

# Turning Legislative Effectiveness into Electoral Success

November 22, 2019

## **Abstract**

Effective lawmakers are the workhorses of the U.S. Congress; yet we know little about the electoral payoff of their efforts. Are effective members better at warding off challengers in the next election? Do they win at a greater rate? To answer these questions, we draw on original data on congressional primary elections from 1980 to 2016, which allows us to focus on elections that lack partisan cues, and where voters tend to be highly knowledgeable about politics. We find that incumbents receive an electoral boost in congressional primaries from their legislative work in Congress. Effective lawmakers face fewer quality challengers and win their primaries at a greater rate than do less effective lawmakers. These benefits are enhanced when incumbents are ideologically well-aligned with primary voters, but diminished in the complex informational environment of a primary with multiple challengers. These findings provide important insights into the conditions under which voters hold lawmakers accountable for their legislative successes and failures.

## Introduction

In 1990 Wayne Gilchrest was elected to represent Maryland's 1st congressional district in the U.S. House of Representatives with nearly 57 percent of the vote. He served in the House until 2008, when he lost his bid for reelection in the Republican party primary. Throughout his time in the House, Gilchrest was known as an ideological moderate who was not afraid to buck the party line, especially on certain prominent issues, such as environmental policy and LGBT rights. Throughout Gilchrest's 18 years of service, he made a point of sponsoring substantive legislation on issues that he cared about, with a specific focus on environmental policy. In fact, all of the legislation Gilchrest introduced throughout his time in the House was on substantive issues, rather than commemorative matters; and in his 18 years he never sponsored a commemorative bill.

Although Gilchrest was a frequent sponsor of legislation, his ability to move his bills through the legislative process was uneven. He had notable successes in the areas of wildlife protection and nature conservation in 1998 through 2004. However, in his final two Congresses Gilchrest introduced notably fewer bills, and none of his bills became law. Gilchrest's inability to shepherd legislation through these later Congresses, coupled with his moderate positions and single-track focus on environmental legislation, likely influenced the entry decisions of potential challengers. In 2008, Gilchrest faced four Republican primary challengers—two of whom had previously served in the Maryland state legislature. On the Democratic side, four candidates competed for their party's nomination. Gilchrest ultimately lost the Republican primary to state senator Andy Harris by nearly 10 percentage points.<sup>1</sup>

Political scientists have long focused on the electoral connection between legislators

---

<sup>1</sup>Gilchrest then threw his support behind Democrat Frank Kratovil, who won the fall general election.

and their constituents (Mayhew 1974). Much of the literature on congressional behavior is based on the premise that members make decisions that increase (or, at least, don't decrease) their chances of reelection, or else they suffer consequences at the ballot box (Canes-Wrone et al. 2002). In light of the potential electoral consequences of their behavior, scholars have argued that legislators spend much of their time in the district claiming credit for their accomplishments (Mayhew 1974), and developing a *homestyle*, which includes explaining their legislative behavior in Washington (Fenno 1978). While many studies explore how Representatives vote with their district interests, and how they point to the virtues of their Washington-based accomplishments, it is less clear whether there is any meaningful electoral benefit from being actively engaged with the legislative process (Payne 1980). More bluntly stated, do highly effective lawmakers reap the rewards of their legislative prowess and achievements at the ballot box?

Previous research finds little evidence that the lawmaking effectiveness of members of the U.S. House boosts their electoral success. Butler et al. (2019) report that the average vote shares for reelected members who perform better than expected in their lawmaking effectiveness is 70.3 percent, compared to 69.6 percent for members who perform below expectations: a statistically and substantively insignificant difference. One plausible reason for this null finding is that Americans have little knowledge about the legislative effectiveness of their Representatives. When provided with information about their Representatives' performance, however, Butler et al. find that voters express greater approval for effective lawmakers and lower approval for ineffective lawmakers. The ability of constituents to hold their elected officials accountable based on their legislative performance thus appears, in part, to be related to the amount of information they have at their disposal when making their voting decisions.

We argue that such informational constraints are only part of the story. In addition to lacking knowledge about legislative performance, voters may treat lawmaking effectiveness as less salient when other factors, such as partisanship, dominate their decision calculus. Bluntly stated, many voters might plausibly care more about whether a candidate is likely to reflect their policy preferences (i.e., whether they are of the same party) than whether they are more or less effective at the lawmaking process. For a representative’s lawmaking effectiveness to meaningfully influence her electoral fate, then, one would expect that voters would have to be relatively well-informed about the legislator’s activities, and other factors (such as partisanship) must not be particularly salient to their decisions. To explore such a possibility, we leverage the unique structure of the nomination process in the U.S.—specifically, the incidence of congressional primary elections—to reconsider the relationship between legislative effectiveness and electoral outcomes. Even if the accountability link is weak in the general election, it may be alive and well at the primary stage because primary voters are more interested in, and knowledgeable about, politics than are general election voters (Norrander 2015; Sides et al. 2018), and because primaries take place *within* rather than *across* political parties.

In this paper, we examine the electoral payoffs of legislative effectiveness in primary elections. Our findings suggest that legislative activity in Congress does, in fact, yield rewards to incumbents in their primary elections. We show, first, that Representatives who are effective lawmakers face fewer quality challengers in their primaries than those incumbents who are less effective lawmakers. This finding suggests that quality candidates are less likely to challenge incumbents who can credibly advertise and claim credit for their policy accomplishments. Second, we find that effectiveness is positively associated with the incidence of primary election victory, even after accounting for a wide array of partisan

and electoral factors that contribute to (or detract from) primary vote shares.

However, we also establish that the accountability link is influenced by the broader primary election context and by incumbent characteristics. For example, the positive relationship between a Representative's legislative effectiveness and the prospects of her primary election victory diminishes in more complex electoral environments, such as when the number of primary candidates increases. We also demonstrate that the electoral benefit from being an effective lawmaker is particularly pronounced for more ideologically extreme incumbents. This finding suggests that primary voters may reward members who both share their policy preferences, and who are also able to translate these shared preferences into policy outcomes.

The results point to the importance of studying the role and impact of primaries as a mechanism of democratic accountability in the American political system. It goes without saying that the differences between the primary and general election environments have become more and more transparent in the contemporary political landscape. As the number of swing districts has continued to decline in recent election cycles, the locus of competition in many districts has shifted from the general election to the primary. Hence, electoral security in the primary is at least as (if not more) valuable for incumbents as security in the general, given that the general election outcome is all but decided in many cases. Our results suggest that even though legislative effectiveness may not play a central role in determining an incumbent's general election viability, it is clearly important for primary competition and outcomes. Among the more engaged and informed members of the primary electorate, there is a clear accountability relationship between representatives' activities in Congress and their electoral fortunes. Although primary election defeat remains a rare event, this electoral connection based on legislative effectiveness

may motivate cautious incumbents to invest effort to become more effective lawmakers. The scope and consequences of this relationship speaks directly to questions about the efficacy of representation in the United States.

