveness. One logic is that incumbent quality will be higher in competitive districts since these districts are better at weeding out weak incumbents.[6] Others have argued that incumbents in competitive districts may exert more effort to utilize the direct office holder benefits since they are more vulnerable (e.g., Stein and Bickers, 1995). Alternatively, a standard assumption in the literature is that all elected officials are worried about losing the next election (e.g., Mann, 1977; King, 1997). This would predict that direct office holder benefits should be of the same magnitude across districts.

We find evidence that district competitiveness is related to incumbents' direct office holder benefits and possibly to incumbents' quality advantages. Incumbents have a smaller overall electoral advantage in safe districts. Direct office holder benefits are also smaller in

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safe districts. These findings are consistent with the notion that incumbents exert more effort when they face more electoral competition, i.e. it is not the case that all incumbents are constantly running scared. We also find some evidence that the incumbent quality advantage is also larger in competitive districts.

In the remainder of the paper we first describe the statistical specification and the data. In section 4 we estimate the incumbent quality advantage and direct office holder benefits. We then go on to examine how the incumbency advantage varies with factors such as district competitiveness, the size of legislative budgets and ballot structure. Section 6 presents the specification and estimates of whether high quality challengers tend to be "scared off" by additional incumbents. The final section is the conclusion and discussion.

2. Model Specification

Decomposing the incumbency advantage is particularly challenging because we are not able to observe factors such as candidate quality and district preferences. A number of previous studies use proxies to measure these components with variables such as previous office holding experience (e.g., Cox and Katz 1996) and/or vote shares for other offices such as the presidency (e.g., Ansolabehere, et al., 2000). One concern with this approach is the proxies include measurement error which biases the estimates. Much of the debate in this branch of the literature concerns the appropriateness of the various proxies.

An alternative approach is to take advantage of multiple observations within the same election and/or across elections (Levitt and Wolfram 1997; Ansolabehere, et al., 2000; Ansolabehere and Snyder 2002). This is the approach we employ.

The study that most closely resembles our motivation and research design is Levitt and Wolfram (1997), which decomposes the sources of the incumbency advantage into its three components by taking advantage of repeat challengers in U.S. House elections. One concern with the Levitt and Wolfram study is that repeat challengers are so rare in House races that they may be capturing something specific to these types of races. This sample selection issue is much less of a concern with our study given the large number of races in multi-member

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districts with repeat challengers.[7] Since winning candidates are more likely to compete in subsequent elections, the same candidates are likely to face each other multiple times in districts which elect several representatives. When we restrict attention to districts which elect only one candidate, we only observe repeat challengers in the rare situation where losing candidates choose to compete against an incumbent.

We focus on multi-member districts in state legislative elections. In these races multiple candidates from the same party compete in the same district, and voters are given n votes for n seats. This feature allows us to estimate the incumbency advantage by simply comparing the vote received by incumbents versus open seat candidates from the same party in the same race. Since we are comparing the relative vote shares of candidates from the same party we are less concerned about factors which affect both candidates that change over time – e.g., national partisan swings or shocks to district characteristics.

2.1 Intuition Behind Our Identification Strategy

Before presenting the equations for the models we estimate, we provide the intuition behind our identification strategy. Our claim is that assuming that candidate votes depend upon their quality, access to direct office holding benefits, and district characteristics, then the magnitudes of both the incumbent quality advantage and direct office holder benefits can be estimated by differencing the votes of co-partisans competing in multi-member districts.

Consider a two seat district with two candidates, 1 and 2, and two parties, D and R. The votes received by candidate i from party p in race j can be denoted as v_{p_ij}. The vote share of this candidate, V_{p_ij}, is equal to $v_{p_ij}/((v_{D_1j} + v_{D_2j})/2 + (v_{R_1j} + v_{R_2j})/2)$. We use the average vote Democratic and Republican vote totals in the denominator to account for the fact that voters can cast up to two votes.[8]

Now consider the two candidates from the same party. To simplify notation we drop the party subscript, p. Assume the vote shares received by two candidates from party p are

$$V_{1j} = \alpha_1 + \beta I_{1j} + \theta_j + \epsilon_{1j} \tag{1}$$

$$V_{2j} = \alpha_2 + \beta I_{2j} + \theta_j + \epsilon_{2j} \tag{2}$$

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where α_i is i's "quality," β is the direct office holder benefit incumbents receive, $I_{ij} = 1$ if candidate i is an incumbent and 0 otherwise, and θ_j is a race-specific term that captures all other factors affecting the vote, including the normal vote in the district, partisan tides, the qualities of the opposing party's candidates, and the qualities of any minor-party or independent candidates running in the district.

Our first quantity of interest is the magnitude of the combined incumbent quality advantage and direct office holder benefit. To recovered this quantity we ask a simple question: By how much does the vote of a non-incumbent differ from the vote of an incumbent when the two candidates are from the same party? Since voters are given two votes and the candidates share the same party label, we attribute any systematic gap in the number of votes received by incumbent and non-incumbent candidates to the difference in their incumbency status.[9] The fact that voters can cast two votes suggests that the candidates are not competing against one another for their party's "normal vote", which should be the same for both candidates. Thus, by averaging over many multi-member district races with an incumbent and non-incumbent from the same party, the difference in these candidates' votes provides an unbiased estimate of the combined incumbent quality advantage and direct office holder benefits.[10]

Using the above notation, we can easily observe how the incumbent quality advantage and direct office holder benefits can be recovered by simply differencing equations (1) and (2).

$$\Delta V_j = V_{1j} - V_{2j} = (\alpha_1 - \alpha_2) + \beta(I_{1j} - I_{2j}) + \eta_j \tag{3}$$

where $\eta_j = \epsilon_{1j} - \epsilon_{2j}$. To the extent that $(\alpha_1 - \alpha_2)$ is correlated with $(I_{1j} - I_{2j})$, in a cross-sectional regression the incumbency indicator variable would estimate the combined effects of the office holder benefits and the incumbent quality advantage over open seat candidates from the same party.[11] Thus, when candidate 2 is an incumbent and candidate 1 is an open seat candidate, $-\Delta V_j$ is an estimate of the overall incumbency advantage.

To isolate the direct office holder benefit, β, we can exploit the fact that in multi-member districts pairs of candidates often face each other more than once. In particular we focus on

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races where candidate 1's incumbency status changes while the other candidate from same party, candidate 2, is an incumbent in both races. We ask a simple question: By how much does candidate 1's vote change, relative to incumbent candidate 2's vote, when candidate 1 switches from being a non-incumbent to being an incumbent. We attribute the degree to which candidate 1 is able to "catch-up" with candidate 2 to the direct office holder benefits candidate 1 acquires by being an incumbent.

