The Artificial Incumbency Advantage:
How Bipartisan Redistricting Schemes Protect Incumbents

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Abstract

Redistricting is a widely contested issue in modern American political dialogue. Advocates decry the negative impact strategic redistricting has on electoral outcomes and clamor for institutional reforms, such as independent commissions. While current research heavily highlights the partisan implications of redistricting, there has been little focus on the other potential impacts of redistricting on electoral outcomes. This work will examine one such electoral outcome: the creation of an artificial incumbency advantage, or an incumbency advantage that arises because of strategic redistricting. Using an innovative methodology, this study seeks to demonstrate that legislators in bipartisan redistricting schemes create an artificial incumbency advantage in U.S. House elections by drawing maps that protect incumbent legislators. Through the exploration of thousands of precinct-level election returns in the 2012 general election, the study concludes that bipartisan redistricting schemes exhibit a significantly higher incumbency advantage than their partisan or independent counterparts. In light of these conclusions, the study suggests that implementing independent commissions across the country would likely be successful not only in mitigating the partisan impacts of redistricting but also in mitigating the artificial incumbency advantage.

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"Redistricting is one of the purest actions a legislative body can take." - John Engler, former Governor of Michigan

Chapter 1: Introduction

In the 2018 midterm elections, voters in Michigan, Colorado, and Missouri overwhelmingly passed referenda to create independent commissions to redraw congressional boundaries. Proponents of these commissions claimed that by taking the power to redistrict out of the hands of legislators, fairer maps would be drawn which did not distort electoral outcomes in favor of incumbents or the majority party. While extensive research has been dedicated to understanding the effect of independent commissions on gerrymandering by the majority party, much less attention has been given to other electoral outcomes which may be affected by strategic redistricting.

One such electoral outcome that deserves attention is the incumbency advantage. Despite the recent uptick of interest in independent commissions, the impact of these commissions on the incumbency advantage remains inconclusive. Therefore, this research will analyze whether independent commissions are successful in reducing the incumbency advantage in U.S. House elections. Specifically, this research will look to see whether strategic redistricting creates an artificial incumbency advantage for U.S. representatives, and if so, how this artificial incumbency advantage varies depending on the type of redistricting scheme employed. To do so, a comparative, quantitative analysis will be conducted that analyzes the various redistricting schemes and the resulting incumbency advantage in each. Using an innovative methodology, the goal of this research is to provide insight into how different types of redistricting schemes create varying incentives for incumbents which, in turn, lead to differences in the corresponding incumbency advantage for legislators re-elected to the U.S. House of Representatives.

Based on the objectives outlined above, the key question explored in this research is: "How does the type of redistricting scheme employed in a congressional district affect the corresponding incumbency advantage for that district's legislator?" While variants of this question have been asked in scholarly research before, the recent growth of independent commissions as a method of redistricting provides an opportunity to explore this question in a new light, and with new data. Therefore, a more specific motivating question for this research is: "What is the difference in the artificial incumbency advantage for representatives re-elected from districts drawn by independent commissions compared to districts drawn by partisan or bipartisan redistricting schemes?"

The term "artificial incumbency advantage" can be defined as an incumbency advantage that is created by legislators through strategic redistricting. This term is used because it encapsulates the idea of an incumbency advantage that is not simply created through an incumbent's holding of elected office. In other words, the artificial incumbency advantage is not simply a by-product of legislators using the resources of their office to fulfill their duties to the fullest extent and building support in the process. Instead, the artificial incumbency advantage is a phenomenon manufactured by legislators through means that are exogenous to their behavior in office.