## Theoretical Considerations

A wide range of studies have focused on the aggregate productivity of Congress and the propensity for legislative gridlock (Brady and Volden 1998; Chiou and Rothenberg 2003; Krehbiel 1998; Mayhew 1991). Scholars and political observers alike have become increasingly concerned about these matters in recent years, as salient policy issues have remained unaddressed in repeated congresses (Binder et al. 1999). At a more micro-level, scholars have likewise turned their attention to the study of the determinants and consequences of the legislative productivity of individual legislators in Congress (Anderson et al. 2003; Cox and Terry 2008; Franzitch 1979). Most recently, Volden and Wiseman (2014) have developed a measure of individual lawmaker effectiveness, denoted as the Legislative Effectiveness Score (LES), and they have identified a wide range of personal and institutional considerations that are correlated with a Representative's (and Senator's) legislative effectiveness.

Consistent with conventional wisdom, they find that members of the majority party, committee chairs, and more senior legislators are more successful at shepherding their bills through the lawmaking process than are their counterparts. They also find that female legislators in the minority party are better able to keep their sponsored bills alive through later stages of the legislative process, in comparison to their male minority-party peers (Volden et al. 2013). They likewise demonstrate an interesting non-linear relationship between a Representative's legislative effectiveness and her prior electoral

margin of victory, such that relatively safe and relatively vulnerable legislators have lower Legislative Effectiveness Scores than legislators who are elected with moderately safe (but not overwhelmingly safe) margins. While these results raise some interesting questions regarding the relationship between electoral security and legislative agendas (and success), they do not speak directly to the question of how (if at all) lawmaking effectiveness maps onto subsequent electoral outcomes.

We seek to engage directly with this question by exploring the relationship between an incumbent's legislative effectiveness and her electoral success in the context of primary elections. We focus on primaries, rather than general elections, because we expect incumbent performance to affect the behavior of potential challengers and primary voters in a way that likely might not obtain in general elections. First, potential challengers are able to learn about incumbents' abilities, and they are motivated to act upon that knowledge. Given that highly effective lawmakers often hold committee chairs or other positions of institutional influence, which allow them to draw attention to their actual (or perceived) legislative accomplishments and possibly to raise campaign contributions more easily, we expect that high-quality challengers (i.e., (Jacobson 1989)) will be hesitant to enter races against these types of incumbents. Rather, a more strategic high-quality candidate will likely choose to run for office only after the effective lawmaking incumbent retires or the legislative districts are redrawn.<sup>2</sup> More broadly speaking, we would expect that more effective lawmakers would face fewer quality challengers in their primaries than would less effective lawmakers, which motivates our first research hypothesis.

***Legislative Effectiveness and Quality Challenger Hypothesis: Incumbents***

---

<sup>2</sup>A long line of research demonstrates that incumbent success is driven in large part by "scaring off" high-quality challengers. See, for example, Ashworth and Bueno de Mesquita (2008); Banks and Kiewiet (1989); Bianco (1984); Bond et al. (1985); Carson et al. (2007); Carson and Roberts (2013); Jacobson and Kernell (1983); Jacobson (1989); Gordon et al. (2007); Stone et al. (2004).

*exhibiting greater legislative effectiveness will face fewer quality challengers in their primary elections than incumbents who are less effective lawmakers.*

Second, it is well-documented that primary voters tend to be more interested in and knowledgeable about politics (Norrander 2015; Sides et al. 2018). Given that an incumbent's party affiliation cannot be employed by a primary voter in order to inform their evaluations of candidates during the primary stage, it seems plausible that these voters will turn to other considerations with which to evaluate candidates. One potentially salient piece of information is an incumbent's relative effectiveness as a lawmaker. Indeed, a lawmaker's effectiveness has been shown to be highly correlated with whether she holds a committee or subcommittee chair and/or a party leadership position, which are likewise correlated with increased fundraising capabilities (Fournaies 2018; Fournaies and Hall 2018) and perhaps more media attention. Thus, more effective lawmakers may be in a position to advertise their accomplishments in a way that resonates with primary voters, more so than what might naturally occur with a general electorate.

That said, one might ask: why would voters care about the relative lawmaking effectiveness of their Representatives at all? As alluded to above, the extant research demonstrates that although voters seem to exhibit little knowledge about the effectiveness of their members, once these same voters are presented with objective and credible information about lawmaking effectiveness, they evaluate effective candidates and officeholders more favorably (Butler et al. 2019). Hence, lawmaker effectiveness could plausibly serve as a valence characteristic of candidates (Groseclose 2001; Wiseman 2006), such that increases in an incumbent's legislative effectiveness would make her generally more attractive to voters, independent of her party affiliation and/or particular policy stances. While the vast majority of incumbents who run for reelection win, there may be differences at

the margins between more and less effective members; and these margins are likely of great concern to members who “run scared” every election cycle (Mann 1977; King 1997).

In addition, while effective lawmaking sounds like an abstract concept to some voters, it is actually often related to real benefits that accrue to a representative’s constituents. Volden and Wiseman (2014), for instance, note how some of the most highly effective lawmakers develop their legislative portfolios around district needs, and they point to Don Young (R-AK) as an illustrative example of this “habit.” Young has been the most consistently effective lawmaker in the U.S. House of Representatives over the past fifty years; and he introduces more than two dozen Alaska-focused pieces of legislation in an average Congress, typically with multiple successful enactments per Congress. Such lawmaking feats have been coupled with a string of electoral successes that have made Young the longest-serving member of the House. Primary voters know him and his accomplishments quite well, and Young’s experiences (and others such as Young) motivate our second research hypothesis:

***Legislative Effectiveness and Electoral Success Hypothesis:*** *Incumbents exhibiting greater legislative effectiveness will improve their chances of electoral victory.*