Using the above notation we can illustrate this point by differencing the differences in the votes for candidates 1 and 2. First, denote a subsequent meeting between the candidates from race j as race k. Then

$$\Delta V_k = V_{1k} - V_{2k} = (\alpha_1 - \alpha_2) + \beta(I_{1k} - I_{2k}) + \eta_k \tag{4}$$

Subtracting equation (3) from equation (4) yields

$$\Delta V_k - \Delta V_j = \beta((I_{1k} - I_{1j}) - (I_{2k} - I_{2j})) + (\eta_k - \eta_j). \tag{5}$$

If, say, candidate 1 is a non-incumbent in race j and an incumbent in race k, and candidate 2 was an incumbent in both races, then $(I_{1k} - I_{1j}) - (I_{2k} - I_{2j}) = 1 - 0 = 1$, and $\Delta V_k - \Delta V_j = \beta + (\eta_k - \eta_j)$. Averaging across a large number of such cases, then, yields an estimate of β that is purged of candidate quality.[12] This is simply a differences-in-differences estimator.

Equations (3) and (5) also provide enough information to isolate the average quality differential between incumbent and non-incumbent candidates. The β from equation (5) can be subtracted out of $(\alpha_2 - \alpha_1 + \beta)$ from equation (3) to recover $(\alpha_2 - \alpha_1)$. If both candidates 1 and 2 eventually win office, then we might expect $(\alpha_2 - \alpha_1)$ to be small. However, if all candidates, irrespective of whether they win office or not, are included in equation 3, then we can recover an unbiased estimate of the incumbent quality advantage over the average non-incumbent.

2.2 Model Estimation

The above discussion describes how features of multi-member districts can be used to

identify both the incumbent quality and the direct office holder advantages. Although we demonstrate the intuition for our identification strategy by differencing the vote shares of pairs candidates, the models we estimate include candidate- and race-specific fixed effects rather than simply compare differences in vote shares. The fixed effects have the same effect as differencing candidates' vote shares as was done in equations (3) and (5).

To identify the combined incumbent quality and direct office holder advantage, we regress V_{ij} on a race-specific fixed effect and an incumbency indicator variable.[13]

$$V_{ij} = \delta I_{ij} + \theta_j + \epsilon_{ij} \qquad (6)$$

δ is an estimate of $(\alpha_2 - \alpha_1) + \beta$ when candidate 2 is an incumbent and candidate 1 is a non-incumbent. Including a race-specific fixed effect is equivalent to differencing the vote shares of incumbents and non-incumbents from the same party in the same race as in equation (3).

In equation (5) we illustrate how the direct office holding benefits, β, can be identified for repeat pairs of candidates by differencing the differences in equations (3) and (4) when candidate 1 moves from being a non-incumbent to an incumbent. Again, this quantity of interest can be estimated directly, following the same logic as in equation (5), by regressing V_{ij} on a candidate-specific fixed effect, α_i, a race-specific fixed effect, θ_j and an incumbency indicator variable, I_{ij}. Thus, we estimate β using the following specification:

$$V_{ij} = \alpha_i + \beta I_{ij} + \theta_j + \epsilon_{ij} \qquad (7)$$

Subtracting this estimate of β from the above estimate of δ provides an estimate of $\alpha_2 - \alpha_1$.

In order to keep the cases as comparable as possible we only examine races that are fully contested – i.e. in an M-member districts there are M candidates from each party.[14] This avoids issues related to how voters reallocated their M votes when the number of choices from any particular party changes. At various points we discuss how results differ if we were to include the entire sample.[15] The main substantive conclusions are unaffected.[16]

Furthermore we restrict attention to races that help identify parameters of interest. Thus, we include races with at least one incumbent candidate and exclude races with incumbents

from both political parties.[17] One implication of these restrictions is that, for any given race, we can focus on the candidates from one party.

2.3 Two Potential Sources of Bias

Our estimate of β may understate the magnitude of the direct office holder benefits for at least two reasons: (i) the direct office holder benefits may in fact be growing over a incumbent's tenure in office; (ii) non-incumbents who win office may receive a larger shock than the average non-incumbent.

If incumbents become better at using the benefits from holding office during their tenure, or if the benefits from holding office increase with tenure (e.g., better committee assignments, or party or committee leadership positions) then our estimate of β in equation (7), which is for the incumbent's sophomore year, is smaller than the actual office holder benefit. While theoretically possible, prior empirical research finds that the growth is small (e.g., Hibbing 1991; Ansolabehere, et al., 2001).

In any case, we can easily allow β to vary with the incumbents' terms in office. For $t = 1, ..., T$, let $I_{ij}^t = 1$ for candidates i serving their 1st to tth terms and zero otherwise.[18] Then the equation we estimate is:

$$V_{ij} = \alpha_i + \beta_1 I_{ij}^1 + ... + \beta_T I_{ij}^T + \beta_{T+1} I_{ij}^{T+1} + \theta_j + \epsilon_{ij} \tag{8}$$

As discussed in section 2.2, if we constrain α_i to equal a constant for all candidates then the coefficient on the incumbency indicator will be an estimate of the incumbent quality advantage and direct office holder benefit.

Another reason our estimates of β may be biased downward is selection bias. Let $\widetilde{V_j}$ be the maximum vote share among the candidates from the other party. Then the bias may arise because $E[\eta_j \,|\, V_{1j} > \widetilde{V_j}$ and $V_{2j} > \widetilde{V_j}]$ is likely to be positive when candidate 2 is an incumbent and candidate 1 is not. The logic is straightforward: assuming the incumbency advantage is positive, candidate 1 would on average require larger positive shock than candidate 2 in order to win office (i.e. $E[\epsilon_{1j} \,|\, V_{1j} > \widetilde{V_j}] > E[\epsilon_{2j} \,|\, V_{2j} > \widetilde{V_j}]$).[19] Note that $E[\eta_k \,|\, V_{1k} > \widetilde{V_k}$ and $V_{2k} >$

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$\widetilde{V_k}] = 0$ when candidates are both incumbents.

One way to address this potential bias is to assume that ϵ_{1j} and ϵ_{2j} are normally distributed and independent. Then $\hat{\beta}$ estimated using equation (7) would have the following bias:

$$\sigma_{\epsilon_{2j}} \frac{\phi\left(\frac{.5-\alpha_2-\beta-\theta_j}{\sigma_{\epsilon_{2j}}}\right)}{1 - \Phi\left(\frac{.5-\alpha_2-\beta-\theta_j}{\sigma_{\epsilon_{2j}}}\right)} - \sigma_{\epsilon_{1j}} \frac{\phi\left(\frac{.5-\alpha_1-\theta_j}{\sigma_{\epsilon_{1j}}}\right)}{1 - \Phi\left(\frac{.5-\alpha_1-\theta_j}{\sigma_{\epsilon_{1j}}}\right)} \qquad (9)$$

With equation (9) we can calculate bounds on the magnitude of the bias.[20] The lower bound of β is $\hat{\beta}$ from equation (7). We can use our measures of the normal vote as a proxy for θ. Then, since we have an estimate of $\beta + (\alpha_2 - \alpha_1)$ from equation (6), what we need to estimate the magnitude of the bias is α_1, $\sigma_{\epsilon_{1j}}$, and $\sigma_{\epsilon_{2j}}$. We can approximate the magnitude of bias by setting α_1 to be 2 percentage points, which is roughly the estimate of previous officer holder benefit in existing studies of Congress (e.g., Ansolabehere and Snyder 2002), and setting both $\sigma_{\epsilon_{1j}}$, and $\sigma_{\epsilon_{2j}}$ to $\hat{\sigma}_\epsilon$ which is estimated from equations (7). In section 4 we discuss the sensitivity of our bias estimate to the values we assign to α_1, $\sigma_{\epsilon_{1j}}$, and $\sigma_{\epsilon_{2j}}$.