This question is a crucial one to ask because it speaks to one of the most fundamental tenets of democracy: the right to vote and choose one's elected official. The idea of "one person, one vote" is touted as a sacred right in our democracy; however, this right is often questioned because of egregious examples of gerrymandering in modern times (Voters Not Politicians 2019). Specifically, examples of districts drawn to ensure a legislative victory for a single party

or an incumbent legislator are often taken as evidence that citizens' votes are being "wasted," thus undermining the democratic process of voting (Wines 2019). Examples of these arguments have been ever-present in Supreme Court litigation since *Baker v. Carr*, 369 U.S. 186 (1962), in the 1960s, and are abundant in current jurisprudence (see *Cooper v. Harris*, 581 U.S. __ [2017], and *Gill v. Whitford*, 585 U.S. __ [2018], as examples). Therefore, finding that an artificial incumbency advantage exists when districts are drawn strategically would highlight a crucial flaw in our voting systems and suggest policy prescriptions to address such a flaw.

However, finding results that disconfirm the existence of an artificial incumbency advantage would prove to be equally important. If no artificial incumbency advantage is found, this would suggest that independent commissions may not be as effective as anticipated (at least in reducing the benefits accruing to incumbents) and that activists should pursue other electoral reforms instead. Furthermore, disconfirming the theory would serve as an important contribution to the scholarly literature by providing additional evidence against the redistricting explanation for the incumbency advantage. Nonetheless, this study ultimately concludes that the artificial incumbency advantage exists and is influenced by strategic redistricting, suggesting that these ramifications are unlikely to come to fruition.

The remainder of this research will focus on exploring the artificial incumbency advantage and detailing how it differs across redistricting schemes. To begin, Chapter 2 summarizes the scholarly literature on the incumbency advantage and redistricting and highlights key concepts for the research. Then, Chapter 3 outlines the theoretical answer to the key questions posed above. Chapters 4 and 5 focus on detailing the empirical approach used to answer these main research questions and the data collection process. Using this empirical

approach, Chapters 6 and 7 perform statistical tests to provide evidence in support of the theory. Then, Chapter 8 explores (and ultimately dismisses) a series of alternative explanations to the results of Chapters 6 and 7. Finally, Chapter 9 summarizes the main conclusions of this research.

Chapter 2: Key Concepts and Literature Review

There are several key concepts that should be explored prior to developing an answer to this research question. This chapter is dedicated to examining these topics in detail and discussing the existing scholarly literature on each topic. In particular, the chapter will develop two key concepts: the incumbency advantage and redistricting. Following this discussion, the relationship between the two concepts will be detailed, and the contributions of the research questions at hand to the scholarly literature will be highlighted.

The first topic to explore is the incumbency advantage. The incumbency advantage is a phenomenon that scholars have been observing since the congressional elections of the 1960s. This research employs a definition of the incumbency advantage that is widely used in the scholarly literature, which defines the incumbency advantage as the increased electoral support received by a candidate running for office simply because of his or her status as the current occupant of that office.

When scholars first uncovered the incumbency advantage in the 1960s, there was debate as to why (and whether) the incumbency advantage suddenly appeared. Some scholars suggested that the incumbency advantage arose due to shifts in the electorate's preferences for their elected officials, whereas others found that such a rise was due to unique characteristics of the legislative cohorts in the 1960s (e.g., Erikson 1971; Born, 1979). Other scholars now assert that the incumbency advantage has been prevalent since at least the 1870s, although ebbing and flowing in its magnitude over time (Carson et al. 2015; Gelman and King 1990). This debate is highly characteristic of the broader literature on the incumbency advantage; while scholars agree that the incumbency advantage is a present and nontrivial force in U.S. congressional elections, a

great deal of uncertainty remains regarding the strength of the incumbency advantage, the factors contributing to the incumbency advantage (and their relative importance), and the movement of the incumbency advantage over time.