For a candidate to benefit electorally from her legislative effectiveness, of course, voters must have a clear sense of her legislative accomplishments. More generally speaking, one would expect that candidates will be more successful at leveraging their particular attributes (such as their relative legislative effectiveness) in environments that either emphasize such attributes or minimize the number of alternative considerations. In cases where there are multiple candidates in an election, all of whom are competing for scarce voter attention and media exposure, the particular characteristics of any individual candidate (including the incumbent) are likely to be underappreciated by voters and swamped

by other information. This inability to distinguish oneself from the pack might be particularly pronounced in primary elections, where voters do not naturally employ a candidate's party affiliation as a heuristic in their evaluations. Moreover, the presence of numerous candidates in a primary election might, if anything, send a signal to voters that an incumbent is a low quality representative and lawmaker, which is why several other candidates have chosen to challenge her. This logic motivates our third research hypothesis:

***Candidate Competition and Legislative Effectiveness Hypothesis:*** *The electoral value of an incumbent's legislative effectiveness decreases as the number of primary challengers increases.*

Finally, several studies have pointed to the relationship between candidate ideology and election outcomes, which are relevant for our current analysis. Scholars have demonstrated that ideological extremism appears to help candidates in their primary elections, but it is harmful for their electoral fortunes at the general election stages (Brady et al. 2007; Canes-Wrone et al. 2002; Hall and Snyder 2015; Snyder and Ting 2011; Thomsen 2019). To the extent that these findings follow from differences in turnout decisions (where ideologically extreme citizens make up a larger fraction of voters in primaries than in the general election), there is likely a relationship between ideological extremity, legislative effectiveness, and primary outcomes. More specifically, we argue that primary voters will be especially supportive of effective lawmakers who are ideologically extreme. Such voters are motivated by the belief that these incumbents not only share their worldviews, but they are also able to translate such views into successful legislation. In contrast, primary voters might be less supportive of more moderate incumbents, even those who are highly effective lawmakers, because they are less supportive of the agendas that they are able to advance while serving in Congress. This logic motivates our final research hypothesis:

***Incumbent Ideology and Legislative Effectiveness Hypothesis:** More ideologically extreme incumbents will receive a greater electoral benefit from their lawmaking effectiveness than will less ideologically extreme incumbents.*

## Data

In order to explore whether there is an electoral payoff from being an effective lawmaker, we draw on a new dataset of members of Congress who sought reelection between 1980 and 2016. More specifically, we collected data on primary election outcomes from the America Votes series and the Federal Election Commission; and data on challenger quality (i.e., whether he/she previously held elected office) were collected for all primaries during this time period by Porter and Treul (2019). We merged these data with Volden and Wiseman's (2014) Legislative Effectiveness Scores (LES) from the 96<sup>th</sup>-113<sup>th</sup> Congresses (1979-2016) to explore the relationship between a Representative's LES and her subsequent primary election challenges and outcomes. The LES is a comprehensive measure combining fifteen metrics of the bills each member sponsors, how far they move through the lawmaking process, and their relative substantive significance.

In total, our dataset includes more than 7,000 incumbents who sought reelection during this period.<sup>3</sup> In the analysis that follows, we also control for a variety of factors that are likely to influence election outcomes and the incidence of candidate entry. Specifically, we include Bonica's (2014) measures of candidate ideology, measured as Democratic liberalism and Republican conservatism, as these individuals are expected to be more likely to win the primary; and we also draw on Bonica's data to calculate the incumbent's share of money that is raised in the district. We use Jacobson's (1989) measures of district pres-

---

<sup>3</sup>We do not include races with more than one incumbent, thus excluding 94 incumbents from the analysis.

idential vote, with higher values indicating more favorable district partisanship, and we also account for a Representative’s seniority, gender, majority party status, role as a committee or subcommittee chair or as a party leader, and membership on a power committee (i.e., Appropriations, Rules, and Ways and Means), as these variables have been shown to be correlated with a Representative’s legislative effectiveness and may also influence their electoral fortunes. In all of the models we also include year fixed effects (to account for any particular anti-incumbent sentiment or other temporal considerations) and incumbent fixed effects (to account for the typical primary election successes or difficulties that these individual candidates face).<sup>4</sup> Definitions of these variables and all control variables, as well as data sources and summary statistics, can be found in Appendix Table A.2.

## Results

Turning to our first hypothesis (the *Legislative Effectiveness and Quality Challenger Hypothesis*), we present the results from a series of regression analyses in Table 1, where the dependent variable is the number of quality challengers that an incumbent faces from her own party (in Models 1.1 and 1.2), as well as the number of quality challengers that run in the other party’s primary (Model 1.3). The distinction between Models 1.1 and 1.2 is whether all primary races are analyzed (Model 1.1), or only those races where the incumbent faces at least one opponent (Model 1.2). In each specification, the crucial variable of interest is *LES Last Congress*, which captures the incumbent’s Legislative Effectiveness Score in the Congress leading up to the election. Consistent with the *Legislative Effectiveness and Quality Challenger Hypothesis*, we expect that the coefficient on *LES Last Congress* will be negative and statistically significant, implying that effective incumbents

---

<sup>4</sup>All results reported throughout the manuscript are robust to excluding these fixed effects.

scare off quality challengers.

As hypothesized, we see that more effective lawmakers face fewer quality challengers in the primary than their less effective counterparts. In all races (Model 1.1), a shift from the lowest to the highest LES score results in a decrease of 0.12 quality challengers; if unopposed primaries are excluded (Model 1.2), a similar shift decreases the number of quality challengers by 0.44. These effects are sizable in light of the fact that incumbents face an average of 0.07 and 0.21 quality challengers in all races and in contested primaries, respectively.

In contrast, the relationship between LES and the number of opposite-party quality challengers is not statistically significant, as seen in Model 1.3. This is also understandable in light of the limited impact of lawmaking effectiveness in the subsequent general election (see Appendix Table A.1). Given that the general electorate is less responsive to a representative's lawmaking effectiveness, challengers from the opposing party have no particular reason to be more fearful of effective lawmaking incumbents than of incumbents who are less effective lawmakers.