We should also note that the estimates of the combined office holder benefits and incumbent quality advantage in equations (6) are not biased when we include all of the observations, including those which are not repeat pairs, in the estimation of these equations. In this case we are not conditioning on the event $V_{1j} > \widetilde{V_j}$ or $V_{2j} > \widetilde{V_j}$.

3. Data and Variables

The three variables needed to estimate any of the above equations include state legislative candidates' vote shares, their incumbency status, and whether they are facing the same opponent(s).[21] The data to measure these variables come from ICPSR Study No. 21480.[22]

Another variable of interest is the degree of district competitiveness. We are only interested in a crude categorization – classifying districts as "competitive," "safely Democratic," or "safely Republican." To do this we first estimate the normal vote for the incumbent candidate's party. We do this for two periods, 1982-1990 and 1992-2000.[23] For the period 1982 to 1990 we use data for presidential, U.S. Senate, U.S. House, gubernatorial and all available down-ballot office elections from the *Record of American Democracy*. We estimate

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the normal vote by averaging across all of these offices for which there were elections during the period. For the period 1992 to 2000 we use data for all presidential, U.S. Senate, and U.S. House elections in 2000 from the *Federal Elections Project*. Both of these data sources provide precinct-level electoral returns which we aggregated to state legislative districts.

One potential limitation with our study is that we cannot generalize from its findings. In particular, it is possible that the size of the incumbency advantage, and its sources, may differ significantly between multi-member and single-member districts. A common claim is that the incumbency advantage is lower in multi-member districts (e.g., Cox and Morgenstern, 1995; Carey, et al., 2000).[24] In fact, this claim is not well-founded.

Table 1 compares the sophomore surge in state legislative elections in states with and without multi-member districts over the period 1972 to 2001. (Note that we also control for the number of seats in multi-member districts – dropping this control does not affect the results.) The sophomore surge in both the single-member and multi-member districts is significantly lower in states with multi-member districts as compared to states with only single-member districts. However, there is little difference in the sophomore surge in single-member and multi-member districts in the states that have both types of districts – in fact, the sophomore surge is larger in two-member districts than in single-member districts in these states.[25] Thus, there is no evidence that the average difference between multi-member and single-member districts is due to district magnitude. Rather, the evidence in Table 1 indicates that the relatively low incumbency advantage observed in multi-member districts reflects features of the states that have multi-member districts, rather than features of the multi-member districts themselves.[26]

This raises the question of why the sophomore surge is smaller in states with multi-member districts. Although addressing this concern is beyond the scope of this paper, in Table A2 we compare several characteristics of states with and without multi-member districts.[27] On average the states with multi-member districts appear similar to the states with only single-member districts, with a few exceptions. The states that used multi-member districts tended to have a slightly higher population density and slightly stronger party

organizations. Although multi-member and single-member district states do appear to differ in terms of populations and size of legislative budgets – multi-member district states have smaller legislative budgets and smaller populations than single-member district states – in per-capita terms the legislative budgets are similar in the two types of states. Overall, in comparing these state characteristics we find little that would account for differences in the sophomore surge in multi-member and single-member district states. Explaining this difference remains an open question for future research.

In the analyses below we focus on two-member districts, which is the most common district magnitude.[28] In the appendix we include a table of results for districts with more than two members.

4. Office Holder Benefits and Incumbent Quality

This section focuses on estimating two components of the incumbency advantage – direct office holder benefits and incumbent quality advantages in two-member districts. We address the third component, "scare-off", in section 6.

The top panel of Table 2 presents estimates of the combined direct office holder benefits and incumbent quality advantage in fully contested two-member districts.[29] These are estimates of $\hat{\delta}$ in equation (6). Again since this estimate includes all candidates and not just repeat pairs it is an unbiased estimate of the overall incumbency advantage. These two components together give incumbents about a 5.2 percentage point electoral advantage.[30] We observe some growth in these two components over the three decades for which we have data – less than 5 percentage points in the 1970s and around 5 and half percentage points in the 1980s and close to 6 percentage points in the 1990s. Our estimates are similar to the estimates of the state legislative incumbency advantage in Cox and Morgenstern (1993) for the period 1972 to 1986. This provides further confirmation that the incumbency advantage exists in state legislative elections and that it has grown between the 1970s and the 1990s.

The middle row of Table 2 presents estimates of the combined direct office holder benefits and incumbent quality advantage, $\hat{\delta}$, for repeat pairs – candidates from the same party who

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face each other in more than one election. We might expect the quality difference between an incumbent and a future incumbent to be smaller than between an incumbent and the average open seat candidate. On average the non-incumbents who later appear as incumbents are likely to be of higher quality than the average open seat candidate who does not. The results show that the overall incumbency advantage is smaller for repeat pair candidates as compared to the full sample of challengers.

The last row of Table 2 presents an estimate of the direct office holder benefits, β, in equation (7). On average, incumbents receive a 2.4 percentage point advantage from holding office.[31,32] The office holding benefits are less than half the size of our estimate of the combined incumbent quality advantage and direct office holding benefit. This is smaller than the estimate in Ansolabehere, Snyder, and Stewart (2000) who find that approximately half of the overall incumbency advantage in Congress can be attributed to direct office holder benefits.[33]

As discussed in section 2.2, the difference between the incumbency effect in the last row versus the first row of Table 2 is an estimate of the average incumbent quality advantage over non-incumbent candidates from the same party. The incumbent quality advantage is approximately 2.8 percentage points relative to the average open seat candidate. This quality advantage contributes as much to the overall incumbency advantage as the direct office holder benefits. This is much larger than the estimate in Levitt and Wolfram, who find essentially no incumbent quality advantage.

The potential selection bias discussed in section 2 does not appear to have a substantial affect on our estimates of the direct office holder benefits using reasonable values of α_1 and σ_ϵ.[34] The bias-corrected office holder benefits still account for less than 45% of the overall incumbency advantage. This is still lower than the estimate in Ansolabehere, et al., (2000).[35]

Table 3 presents estimates the incumbency advantage allowing the direct office holder benefits to increase with tenure – i.e. β_t from equation (8). The estimates show that there is no noticeable change in direct officer holder benefits over an incumbent's terms in office. There is some evidence that the overall incumbency advantage is higher for the incumbents

in their third or higher term. This is consistent with electoral selection argument since the long tenure in office is likely to be an indication of the candidate's high quality.[36]

5. Heterogeneity in the Incumbency Advantage

Accounting for district partisanship in our analysis is useful in at least two respects. First, we can potentially address the concerns with bias discussed in section 2. Second, we can investigate one potential source of heterogeneity in the incumbency advantage, which is sometimes noted in the literature. We can also examine whether this heterogeneity reflects a difference in electoral incentives or in the type of incumbent selected.