Turning to the control variables, female incumbents also face more quality same-party primary challengers, which conforms to Lawless and Pearson's (2008) findings. The number of same-party quality challengers is higher in more one-sided districts that favor one party over the other (thus signaling that a primary victory is more likely to lead to a general election victory) and lower when the incumbent raises a larger share of district receipts. The results in Model 1.3 likewise illustrate that ideologically extreme members draw more quality opposite-party challengers than less extreme members. In addition, the number of quality opposite-party challengers decreases in districts that are more favorable to the incumbent's party, when the incumbent's party is in the majority in the House,

**Table 1: Effective Incumbents Score Off Own-Party Quality Challengers**

	(1.1) Own-Party Quality Challengers All Races	(1.2) Own-Party Quality Challengers Opposed Races	(1.3) Other-Party Quality Challengers All Races
LES Last Congress	-0.007* (0.003)	-0.024* (0.011)	0.004 (0.005)
Ideologue	-0.018 (0.030)	-0.049 (0.089)	0.108** (0.043)
Female	0.269* (0.135)	0.376 (0.339)	0.123 (0.190)
Favorable District Partisanship	0.002* (0.001)	0.004 (0.003)	-0.004** (0.001)
Power Committee	-0.024 (0.016)	-0.036 (0.058)	-0.002 (0.023)
Seniority	0.005 (0.006)	0.026 (0.020)	-0.004 (0.008)
Majority	0.012 (0.012)	0.029 (0.041)	-0.029 (0.016)
Chair	-0.0002 (0.013)	0.041 (0.044)	-0.011 (0.019)
Party Leader	-0.019 (0.025)	-0.052 (0.082)	0.016 (0.035)
Incumbent Share of Receipts	-0.004** (0.0002)	-0.009** (0.001)	-0.005** (0.0003)
Constant	0.237** (0.057)	0.569** (0.204)	0.799** (0.080)
Observations	7,376	2,306	7,376
Number of Groups	1,522	930	1,522

*Note:* \* $p < 0.05$ , \*\* $p < 0.01$ , one tailed tests. Results are from cross-sectional time-series least squares regressions with incumbent and year fixed effects. Standard errors are in parentheses. For Models 1.1 and 1.2, the dependent variable is the number of quality challengers that emerged in the incumbent's primary. For Model 1.3, the dependent variable is the number of quality challengers in the primary of the party opposite the incumbent. The data in Models 1.1 and 1.3 are drawn from all races. The data in Model 1.2 excludes unopposed races. The results show that incumbents with higher Legislative Effectiveness Scores face fewer own-party quality challengers, but an incumbent's Legislative Effectiveness Score is unrelated to the number of quality challengers from the opposing party.

and when the incumbent raises more money than other candidates in the district. All of these results match our expectations, given the extant literature, and thus lend credence to the overall estimation strategy employed here.

Our main finding is robust to alternative specifications as well. For example, in Table 2 we report the results of logistic regression models where the dependent variable is whether or not the incumbent faced at least one quality challenger in the primary, and the key independent variable is whether the representative's lawmaking effectiveness under-performed or over-performed expectations. More specifically, the *LES Relative to Expectations* variable is coded as 1, 2, or 3, with higher values corresponding to increased effectiveness relative to similarly-positioned members, with regards to seniority, party, and institutional positions.<sup>5</sup> The coefficient on this variable is again negative and statistically significant, indicating that more effective members are less likely to face a quality challenger in the primary.<sup>6</sup>

---

<sup>5</sup>To create this variable, we begin by generating a *benchmark* LES for each legislator by regressing his/her LES on his/her seniority, majority party status, and whether he/she holds a committee or subcommittee chair in each Congress. The coefficients from this regression are then used to calculate a predicted value for the representative's LES, and we then compare this predicted (benchmark) LES against the representative's actual LES. Representatives whose LES are 50% above their benchmark scores are coded as "3" for their *LES Relative to Expectations*, and representatives whose LES are 50% below their benchmark scores are coded as "1" for their *LES Relative to Expectations*. Finally, those remaining representatives receive a "2."

<sup>6</sup>The results throughout the manuscript are substantively similar when using this alternative metric for effectiveness.

**Table 2: Lawmakers Who Outperform Expectations Face Fewer Quality Challengers**

	(2.1) Own-Party Quality Challenger All Races	(2.2) Own-Party Quality Challenger Opposed Races	(2.3) Other-Party Quality Challenger All Races
LES Relative to Expectations	-0.252** (0.073)	-0.159* (0.079)	0.116 (0.076)
Ideologue	-0.824** (0.152)	-0.638** (0.176)	0.455* (0.180)
Female	0.107 (0.165)	0.055 (0.178)	-0.170 (0.185)
Favorable District Partisanship	0.053** (0.005)	0.037** (0.005)	-0.060** (0.006)
Power Committee	-0.343* (0.139)	-0.262 (0.150)	-0.560** (0.158)
Seniority	0.041** (0.014)	0.031* (0.015)	-0.016 (0.017)
Majority	0.263 (0.143)	0.115 (0.156)	-0.168 (0.149)
Chair	0.099 (0.157)	-0.044 (0.171)	-0.413* (0.168)
Party Leader	-0.528 (0.310)	-0.570 (0.328)	-0.330 (0.324)
Incumbent Share of Receipts	-0.034** (0.002)	-0.028** (0.002)	-0.022** (0.002)
Constant	-3.33** (0.390)	-1.678** (0.429)	3.137** (0.454)
Observations	7,376	2,306	2,306
Log likelihood	-1336.5	-943.5	-957.37
LR Chi-square	442.16	231.26	321.5

*Note:* \* $p < 0.05$ , \*\* $p < 0.01$ , one tailed tests. Results are from logistic regressions from 1980-2016, with year fixed effects. Standard errors are in parentheses. For Models 2.1 and 2.2, the dependent variable is whether a quality challenger emerged in the incumbent's primary. For Model 2.3, the dependent variable is whether a quality challenger emerged in the primary of the party opposite the incumbent. The data in Model 2.1 are drawn from all races. The data in Models 2.2 and 2.3 exclude unopposed races. The results show that incumbents who outperform their otherwise similar peers at lawmaking face fewer own-party quality challengers, but an incumbent's lawmaking effectiveness has no effect on challengers from the opposing party.

To illustrate the magnitude of this effect, we present predict probabilities in Figure 1.<sup>7</sup> The probability of facing a quality challenger in the primary is shown on the y-axis along with 95% confidence intervals, and the three categories of the *LES Relative to Expectations* variable are on the x-axis. We can see that a shift from a legislator whose LES is below expectations (such as Wayne Gilchrest in the example above) to a legislator whose LES exceeds expectations (such as Don Young) decreases the probability of running against a quality primary challenger by 2 percentage points (from 5.1 to 3.1 percent).<sup>8</sup> Substantively, this result implies that highly effective lawmakers face about half as many quality challengers as ineffective lawmakers, which can contribute in a significant way towards reaching their reelection goal.<sup>9</sup>

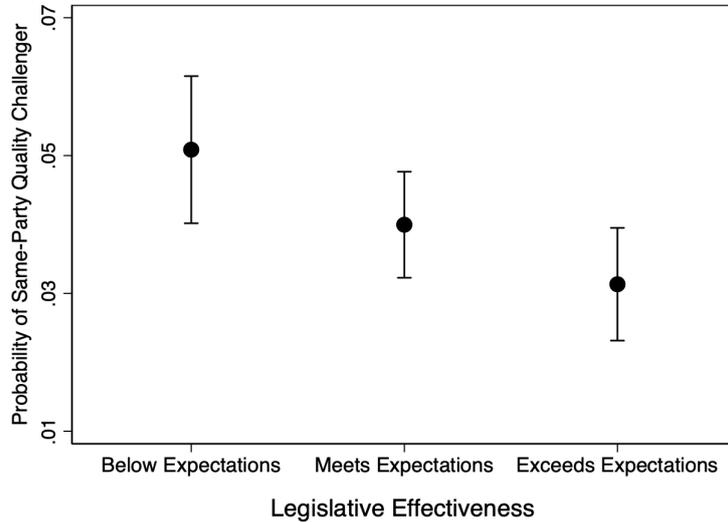
---

<sup>7</sup>Control variables are held at their mode (for dichotomous variables) or their means (for other variables) in generating these values.