We expect the bias in the estimate of the direct office holder benefit to be smaller in safe districts. As mentioned above, when candidate 2 is an incumbent and candidate 1 is a non-incumbent who eventually wins office, a potential bias arises because $E[\epsilon_1 - \epsilon_2 \mid V_1 > \tilde{V}$ and $V_2 > \tilde{V}]$ is likely to be positive since the non-incumbent does not have the office holding benefits and thus would require a larger positive shock to win office. However, in safe seats the non-incumbent would not need a substantially larger positive shock than the incumbent to win office. Thus we might expect the estimated direct office holder benefit to be larger in safe districts than competitive districts because of this difference in the expected magnitudes of the biases.

In Table 4 we divide the districts according to whether they are competitive or safe. Districts where the Democratic (Republican) normal vote is less than 60% are considered competitive districts for Democratic (Republican) candidates. Districts where the Democratic (Republican) normal vote is greater than 60% and less than 85% are considered safe for Democrats (Republicans).[37]

The top of Table 4 presents our estimate of $\hat{\delta}$ from equation (6) by district competitiveness. On average the incumbents have a larger electoral advantage in competitive versus safe districts – 6.5 versus 2.6 percentage points. Since the bias should be towards finding a larger incumbency advantage in safe districts, this indicates a strong negative relationship between district safety and the incumbency advantage.

The results on the bottom of Table 4 show that a large part of the difference between competitive and safe districts can be attributed to the difference in direct office holder benefits – i.e. β from equation (7). The direct office holder benefits are larger in competitive districts – 3.0 as compared to 1.2 percentage points. The estimate of the direct office holder benefits in safe districts is not statistically significant. This finding is consistent with the idea that incumbents exert more effort to use their office holder benefits when they are in competitive districts. There is some evidence that incumbents are of noticeably higher quality in competitive versus safe districts, as predicted by Ashworth and Bueno de Mesquita (2007). However, in both competitive and safe districts there is a substantial incumbent quality advantage over open seat candidates.

Table 5 explores two other possible sources of heterogeneity. First, states with a "party lever" on the ballot could reduce the magnitude of the incumbency advantage if this option induces more straight-ticket voting. Thus, we include an interaction term between party lever and our incumbency indicator variable. The results in Table 5 suggest that the party lever did not reduce the magnitude of the overall incumbency advantage or the direct office holder benefits.

Second, some previous studies have found a positive correlation between the size of the legislative budget and the magnitude of the incumbency advantage across states (e.g., King, 1991; Cox and Morgenstern, 1993). Unlike previous studies we can estimate whether this is due to incumbents utilizing the government resources or due to high quality candidates being attracted to office by the lure of influencing a large legislative budget. We therefore interacted our incumbency indicator variable with the size of the state legislative budget per capita.[38] The state legislative budget data come from the *Compendium of State Government Finances*. We categorized the average state legislative budget for each state as being small, medium or large.[39] The results in Table 5 provide some evidence that legislative "resources" matter in the predicted manner. The relationship between direct office holder benefits and the relative size of the state legislative budgets per capita is positive (bottom panel).[40] The magnitude of the coefficient on the interaction between incumbency and large state legislative

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budget per capita is of similar magnitude in the top and bottom panels which suggests that the larger incumbency advantage in states with large legislative budgets is likely to be due to the difference in direct office holder benefits in these states.[41]

6. "Scare-Off" of Opposition Party Challengers

The multi-member districts also allow us to estimate the "scare-off" effect in a novel way. Most previous studies of scare-off have used some proxy for candidate quality, such as past office holding experience. In contrast we take advantage of the large number of races with the same incumbent running in two different years in two situations. In situation 1, she is the only incumbent in the election from her party. Since one seat in the district is "open" we expect high quality challengers from both parties. In situation 2, there are two incumbents from her party and no "open" seats. If there is a large scare-off effect we would expect the challengers in situation 2 to be "weaker" than in situation 1. This would result in a higher vote share for the continuing incumbent relative to the challengers. Equivalently, the new challengers' vote shares relative to the continuing incumbent will fall. Note that this purposely ignores the change in votes for the new incumbent. This design only involves the votes for the continuing incumbent and the challengers.

Consider a two-seat district j (we suppress this subscript to simplify notation). Suppose in the election at time t of district j, there are two candidates from party D and two candidates from party R. Candidate 1 from party D is an incumbent and the rest of the candidates are non-incumbents. Further suppose that candidate 2 from party D wins the election at t so she appears as an incumbent in following election at time $t + 1$. In the election at time $t + 1$ party D renominates candidates 1 and 2 but party R nominates two different candidates.[42] The "scare-off" from the change in the D candidate's incumbency status should lead to a drop in the R candidates' vote shares relative to candidate 1 from party D between the t and $t + 1$ elections.

We can define the average vote share of the two challengers from party R relative to candidate 1 from party D who is an incumbent at both time $t + 1$ and t. At time t the

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vote share of the challengers is $\bar{V}_{Rt} = \frac{(V_{R_1 t} + V_{R_2 t})/2}{V_{D_1 t} + (V_{R_1 t} + V_{R_2 t})/2}$ where $V_{D_1 t}$ is the vote for candidate 1 from party D and $\bar{V}_{R,t+1}$ is defined analogously. We are excluding the vote share of candidate 2 from party D. Since we are observing the same district with the same candidates from party D we simply difference out the effects of characteristics of party D's candidates and of district j. Thus subtracting $\bar{V}_{Rt}$ from $\bar{V}_{R,t+1}$ yields

$$\Delta \bar{V}_{R,t+1} = \Delta \bar{\alpha}_{R,t+1} + \Delta \gamma_{t+1} + \eta_{R,t+1} \tag{10}$$

where $\Delta \bar{\alpha}_{R,t+1}$ is the difference in candidate quality which is the average "scare-off" effect from the change in the incumbency status of candidate 2 from party D between t and $t+1$; $\Delta \gamma_{t+1}$ is the change in partisan tides between t and $t+1$; and $\eta_{R,t+1}$ is equal to $\epsilon_{R,t+1} - \epsilon_{Rt}$.

Since the vote share of candidate 2 from party D is not directly included in the calculation of $\bar{V}_{Rt}$, the change in incumbency status of candidate 2 from party D is assumed to affect $\Delta \bar{V}_{R,t+1}$ only through $\Delta \bar{\alpha}_{R,t+1}$. Thus, as above we could also estimate the "scare-off" effect with the following specification:

$$\bar{V}_{Rt} = \lambda_{D_{12}} + \rho I_{D_2 t} + \gamma_t + \eta_{Rt} \tag{11}$$

where $\lambda_{D_{12}}$ is an indicator variable for each unique pair of candidates from party D. $I_{D_2 t}$ is an indicator variable for the incumbency status of candidate 2 from party D. γ_t is a year fixed effect. Thus, ρ is an estimate of $\Delta \bar{\alpha}_{Rt}$ from equation (10).