<sup>8</sup>These values are calculated from Model 2.1 in Table 2.

<sup>9</sup>We also considered the possibility of whether those incumbents who face quality challengers engage in less lawmaking activities in the remainder of the term, and therefore appear less effective. To explore this possibility further, we first excluded primary losers from the analyses, and the results in both Table 1 and Table 2 remained the same. We also leveraged differences in primary timing and broke down the models by early and late primaries, with the cutoff being primaries through June. Our results in Table 1 and Table 2 generally hold for these alternative specifications. We are grateful to Boatright (2014) for providing data on primary timing.

**Figure 1: Effective Lawmakers Face Fewer Quality Primary Challengers**



To test the *Legislative Effectiveness and Electoral Success Hypothesis*, we estimate a logistic regression with the dependent variable capturing whether an incumbent won her primary. Our results from this analysis are presented in Table 3, where Model 3.1 analyzes data from all primaries, and Model 3.2 analyzes data only from contested primaries. As we can see in both specifications, a Representative’s legislative effectiveness in the previous Congress is positively associated with her winning her primary election.<sup>10</sup> While it is true that virtually all incumbents who seek reelection win in the primary, legislative effectiveness appears to improve one’s electoral performance on the margins. A shift from the minimum value of LES to the maximum value, for example, increases the likelihood of an incumbent winning her primary by about half of a percentage point (from 99.1 percent to 99.9 percent).<sup>11</sup> Put another way, the least effective incumbent lawmaker is

<sup>10</sup>We do not expect these relationships to emerge in the general election due to lower levels of political interest and knowledge among general election voters and due to the heightened effect of partisan cues; such models are provided in the Appendix. Consistent with Butler et al.’s (2019) results, we find no evidence that legislative effectiveness is associated with general election outcomes.

<sup>11</sup>All predicted values are calculated from Model 3.2, which includes only opposed primaries, with

about nine times more likely to be defeated as is the most effective incumbent lawmaker, all else equal. Similar to how presidential vetoes are rare events that nevertheless seem to have a significant impact on legislative politics (Cameron 2000), so too might the rare but devastating threat of primary defeat motivate members in their lawmaking activities.

---

control variables at their modes (for dichotomous variables) or means (for other variables).

**Table 3: Effective Lawmakers Are More Likely to Win their Primaries**

	(3.1) Win Primary All Races	(3.2) Win Primary Opposed Races
LES Last Congress	0.509** (0.193)	0.454* (0.195)
Number of Quality Primary Challengers	-0.904** (0.167)	-0.442** (0.169)
Ideologue	1.264** (0.351)	1.227** (0.387)
Female	-0.292 (0.441)	-0.205 (0.450)
Favorable District Partisanship	-0.048** (0.012)	-0.037** (0.013)
Power Committee	0.372 (0.396)	0.240 (0.418)
Seniority	-0.031 (0.039)	-0.013 (0.041)
Majority	-0.070 (0.360)	0.018 (0.380)
Chair	-0.629 (0.415)	-0.441 (0.438)
Party Leader	0.695 (0.805)	0.927 (0.893)
Incumbent Share of Receipts	0.065** (0.005)	0.067** (0.006)
Constant	4.135** (0.876)	2.191* (0.914)
Observations	7,376	2,306
Log Likelihood	-232.2	-191.2
Pseudo R-squared	0.413	0.390

*Note:* \* $p < 0.05$ , \*\* $p < 0.01$ , one-tailed tests. Results from logistic regressions for 1980-2016; the dependent variable captures whether the incumbent won the primary. Standard errors are in parentheses. Results show that incumbents who are more effective as lawmakers are more likely to win their primaries.

It is also clear from Table 3 that one of the main factors that influences an incumbent's reelection chances in the primary is the entry of quality challengers. A shift from

the minimum to the maximum number of quality primary challengers results in a 5.6 percentage point decrease in the probability of winning the primary (from 99.6 to 94.0 percent). Thus the findings from Tables 1 and 2 above point to a clear electoral benefit that follows from effective lawmakers being able to scare off quality challengers.

With respect to the other control variables, we see from the coefficient on the *Ideologue* variable that liberal Democrats and conservative Republicans are both more likely to win their primaries, which is consistent with previous research (Brady et al. 2007; Hall and Snyder 2015; Thomsen 2019). These results imply that a shift from an ideological moderate like Olympia Snowe (R-ME) to an ideological conservative like Mark Meadows (R-NC), for example, results in a 0.4 percentage point increase in the probability of winning the primary. We also see, interestingly, that incumbents who represent more favorable (i.e., one-sided) partisan districts are less likely to win the primary. This result follows, perhaps, due to more primary competition. We also see that those candidates who raise a larger share of district receipts are more likely to win their primary races.

Taken together, these results lend support to the argument that legislative effectiveness yields electoral benefits in the primary. However, as discussed above, there is reason to believe that other features of the electoral environment may influence lawmakers' (including effective lawmakers') prospects, as well. Turning to the *Candidate Competition and Legislative Effectiveness Hypothesis*, we seek to identify whether the electoral payoffs of legislative effectiveness diminish as the number of candidates in the primary election increases. We likewise seek to test the *Incumbent Ideology and Legislative Effectiveness Hypothesis* by seeing whether more ideologically-extreme candidates receive greater electoral benefits from being more effective lawmakers than ideologically moderate candidates. To engage with these hypotheses, we present the analyses from a series of logistic

regressions in Table 4, where the dependent variable in each model remains whether an incumbent won her primary. Models 4.1 and 4.3 include data from all primary elections, while Models 4.2 and 4.4 only include data from contested primary elections.

To test the *Candidate Competition and Legislative Effectiveness Hypothesis*, we include an interaction variable ( $LES \times \# \text{ of Challengers}$ ) in Models 4.1 and 4.2. Consistent with the hypothesis, we expect that the coefficient on this interaction will be negative and statistically significant. Such a result would suggest that the marginal electoral benefits of a representative's lawmaking effectiveness decreases as more candidates enter the race; as more candidates would contribute to a more complex informational environment, where the qualities of the incumbent are less obvious and clear. To test the *Incumbent Ideology and Legislative Effectiveness Hypothesis*, we include an interaction variable ( $LES \times Ideologue$ ) in Models 4.3 and 4.4. Consistent with the hypothesis, we expect that the coefficient on this variable will be positive and significant, which would suggest that more ideologically extreme and effective lawmakers are rewarded at the polls by primary voters.

**Table 4: Lightly Contested and Ideologically Extreme Incumbents Benefit the Most from Effective Lawmaking**

	(4.1) All Races	(4.2) Opposed Races	(4.3) All Races	(4.4) Opposed Races
LES Last Congress	1.134** (0.367)	0.992* (0.421)	0.342 (0.190)	0.180 (0.180)
Number of Primary Challengers	-0.219** (0.070)	-0.010 (0.076)	-0.898 (0.167)	-0.437** (0.170)
LES × # of Challengers	-0.198** (0.073)	-0.160 (0.099)		
Ideologue	1.385** (0.351)	1.331** (0.383)	0.971* (0.396)	0.802 (0.427)
LES × Ideologue			0.467 (0.263)	0.752* (0.323)
Female	-0.300 (0.426)	-0.190 (0.439)	-0.288 (0.443)	-0.195 (0.455)
Favorable District Partisanship	-0.053** (0.012)	-0.045** (0.012)	-0.048** (0.012)	-0.037* (0.013)
Power Committee	0.388 (0.396)	0.256 (0.416)	0.385 (0.397)	0.234 (0.418)
Seniority	-0.033 (0.040)	-0.017 (0.041)	-0.038 (0.039)	-0.017 (0.041)
Majority	-0.103 (0.357)	-0.033 (0.377)	-0.123 (0.360)	-0.022 (0.380)
Chair	-0.619 (0.417)	-0.445 (0.437)	-0.581 (0.418)	-0.415 (0.440)
Party Leader	0.902 (0.813)	1.104 (0.909)	0.684 (0.805)	0.840 (0.889)
Incumbent Share of Receipts	0.064** (0.005)	0.069** (0.006)	0.063** (0.005)	0.067** (0.006)
Constant	4.303** (0.885)	2.153 (0.932)	4.270** (0.875)	2.392 (0.925)
Observations	7,376	2,306	7,376	2,306
Log Likelihood	-232.3	-193.3	-231.0	-189.4
Pseudo R-squared	0.413	0.384	0.416	0.396

*Note:* \*p<0.05, \*\*p<0.01, one-tailed tests. Results from logistic regressions for 1980-2016; the dependent variable captures whether the incumbent won the primary. Standard errors are in parentheses. Results illustrate the conditional benefits of effective lawmaking on primary election victory. Specifically, consistent with our hypotheses, incumbents with fewer primary challengers, and those who are more ideologically extreme, gain the largest benefits from establishing themselves as effective lawmakers.

Turning to our results, the models offer strong support for both hypotheses. Specifically, there is clearly a positive relationship between an incumbent's LES and the probability that she wins the primary, but the electoral benefit of a representative's LES diminishes as the number of primary candidates in the race increases (Models 4.1 and 4.2). These findings are consistent with the argument that a larger field of primary challengers essentially muddies whatever signal voters might be able to infer about an incumbent's lawmaking effectiveness, making it less valuable as a primary election resource. Turning to Models 4.3 and 4.4, we likewise see that ideologically extreme incumbents are more likely to win the primary, but the interaction between extremism and LES is also positive and significant (for opposed races). This suggests that being an effective lawmaker especially improves the electoral chances of ideologically extreme incumbents in the primary. The lack of statistical significance for the *LES Last Congress* direct effect indicates a weaker electoral benefit of lawmaking effectiveness for more ideologically moderate incumbents.

To illustrate these points further, in Table 5 we present the predicted probabilities of primary defeat at different values of legislative effectiveness when there are high and low numbers of primary competitors, and for more and less ideologically extreme incumbents.<sup>12</sup> In the top two rows, we can see that ineffective incumbents are similarly likely to lose across high and low values of primary competitors; however, the probability of losing is cut in half for effective lawmakers in a highly contested primary and cut in half again for effective lawmakers in a lightly contested primary. In addition, less extreme members receive a smaller benefit from legislative effectiveness than their more extreme counterparts. Ideologues with a high LES are nearly five times less likely to suffer primary defeat than ideologues with a low LES (0.12% versus 0.56%), but the electoral boost for

---

<sup>12</sup>These predictions are generated with high and low values of legislative effectiveness set at one-half of a standard deviation above and below the mean, respectively. High and low values of primary competitors and ideological extremism are also one standard deviation above and below the mean, respectively.

effective lawmaking is more modest for moderate members. This result thus adds important nuance to the literature on the electoral benefits of the ideological alignment between representatives and their constituents (Canes-Wrone et al. 2002).

**Table 5: Probability of Primary Defeat, Low and High LES**

	Low LES	High LES
Low Number of Primary Candidates	0.76%	0.21%
High Number of Primary Candidates	0.85%	0.41%
Low Ideological Extremism	1.08%	0.55%
High Ideological Extremism	0.56%	0.12%

*Note:* Predicted probabilities are calculated from Models 4.2 and 4.4 in Table 4. Results show that the largest electoral security benefits from effective lawmaking accrue to incumbents facing a low number of primary challengers, and to ideologically extreme incumbents.

To summarize, in Table 1, we established that more effective lawmakers are less likely to face quality challengers in the first place, and in Table 4, we found that fewer challengers allows the effective lawmaking signal to shine through more clearly to voters. Thus effective lawmakers face a triple level of enhanced security in primaries, arising from (1) diminishing the number of quality challengers they face, (2) producing a less-complex electoral environment in which information about lawmaking effectiveness can more easily reach voters, and also (3) winning at a greater rate, even upon controlling for these other benefits (Table 3).

## Conclusion

Prior research suggests that voters do not hold their representatives accountable for their lawmaking effectiveness. The extant literature, however, has focused on general election results, in which voters do not typically possess much credible information about incumbents' effectiveness, and they are casting their votes in an environment in which their decisions may be swayed by other salient considerations, such as candidates' partisanship. We argue that accountability can manifest itself much more clearly when these two factors are limited, or eliminated altogether. More specifically, we focus on primary elections, which are characterized by generally more-informed voters (than the average voter in the general election), and where partisan considerations might be less relevant than in the general election.