We also estimate whether incumbency is related to the number of opposition candidates. Consider the same situation as above with two elections and two Democratic candidates who face each other in both elections. Again Democratic candidate 2 is not an incumbent in the first election then becomes an incumbent in the second election. Let O_{Rt} be the number of Republican non-incumbents in the two elections. We can estimate "scare-off" of opposition candidates with the following specification:

$$O_{Rt} = \lambda_{D_{12}} + \phi T_{D_{12} t} + \gamma_t + \xi_{Rt} \tag{12}$$

where $T_{D_{12} t}$ is the number of Democratic party incumbents in election t. As in equation

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(11), $\lambda_{D_{12}}$ is an indicator variable for each unique pair of candidates from party D and γ_t is a year fixed effect. Our coefficient of interest, ϕ, is an estimate of the change in the number of Republican candidates when the number of Democratic incumbents increases by one.

We estimate equation (11) for both Democrats and Republicans. The results on the top of Table 6 provide little evidence that having an additional incumbent in a race will "scare-off" high quality challengers. The "scare-off" effect, $\hat{\rho}$, is close to being statistically significant at the 5% level in "safe" districts but not in "close" districts.[43] However, with so few "safe" districts in our data set further research should check the robustness of these results.

Our estimates of equation (12) are presented on the bottom of Table 6. These results provide some evidence that the number of opposition party challengers is related to incumbency. This is consistent with some previous findings in the literature. However, even this finding is rather tenuous. When we examine only those districts where we have data on the normal vote, the magnitude of the coefficient declines and it is no longer statistically significant. We only have data on the normal vote for the period from 1982 onward. The effect is most prominent in the pre-1982 period.

We should note that in some respects it is not surprising that the incumbent "scare-off" effect is less evident than in existing studies of single-member district elections. First, the "scare-off" we are estimating is the marginal impact of adding an additional incumbent when there is at least one continuing incumbent. Thus we may not expect to observe as large a "scare-off" effect as in the single-member district case.[44] Furthermore since we are focusing on repeat pair cases it is possible that quality candidates from party R may be already scared off in period $t-1$ due to the high quality of the repeat candidates from party D. As discussed above when candidates from party D are a repeat pair they both tend to be high quality candidates. Finally, our estimates of office holder benefits in state legislative elections is smaller than that found for Congress. Thus, the "scare off" effect from incumbency would likely be smaller as well.

7. Conclusion

We find a sizeable incumbency advantage in multi-member district elections for state legislatures. This confirms findings from previous studies. Our research design allows us to go further than most existing studies, however, and decompose the advantage. Doing this we find a substantial direct office holder benefit, as well as a large incumbent quality advantage. We attribute at least half of the overall incumbency advantage to the higher quality of incumbent candidates over the average open seat candidate from the same party.

Intra-state heterogeneity is evident in our findings. First, incumbents in more competitive districts have larger direct officer holder benefits. This pattern is consistent with the idea that incumbents use their office resources to respond to electoral threats. Second, we find some evidence that the incumbent quality advantage may be higher in competitive districts, which is consistent with the predictions in Ashworth and Bueno de Mesquita (2007). Further research is needed to confirm the robustness of this second result.

We also find inter-state heterogeneity. In particular, the size of the state legislative budget appears to be positively correlated with the magnitude of the direct office holder benefits. This is more direct confirmation of the literature, which claims that incumbents exploit their access to government resources to provide themselves with an electoral advantage. These findings again highlight the importance of incorporating inter-state heterogeneity into analyses of the incumbency advantage.

Two potential areas in which our research into the components of the incumbency advantage could be extended include: (i) estimating the relative importance of different types of office holding benefits (e.g., campaign contributions); and (ii) examining the interaction between office holder benefits and candidate quality.[45] We hope to pursue these topics in future research.

Notes

[1]See, for example, Erikson, 1971, 1972; Mayhew, 1974; Cover and Mayhew, 1977; Gelman and King, 1990; Levitt and Wolfram, 1997; Ansolabehere, et al., 2000; Ansolabehere and Snyder, 2002; Gelman and Huang, 2006.

[2]To our knowledge Levitt and Wolfram were the first to divide the incumbency advantage into these three broad categories. Ansolabehere et al. (2000) combine categories 2 and 3 but further divide category 1 into the effort of candidates to cultivate a personal vote and simple cue substitution. We cannot separate the personal vote and cue-substitution components of direct office holder benefits. However, Ansolabehere, et al., (2006) has shown that cue substitution at least in Minnesota is not very significant.

[3]We discuss why this might be an underestimate of the overall incumbency advantage because of the difficulty estimating the total "scare-off" effect.

[4]Our estimates of the incumbency advantage are slightly smaller than some other studies in the literature (e.g., Holbrook and Tidmarch, 1991).

[5]Sekhon and Titiunik (2007) find no evidence of direct office holder benefits for congressmen in Texas between 2002 and 2006.

[6]Erikson (1971, 396) writes, "...a Congressman who consistently wins in a district where his party is weak may owe his incumbency to the fact that he is a strong candidate rather than owe his victories to the fact that he is an incumbent."

[7]Consider two-member districts, and consider all pairs of candidates from the same party where one is an incumbent and the other is not – these constitute the vast majority of potential cases we use to identify officeholder benefits. We exclude cases involving incumbents from both parties. Of these pairs, about 44% face each other in another election where the relative incumbency status is different from the first meeting. By way of comparison, consider the U.S. Congress since 1972, and consider all pairs of candidates (one from each major party) who meet at least once either in an open-seat race or a race where the incumbent loses –

these constitute the vast majority of potential cases Levitt and Wolfram use to identify officeholder benefits for members of congress. Of these pairs, under 12% face each other in another election where the incumbency status is different from the first meeting. The concern is that analyzing this rare sample of repeat pairs may lead to biased inferences. For example, Levitt and Wolfram may underestimate the office holder benefits if we tend to observe repeat pairs when the challengers do "better than expected" in their first meeting and voters infer something about the quality of the incumbent or the challenger from the first election. Alternatively, Levitt and Wolfram may overestimate the effect if repeat pairs tend to occur in close districts, which is where we expect the office holder benefits to be especially large.

[8] The two votes cannot be cast for the same candidate.

[9] For simplicity we ignore the cases where there is an incumbent from the other party.

[10] Note that at this point we are not limiting the sample to candidates who compete in more than one election.

[11] Note that this is not an estimate of all components of the incumbency advantage since it does not include the "scare-off" effect.

[12] In any particular election it is possible that changes in the attributes of challengers (e.g. quality, gender or ethnicity) may have different affects on the vote shares of candidates within repeat pairs. We assume that on average these changes in challenger attributes do not consistently favor either the candidate whose incumbency status changes or the candidate whose incumbency status remains same.

[13] We do not include a subscript for party, since, as will be explained later, we include the candidates from only one party for each race.

[14] We focus only on the Democratic and Republican Party candidates in our analysis. We also exclude cases where the top third party candidate receives more than 10% of the second place candidate. Although candidates occasionally switch partisan affiliations, there are no

party switchers among the cases we use to estimate the overall incumbency advantage or office holder benefits. There are also no third party candidates who appear as incumbents among these cases.

[15]About 22% of the 2,439 two-member district races without a significant third party candidate are dropped because they are not fully contested.

[16]We present the results for contests that are not full contested in the Appendix.