In focusing our analysis on primaries, we find strong evidence of effective lawmakers outperforming ineffective lawmakers in the electoral arena: incumbents who were more effective lawmakers in the Congress leading up to the election face fewer quality challengers in their primaries, and they win their primaries at a significantly higher rate than

less effective lawmakers. Moreover, we uncover two conditions under which this electoral benefit is especially strong. First, in primaries with fewer challengers, effective lawmaking plays a greater role in voters' decisions. Second, when incumbents are ideologically extreme (and thus likely more closely aligned with primary voters' policy preferences), their lawmaking effectiveness is more highly rewarded than when they are ideological centrists.

Together, these findings contribute to a broader picture of the conditions under which voters hold their representatives accountable for their effectiveness (or ineffectiveness) as lawmakers. Crucially, the information environment must be conducive to transmitting signals about legislative effectiveness to voters in a clear way. This information environment is more likely to exist when there are knowledgeable primary voters considering a two-candidate race than when there is a crowded field, or among general election voters, who rely mostly on partisan cues in making their decisions. Additionally, voters appear to value effective lawmaking when it offers them a specific policy benefit. Thus effectiveness is less valuable for primary voters who do not feel ideologically-aligned with the incumbent, as well as for general election voters who might find themselves at odds with the partisanship of their (possibly) highly effective lawmaking incumbent.

The research findings presented here offer implications that extend well beyond the analysis of primary elections. Whether incumbent lawmakers are rewarded for their effectiveness seems to be fundamentally linked to the basic considerations about whether constituents know how effective their representatives are and whether they perceive themselves as benefiting from that effectiveness. As such, effective lawmakers likely face incentives to provide constituents with objective and credible information about their legislative successes, and to target that information to voters and contributors who are particularly supportive of the major initiatives advanced during their time in office.

The results of this study also suggests a role for legislative effectiveness to be incorporated into scholars' understanding of democratic accountability on other dimensions. For instance, scholars have demonstrated that an alignment between legislators' voting behavior in Congress and voters' preferences tends to contribute to electoral success. Our work suggests that such an alignment is heightened for effective lawmakers, who can point to how they vote in line with district preferences *and* how they actively and effectively advance their voters' interests through their lawmaking efforts. Similarly, future work exploring the connections between effective lawmaking and other aspects of representation (such as targeting resources to the district, engaging in oversight, or providing constituent services) may reveal additional electoral benefits for effective lawmakers.

## References

- Anderson, William D., Janet M. Box-Steffensmeier, and Valeria Sinclair-Chapman. 2003. "The Keys to Legislative Success in the U.S. House of Representatives." *Legislative Studies Quarterly* 28(3):357–386.
- Ashworth, Scott, and Ethan Bueno de Mesquita. 2008. "Electoral Selection, Strategic Challenger Entry, and the Incumbency Advantage." *The Journal of Politics* 70(4):1006–1025.
- Banks, Jeffrey S., and D. Roderick Kiewiet. 1989. "Explaining Patterns of Candidate Competition in Congressional Elections." *American Journal of Political Science* 33(4):997–1015.
- Bianco, William T. 1984. "Strategic Decisions on Candidacy in US Congressional Districts." *Legislative Studies Quarterly* 9(2):351–364.
- Binder, Sarah A., Eric D. Lawrence, and Forest Maltzman. 1999. "Uncovering the Hidden Effects of Party." *Journal of Politics* 61(4):815–31.
- Boatright, Robert G. 2014. *Getting Primaried: The Changing Politics of Congressional Primary Challenges*. The University of Michigan Press.
- Bond, Jon R, Cary Covington, and Richard Fleisher. 1985. "Explaining Challenger Quality in Congressional Elections." *The Journal of Politics* 47(2):510–529.
- Bonica, Adam. 2014. "Ideology and Interests in the Political Marketplace." *American Journal of Political Science* 57(2):294–311.
- Brady, David W., Hahrie Han, and Jeremy C. Pope. 2007. "Primary Elections and Candidate Ideology: Out of Step with the Primary Electorate?" *Legislative Studies Quarterly* 32(1):79–105.
- Brady, David W., and Craig Volden. 1998. *Revolving Gridlock: Politics and Policymaking from Carter to Clinton*. Boulder, CO: Westview Press.
- Butler, Daniel M., Adam G. Hughes, Craig Volden, and Alan E. Wiseman. 2019. "Do Constituents Know (or Care) about the Lawmaking Effectiveness of their Representative?" Working paper 2019-001.
- Cameron, Charles M. 2000. *Veto Bargaining: Presidents and the Politics of Negative Power*. Cambridge: Cambridge University Press.
- Canes-Wrone, Brandice, David W. Brady, and John F. Cogan. 2002. "Out of Step, Out of Office: Electoral Accountability and House Members' Voting." *American Political Science Review* 96(1):127–40.

- Carson, Jamie L., Erik J. Engstrom, and Jason M. Roberts. 2007. "Candidate Quality, the Personal Vote, and the Incumbency Advantage in Congress." *American Political Science Review* 101(2):289–301.
- Carson, Jamie L., and Jason M. Roberts. 2013. *Ambition, Competition, and Electoral Reform: The Politics of Congressional Elections Across Time*. University of Michigan Press.
- Chiou, Fang-Yi, and Lawrence S. Rothenberg. 2003. "When Pivotal Politics Meets Partisan Politics." *American Journal of Political Science* 47(3):503–522.
- Cox, Gary W., and William C. Terry. 2008. "Legislative Productivity in the 93rd-105th Congresses." *Legislative Studies Quarterly* 33(4):603–618.
- Fenno, Richard F. 1978. *Home Style: House Members in Their Districts*. Boston: Little, Brown, and Company.
- Fourinaies, Alexander. 2018. "When Are Agenda Setters Valuable?" *American Journal of Political Science* 62(1):176–191.
- Fourinaies, Alexander, and Andrew B. Hall. 2018. "How Do Interest Groups Seek Access fo Committees?" *American Journal of Political Science* 62(1):132–147.
- Franzitch, Stephen. 1979. "Who Makes Our Laws? The Legislative Effectiveness of Members of the U.S. Congress." *Legislative Studies Quarterly* 43(3):409–428.
- Gordon, Sanford C, Gregory A Huber, and Dimitri Landa. 2007. "Challenger Entry and Voter Learning." *American Political Science Review* 101(2):303–320.
- Groseclose, Tim. 2001. "A Model of Candidate Location When One Candidate Has a Valence Advantage." *American Journal of Political Science* 45(4):862–886.
- Hall, Andrew B., and James M. Snyder. 2015. "Candidate Ideology and Electoral Success." *Working paper* .
- Jacobson, Gary C. 1989. "Strategic Politicians and the Dynamics of U.S. House Elections, 1946-86." *American Political Science Review* 83(3):773–793.
- Jacobson, Gary C., and Samuel Kernell. 1983. *Strategy and Choice in Congressional Elections*. Yale University Press, second edition.
- King, Anthony. 1997. *Running Scared: Why America's Politicians Campaign too Much and Govern too Little*. Free Press, Martin Kessler Books.
- Krehbiel, Keith. 1998. *Pivotal Politics: A Theory of U.S. Lawmaking*. Chicago: University of Chicago Press.