[17]Cases with incumbents from both parties add additional complications, because there are different possibilities regarding where the two incumbents draws votes, with different implications for estimating incumbency effects. We avoid these complications by excluding these races from our analysis. We checked what happens when we include them, and find that the estimates of the overall incumbency advantage are somewhat higher than what we report below, but the estimates of directly officeholder benefits are of similar magnitudes. There are reasons to suspect that including these cases produces an estimate of the overall incumbency advantage that is biased upward. It would be especially interesting to examine these races with individual-level voting data.

[18]Note that the $(T+1)$th term is slightly different meaning, $I_{ij}^{T+1} = 1$ if candidate i is an incumbent serving her $(T+1)$th or higher term and zero otherwise.

[19]Since ϵ_{ij} is normally distributed, $E[\epsilon_{ij} \,|\, V_{ij} > \widetilde{V_j}] = \sigma_{\epsilon_{ij}} \, \phi(\frac{.5 - \alpha_i - \beta I_{ij} - \theta_j}{\sigma_{\epsilon_{ij}}}) / [1 - \Phi(\frac{.5 - \alpha_i - \beta I_{ij} - \theta_j}{\sigma_{\epsilon_{ij}}})]$. Thus we see that $E[\epsilon_{ij} \,|\, V_{ij} > \widetilde{V_j}]$ is smaller when $I_{ij} = 1$ than when $I_{ij} = 0$.

[20]Alternatively we could examine districts where the party of candidates 1 and 2 is significantly advantaged – i.e., safe seats. In these districts ϵ_2 does not need to be large in order for candidate 2 to win a seat even without the direct office holding benefit. This is valid only if β does not vary by district competition. The results in section 5 suggest that office holder benefits differ between safe and close districts.

[21]We classify candidates as incumbents only if they won in the previous general election. Special elections may introduce some measurement error in our incumbency indicator. Al-

though we suspect that the ICPSR study 21480 may not contain all of the special elections, we were able to identify several candidates who are classified as non-incumbents but had previously won a special elections. When these candidates are classified as full term incumbents we observe only very minor changes in our point estimates which do not affect the substantive interpretations of our findings. How the incumbency status of special election winners should be coded is a general concern throughout the existing incumbency advantage literature.

[22]For more details about the data set see "State Legislative Elections, 1992-2002: An Overview of Incumbent Reelection, Open Seats, Turnover, and Competition" by Richard G. Niemi, Lynda W. Powell, William D. Berry, Thomas M. Carsey, and James M. Snyder, Jr.. We have made some additional corrections to the names and partisan affiliations of the candidates in the data set.

[23]These are the periods before and after the redistricting associated with the 1990 census. A number of states in our sample had redistricting in years other than in 1982 and 1992 (e.g., AL, ID, KS, MA, ME, MT, NH, SD, WI, WY). We adjust the normal vote calculation accordingly.

[24]Ashworth and Bueno de Mesquita (2006) provide a theoretical model which predicts that incumbents are more likely to shirk in multi-member districts.

[25]One concern is that a number of states with multi-member districts moved to having only single-member districts over time. If the sophomore surge grew over time then the difference between multi-member districts and single-member district states may simply reflect the fact that the multi-member district observations are from an earlier period. In Table A1 of the Appendix we show that difference in the sophomore surge between single-member and multi-member districts states exists even when we estimate the sophomore surge for each decade separately.

[26]As Gelman and King (1990) and others note, the sophomore surge is not an unbiased

estimate of the incumbency advantage. However, we do not see why the bias would be related to district magnitude or why it would be different in the single-member districts of states that only have single-member districts compared to states that have both single-member districts and multi-member districts.

[27]In Table A2 each state in each year is treated as a separate observation. In the first column we average across all observations where all of the state legislators were elected in single-member districts. In the second column we average across observations where at least some of the legislators were elected in multi-member districts.

[28]The following states are included in our analyses of fully contested two member districts: AK (15), AZ(110), HI (30), ID (35), IN (61), MA (12), MD (27), ME (4), MT (7), NC (139), ND (417), NH (169), NJ (477), NV (3), SC (3), SD (209), VA (13), VT (111), WV (45), WY (26).

[29]In Table A3 we present the results including districts that are not fully contested. On the top of Table A4 we vary the candidate fixed effects by redistricting periods. When possible we account for the redistricting that occurred not in 1982 or 1992. On the bottom of Table A4 we allow the candidate fixed effects to vary and we also drop the election years just following a redistricting. The results remain substantively similar to those presented in Table 2.

[30]A number of races used to estimate the overall incumbency advantage in Table 2 include two incumbents. These races help provide an estimate of $\hat{\sigma}_\epsilon$ which is used in Table A6 and also help identify the coefficients presented in Table 3. The estimates of the overall incumbency advantage in Tables 2, 4 and 5 are the same and remains statistically significant if we restrict our attention to the races which include incumbent and non-incumbent pairs.

[31]Among the repeat pairs used to estimate the direct office holder benefits, there are some cases where the incumbency status of the candidates within a repeat pairs does not vary overtime. These races help provide an estimate of $\hat{\sigma}_\epsilon$ which is used in Table A6 and also

help identify the coefficients presented in Table 3. The estimates of the direct office holder benefits in Tables 2, 4, and 5 are the same and remain statistically significant if we restrict attention to repeat pairs where we observe a change in the incumbency status of at least one candidate within the pair.

[32]In Table A5 we present the results for districts with more than two members. The overall incumbency advantage and direct officer holder benefits are smaller in these districts, but the incumbent quality advantage is roughly the same magnitude as in the two-member districts.

[33]The Ansolabehere, et al., (2000) estimate is slightly different because quality in their analysis includes "scare-off" effects, however in section 5 we find no systematic evidence for a "scare-off" effect in our sample.

[34]Note, α_1 is equal to 2 percentage points, and σ_ϵ estimated from the specification including race and individual fixed effects. As we would expect, the bias is slightly larger for smaller values of α_1 or when σ_ϵ is estimated including only race fixed effects.

[35]In Table A6 we present estimates of the direct office holder benefits and incumbent quality advantage varying both α_1 and σ_ϵ. We use the estimates of the overall incumbency advantage and direct office holder benefits from Table 4. If we use $\hat{\sigma}_\epsilon$ from the specification including only race fixed effects, then the estimated direct office holder benefit is substantially larger. This $\hat{\sigma}_\epsilon$ most likely overestimates σ_ϵ since it also includes the variation in α. It is possible that $\hat{\sigma}_\epsilon$ from the specification including the race and individual fixed effects is an underestimate of the true value of σ_ϵ. However, we believe it is relatively good estimate of σ_ϵ. In Table A6 we do not present the results for safe districts because the bias is always negligible in these cases.

[36]The higher quality of candidates with longer tenure may explain the difference between the estimates of β in the second and third rows of Table 2.

[37]We drop districts with normal votes greater than 85% because in these districts there

may be few voters who are not already voting for the incumbent's party.

[38]Cox and Morgenstern (1993, 1995) find that the legislative budget per capita is more highly correlated with the incumbency advantage than legislative budget per representative.

[39]For each year we ranked the states according to their legislative budget per capita from smallest to largest. We then averaged each states' ranking for the period five years before and including an election year. States with average rankings less than 20 were considered to have small state legislative budgets per capita. States with average rankings between 20 and 30 were considered to have medium state legislative budgets. The remaining states were considered to have large state legislative budgets.

[40]We also examined whether the size of the state legislative budget per legislator is correlated with the direct office holder benefits. For this variable the estimates have the "wrong" sign – office holder benefits appear to be lower in the states with larger state legislative budgets.

[41]The results are somewhat sensitive to the level of clustering and to a lesser degree how many years of budget data are used to calculate the ranking of state budget sizes.

[42]We exclude cases where the same candidate from party R runs at both times t and $t+1$.

[43]The evidence for a "scare-off" in vote shares is even weaker if we allow cases where one or more challengers run at both times t and $t+1$.

[44]There are few cases where both a Democrat and a Republican are incumbents. Using a similar research design as above we can examine the "scare-off" effect from the first incumbent in a party when the other party has a continuing incumbent. The "scare-off" effect is present but not statistically significant.

[45]Gordon and Landa (2008) provide a model where direct office holder benefits could create empirical challenges to decomposing the sources of the incumbency advantage.

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	All States	SMD States	MMD States				
			All	1 Seat	>1 Seat	2 Seats	>2 Seats
Sophomore Surge (1972-2000)							
Incumbency	0.024 (0.001)	0.028 (0.001)	0.014 (0.001)	0.013 (0.002)	0.014 (0.002)	0.018 (0.002)	0.009 (0.002)
Number Seats	0.001 (0.001)		-0.000 (0.001)		0.001 (0.001)		0.000 (0.003)
Obs	28825	21176	7649	2907	4742	2752	1990

Table 1: Sophomore Surge in States With and Without Multi-member Districts

Table 2:
Incumbent Quality and Office Holder Benefits
in Fully Contested Two-Member Districts

	All Seats	1972 to 1981	1982 to 1991	1992 to 2001
Overall Incumbency Advantage (All Races)				
Incumbency Indicator	0.052* (0.005)	0.046* (0.007)	0.054* (0.009)	0.059* (0.009)
Observations	3826	1482	1178	1166
Overall Incumbency Advantage (Repeat Candidates)				
Incumbency Indicator	0.034* (0.006)	0.026* (0.008)	0.044* (0.010)	0.032* (0.015)
Observations	2046	696	730	620
Office Holder Benefits				
Incumbency Indicator	0.024* (0.004)	0.023* (0.009)	0.026* (0.006)	0.022* (0.010)
Observations	2046	696	730	620

Race fixed effects are included and standard errors are clustered by pair of candidates when estimating the overall incumbency advantage. The coefficient on the incumbency indicator for the overall incumbency advantage results are estimates of $\hat{\delta}$ in equation (6). Race and candidate fixed effects are included and standard errors are clustered by candidate when estimating the officer holder benefits. The coefficient on the incumbency indicator for the office holder benefit results are estimates of $\hat{\beta}$ in equation (7). The number of races is equal to one half the number of observations.

		Repeat Candidates	
	Overall Incumbency	Overall Incumbency	Office Holder Benefits
Incumbency Indicator	0.048* (0.005)	0.027* (0.006)	0.025* (0.004)
Second Term	0.002 (0.005)	0.004 (0.005)	0.001 (0.005)
Third Term or Higher	0.011* (0.005)	0.014* (0.006)	0.005 (0.005)
Observations	3826	2046	2046

Table 3:
Office Holder Benefits and Tenure in Office
in Fully Contested Two-Member Districts

Race fixed effects are included and standard errors are clustered by pair of candidates when estimating the overall incumbency advantage. Race and candidate fixed effects are included and standard errors are clustered by candidate when estimating the officer holder benefits. The results in the office holder benefits column are estimates of β_t in equation (8). The number of races is equal to one half the number of observations.

	All Seats	Close Seat	Safe Seats
Table 4: **Incumbent Quality, Office Holder Benefits** **and District Competitiveness** **in Fully Contested Two-Member Districts**			
Overall Incumbency Advantage (All Races)			
Incumbency Indicator	0.051* (0.008)	0.065* (0.010)	0.026* (0.010)
Observations	1544	942	586
Overall Incumbency Advantage (Repeat Pairs)			
Incumbency Indicator	0.035* (0.009)	0.042* (0.011)	0.024 (0.013)
Observations	1002	598	392
Office Holder Benefits			
Incumbency Indicator	0.022* (0.006)	0.030* (0.007)	0.012 (0.010)
Observations	1002	598	392

Race fixed effects are included and standard errors are clustered by pair of candidates when estimating the overall incumbency advantage. The coefficient on the incumbency indicator for the overall incumbency advantage results are estimates of $\hat{\delta}$ in equation (6). Race and candidate fixed effects are included and standard errors are clustered by candidate when estimating the officer holder benefits. The coefficient on the incumbency indicator for the office holder benefit results are estimates of $\hat{\beta}$ in equation (7). The number of races is equal to one half the number of observations.

Table 5: The Effect of Straight-Ticket Ballots and the Size of Legislative Budgets Per Capita in Two-Member Districts			
Overall Incumbency Advantage			
Incumbent Indicator	0.051* (0.006)	0.040* (0.007)	0.038* (0.008)
x Medium Budget		0.008 (0.011)	0.008 (0.011)
x Large Budget		0.024* (0.011)	0.024* (0.011)
x Straight Ticket	0.002 (0.010)		0.004 (0.010)
Observations	3824	3826	3824
Office Holder Benefits			
Incumbent Indicator	0.023* (0.004)	0.012* (0.006)	0.011* (0.005)
x Medium Budget		0.012 (0.008)	0.012 (0.008)
x Large Budget		0.027* (0.010)	0.027* (0.010)
x Straight Ticket	0.005 (0.009)		0.005 (0.009)
Observations	2046		

Race fixed effects are included and standard errors are clustered by pair of candidates when estimating the overall incumbency advantage. Race and candidate fixed effects are included and standard errors are clustered by candidate when estimating the officer holder benefits. The number of races is equal to one half the number of observations.

	All Seats	Close Seats	Safe Seats
Table 6: **Opposition Candidate Quality** **in Two-Member Districts**			
Opposition Vote Share (Only Fully Contested)			
Incumbency Indicator	-0.002 (0.006)	-0.001 (0.013)	-0.027 (0.016)
Observations	490	152	86
Number of Opposition Candidates (Fully and Not Fully Contested)			
Incumbency Indicator	-0.115* (0.046)	-0.034 (0.093)	-0.020 (0.154)
Observations	1760	479	347

Fixed effects for year and pairs of incumbent party candidates are included but the coefficients are not reported. The standard errors are clustered by pair. The results in the top half of the table are estimates of ρ in equation (11). The results in the bottom half of the table are estimates of ϕ in equation (12).