- Lawless, Jennifer L., and Kathryn Pearson. 2008. "The Primary Reason for Women's Underrepresentation? Reevaluating the Conventional Wisdom." *Journal of Politics* 70(1):67–82.
- Mann, Thomas. 1977. *Unsafe at Any Margin: Interpreting Congressional Elections*. American Enterprise Institute.
- Mayhew, David R. 1974. *Congress: The Electoral Connection*. Yale University Press.
- Mayhew, David R. 1991. *Divided We Govern*. New Haven: Yale University Press.
- Norrande, Barbara. 2015. *The Imperfect Primary: Oddities, Biases, and Strengths of U.S. Presidential Nomination Politics*. Routledge, second edition.
- Payne, James L. 1980. "Show Horses and Work Horses in the United States House of Representatives." *Polity* 12(3):428–456.
- Porter, Rachel A., and Sarah A. Treul. 2019. "Inexperience and Success in Congressional Primaries." *Presented at MPSA 2018* .
- Sides, John, Chris Tausanovitch, Lynn Vavreck, and Christopher Warshaw. 2018. "On the Representativeness of Primary Electorates." *British Journal of Political Science* .
- Snyder, James M., and Michael M. Ting. 2011. "Electoral Selection with Parties and Primaries." *American Journal of Political Science* 55(4):782–796.
- Stone, Walter J, L Sandy Maisel, and Cherie D Maestas. 2004. "Quality Counts: Extending the Strategic Politician Model of Incumbent Deterrence." *American Journal of Political Science* 48(3):479–495.
- Thomsen, Danielle M. 2019. "Ideology and Gender in U.S. House Elections." *Political Behavior* Forthcoming.
- Volden, Craig, and Alan E. Wiseman. 2014. *Legislative Effectiveness in the United States Congress*. Cambridge University Press.
- Volden, Craig, Alan E. Wiseman, and Dana E. Wittmer. 2013. "When Are Women More Effective Lawmakers Than Men?" *American Journal of Political Science* 57(2):326–341.
- Wiseman, Alan E. 2006. "A Theory of Partisan Support and Entry Deterrence in Electoral Competition." *Journal of Theoretical Politics* 18(2):123–158.

## A Appendix

**Table A.1: Legislative Effectiveness Provides No Benefit in General Elections**

	(A1.1) Win General All Races	(A1.2) Win General Opposed Races
LES Last Congress	-0.065 (0.045)	-0.064 (0.045)
# of Quality Chall. in Primary	-0.628** (0.152)	-0.639** (0.153)
Ideologue	-0.958** (0.223)	-0.876** (0.227)
Female	-0.067 (0.211)	-0.041 (0.210)
Favorable District Partisanship	0.100** (0.008)	0.097** (0.008)
Power Committee	0.454** (0.188)	0.440** (0.188)
Seniority	0.008 (0.022)	0.011 (0.022)
Majority	-0.161 (0.166)	-0.152 (0.166)
Chair	0.298 (0.197)	0.286 (0.197)
Party Leader	0.342 (0.486)	0.353 (0.485)
Incumbent Share of Receipts	0.037** (0.003)	0.035** (0.003)
Constant	-3.981** (0.455)	-3.852** (0.455)
Observations	6,902	5,848
Log Likelihood	-886.1	-876.6
Pseudo R-squared	0.308	0.285

*Note:* \* $p < 0.05$ , \*\* $p < 0.01$ , one tailed tests. Results are from logistic regressions for 1980-2016; dependent variable captures whether the incumbent won the general election. Standard errors are in parentheses. Model A1.1 is for all races and Model A1.2 is just for opposed races. Results show no statistically significant benefit in the general election from being an effective lawmaker.

**Table A.2: Descriptive Statistics**

Variable (Definition & Source)	Mean	Std. Dev.
LES Last Congress <sup>a</sup> : Incumbent's Legislative Effectiveness Score from the Congress leading up to the election.	1.00	1.54
LES Relative to Expectations <sup>a</sup> : 1 = below expectations, 2 = meets expectations, 3 = exceeds expectations.	1.85	0.77
Number of Quality Primary Challengers <sup>b</sup> : Number of challengers in own-party primary with prior electoral success.	0.067	0.31
Ideologue <sup>c</sup> : Degree of ideological extremism in the direction of primary voters.	0.62	0.36
Female <sup>c</sup> : 1 = incumbent is a woman.	0.11	0.32
Favorable District Partisanship <sup>d</sup> : Most recent district presidential vote share for incumbent's party.	58.24	12.02
Power Committee <sup>a</sup> : 1 = incumbent sits on Appropriations, Rules, or Ways and Means.	0.25	0.43
Seniority <sup>a</sup> : Terms of incumbent seniority.	5.14	4.02
Majority <sup>a</sup> : 1 = incumbent is in majority party.	0.57	0.50
Chair <sup>a</sup> : 1 = incumbent is in a committee or subcommittee chair.	0.27	0.44
Party Leader <sup>a</sup> : 1 = incumbent is a majority or minority party leader.	0.04	0.20
Incumbent Share of Receipts <sup>e</sup> : Percent of campaign contributions raised by incumbent.	81.16	22.44
Primary win <sup>c</sup> : 1 = incumbent won the primary.	0.99	0.10

*Sources:*<sup>a</sup>Created by authors from Volden and Wiseman (2014) data at [www.thelawmakers.org](http://www.thelawmakers.org).<sup>b</sup>Created by authors from Porter and Treul (2019) data.<sup>c</sup>Created by authors from Thomsen (2019) data.<sup>d</sup>Created by authors from Jacobson (1989) data.<sup>e</sup>Created by authors from FEC and Bonica (2014) data.