Table A1: Sophomore Surge in States With and Without Multi-member Districts by Decade

	All States	SMD States	MMD States				
			All	1 Seat	>1 Seat	2 Seats	>2 Seats
Sophomore Surge (1972-1981)							
Incumbency	0.019 (0.001)	0.024 (0.002)	0.010 (0.002)	0.008 (0.004)	0.010 (0.003)	0.013 (0.004)	0.008 (0.004)
Number Seats	0.001 (0.001)		0.001 (0.002)		0.001 (0.002)		0.001 (0.005)
Obs	11033	7450	3583	1322	2261	1169	1092
Sophomore Surge (1982-1991)							
Incumbency	0.027 (0.001)	0.030 (0.002)	0.017 (0.003)	0.018 (0.005)	0.017 (0.003)	0.019 (0.004)	0.013 (0.005)
Number Seats	0.002 (0.004)		0.002 (0.003)		-0.002 (0.004)		-0.013 (0.027)
Obs	9102	6916	2186	800	1386	847	539
Sophomore Surge (1992-2000)							
Incumbency	0.029 (0.001)	0.032 (0.001)	0.016 (0.003)	0.017 (0.004)	0.017 (0.003)	0.022 (0.004)	0.003 (0.005)
Number Seats	0.007 (0.013)		0.006 (0.011)				
Obs	8690	6810	1880	785	1095	736	359

<table>
<thead>
<tr><th colspan="3" align="center">**Table A2: Comparing
Single-member and Multi-member
District and State Characteristics**</th></tr>
</thead>
</table>

	SMD	MMD
Dem Vote Share	0.51	0.50
Legislative Budget Size[1,2]	39,475	16,495
Legislative Budget per capita[2]	8.26	8.49
Total Government Spending / GDP[3]	0.14	0.15
Representatives	150	157
Population	5,659,304	2,871,526
Population Density[3]	164	180
Mayhew TPO $\geq$ 5	0.26	0.31
Straight Ticket[4]	0.44	0.41
Obs	1030	340

[1] in 000s of dollars. [2] 337 obs for MMD states. [3] 991 obs for SMD states and 331 obs for MMD states. [4] 1018 obs for SMD states and 335 obs for MMD states. Population and state GDP data come from the *U.S. Bureau of Economic Analysis*. Legislative budget data come from various issues of the *Compendium of State Government Finances* (later renamed *State Government Finances*). Mayhew's TPO scores come from Mayhew (1986). Population density data come from the *Census of Population and Housing*. Data on the size of state legislatures come from Burnham's "Partisan Division of American State Governments, 1834-1985," updated with information from the *Book of the States*.

	All Seats	1972 to 1981	1982 to 1991	1992 to 2001
Table A3: Incumbent Quality and Office Holder Benefits in Not Fully Contested Two-Member Districts				
Overall Incumbency Advantage (All Races)				
Incumbency Indicator	0.047* (0.004)	0.041* (0.006)	0.050* (0.007)	0.051* (0.008)
Observations Races	4878 2439	1900 950	1526 763	1452 726
Office Holder Benefits				
Incumbency Indicator	0.022* (0.004)	0.020* (0.010)	0.029* (0.006)	0.014 (0.010)
Observations Races	3222 1611	1104 552	1144 572	974 487

Race fixed effects are included and standard errors are clustered by pair of candidates when estimating the overall incumbency advantage. The coefficient on the incumbency indicator for the overall incumbency advantage results are estimates of $\hat{\delta}$ in equation (6). Race and candidate fixed effects are included and standard errors are clustered by candidate when estimating the officer holder benefits. The coefficient on the incumbency indicator for the direct office holder benefit results are estimates of $\hat{\beta}$ in equation (7).

	All Seats	1972 to 1981	1982 to 1991	1992 to 2001
Table A4: **Incumbent Quality and Office Holder Benefits** **in Fully Contested Two-Member Districts** **Allowing Candidate Fixed Effects to Vary by Redistricting Period**				
All Races				
Overall Incumbency Advantage	0.052* (0.005)	0.046* (0.007)	0.054* (0.009)	0.059* (0.009)
Observations	3826	1482	1178	1166
Office Holder Benefits	0.024* (0.004)	0.023* (0.008)	0.026* (0.006)	0.022* (0.009)
Observations	1818	618	624	576
Excluding Redistricting Years				
Overall Incumbency Advantage	0.053* (0.005)	0.049* (0.008)	0.051* (0.010)	0.059* (0.010)
Observations	3028	1178	906	944
Office Holder Benefits	0.022* (0.006)	0.021* (0.010)	0.030* (0.008)	0.015 (0.011)
Observations	1536	526	516	494

Race fixed effects are included and standard errors are clustered by pair of candidates when estimating the overall incumbency advantage. The coefficient on the incumbency indicator for the overall incumbency advantage results are estimates of $\hat{\delta}$ in equation (6). Race and candidate fixed effects are included and standard errors are clustered by candidate when estimating the officer holder benefits. The coefficient on the incumbency indicator for the direct office holder benefit results are estimates of $\hat{\beta}$ in equation (7).

<table>
<thead>
<tr><th></th><th>All Seats</th><th>1972 to 1981</th><th>1982 to 1991</th><th>1992 to 2001</th></tr>
</thead>
<tbody>
<tr><td colspan="5" align="center">Table A5:
Incumbent Quality and Office Holder Benefits
in Fully Contested Districts with More than Two Members</td></tr>
</tbody>
</table>

	All Seats	1972 to 1981	1982 to 1991	1992 to 2001
Overall Incumbency Advantage (All Races)				
Incumbency Indicator	0.041*	0.040*	0.037*	0.049*
	(0.004)	(0.005)	(0.009)	(0.009)
Observations	1798	852	549	397
Office Holder Benefits				
Incumbency Indicator	0.013*	0.011	0.020*	-0.002
	(0.004)	(0.008)	(0.007)	(0.007)
Observations	1431	565	477	389
Races	385	149	131	105

Race fixed effects are included and standard errors are clustered by pair of candidates when estimating the overall incumbency advantage. The coefficient on the incumbency indicator for the overall incumbency advantage results are estimates of $\hat{\delta}$ in equation (6). Race and candidate fixed effects are included and standard errors are clustered by candidate when estimating the officer holder benefits. The coefficient on the incumbency indicator for the direct office holder benefit results are estimates of $\hat{\beta}$ in equation (7).

	All			Close		
Table A6: **Bounds on Bias-Corrected Estimates of** **Incumbent Quality and Office Holder Benefits** **in Fully Contested Two-Member Districts**						
	$\alpha =$ 0.00	$\alpha =$ 0.02	$\alpha =$ 0.04	$\alpha =$ 0.00	$\alpha =$ 0.02	$\alpha =$ 0.04
σ Estimated with Repeat Challengers, Race and Candidate Fixed Effects						
Office Holder Benefit	0.022	0.022	0.022	0.038	0.032	0.030
Incumbent Quality Advantage	0.029	0.029	0.029	0.027	0.032	0.034
σ Estimated with All Races and Race Fixed Effects						
Office Holder Benefit	0.028	0.025	0.025	0.055	0.049	0.043
Incumbent Quality Advantage	0.023	0.026	0.026	0.010	0.016	0.021

The uncorrected estimates are from Table 4. In the top half of the table σ is estimated using the root mean squared error from equation (7) and the normal vote is 0.587. On the bottom half of the table σ is estimated using the root mean squared error from equation (6) and the normal vote is 0.527.