The tools used to measure the incumbency advantage vary widely and have become more advanced with improved technology and methods. When the incumbency advantage was first studied empirically in the 1970s, scholars used measures known as the "sophomore surge" and "retirement slump." The sophomore surge measures the increase in electoral support received by a candidate in his first bid for reelection compared to his first election, whereas the retirement slump measures the decrease in electoral support received by the incumbent political party in the election following the retirement of an incumbent legislator (Erikson 1971; Cover and Mayhew 1977). Estimates of the incumbency advantage based on these measures were in the range of 0 percentage points to 3 percentage points (Erikson 1971). Methodological advancements in the 1990s, however, criticized the use of the sophomore surge and retirement slump as inadequate measures of the incumbency advantage, and thus abandoned these measures in favor of regression techniques (e.g., Gelman and King 1990; Cox and Katz 1996). These techniques lead to a larger incumbency advantage, in the range of 6 to 10 percentage points.

Since the 1990s, several methods have been employed to measure the incumbency advantage. For example, one such method uses the "natural experiment" of redistricting and finds that the incumbency advantage is in the range of 7 percentage points to 10 percentage points (Ansolabehere et al. 2000). Recently, much of the empirical work has focused its attention on regression discontinuity designs (e.g., Lee 2008; Butler 2009). These studies have produced a wide range of estimates for the incumbency advantage, as scholars are still contesting the proper

way to utilize the regression discontinuity design to measure the incumbency advantage. In sum, scholars agree that the incumbency advantage exists, but have not yet reached a consensus on the precise magnitude of the incumbency advantage and the best way to measure it.

Furthermore, scholars disagree about the factors which contribute to the incumbency advantage and their relative importance. There are three key categories of explanations for the incumbency advantage: resource explanations, "homestyle" explanations, and electoral explanations. Resource explanations put forth the theory that the incumbency advantage exists because incumbent legislators have access to certain resources by nature of holding office which are not available to non-incumbents. In turn, these resource advantages benefit legislators electorally, thereby creating an incumbency advantage. One example that scholars focus on is the franking privilege, which allows incumbent legislators to use the U.S. Postal Service free-of-charge (Mayhew 1974). Other scholars point to the existence of a financial incumbency advantage, which occurs because of the greater ability of incumbent legislators to solicit financial resources to support their re-election campaigns (Fouirnaies and Hall 2014). These theories are just a few among many which highlight the resource explanation as the driving force behind the incumbency advantage. While resource advantage theories are not as widely considered today as they were in the 1970s, they nonetheless represent important potential explanations of the causes of the incumbency advantage.

The second category of explanations for the incumbency advantage are the "homestyle" explanations. These explanations explore how the relationship between legislators and their constituents contributes to the incumbency advantage, with a focus on two factors in particular: the "personal vote" and "name recognition." The "personal vote" theory makes the argument that

legislators gain favor with constituents by engaging in work on their behalf (e.g., Mayhew 1974; Fiorina 1977; Fenno 1978; Ansolabehere et al. 2000). Importantly, this explanation focuses on the nonpartisan efforts undertaken by representatives, rather than actions taken in loyalty to the incumbent's political party. A key portion of this literature specifically emphasizes the role of casework in establishing the personal vote. The argument put forth by these scholars is that constituents, regardless of party, are more likely to vote for the incumbent if that incumbent engaged in casework on their behalf (such as resolving issues with Social Security or veterans' benefits), in turn creating an incumbency advantage (Ansolabehere et al. 2000). This argument has found a strong footing in much of the literature on the incumbency advantage, but its importance has been called into question in hyper-partisan times, such as the current political era (Fowler 2018).

An additional component of the "homestyle" explanation centers around name recognition. The name recognition explanation simply states that incumbents are more likely to win reelection because constituents hear about and are aware of their legislator's beneficial actions in the community (Kam and Zechmeister 2013). The causal mechanism is as follows: constituents at the ballot box recognize the name of an incumbent, associate that name with the positive actions they have heard about in their community, and thus vote for the incumbent, creating an incumbency advantage. Some scholars in this sphere specifically examine the role that TV ads and local news coverage play in crafting an incumbency advantage based on name recognition (Ansolabehere et al. 2006; Prior 2006). The name recognition explanation of the incumbency advantage has been well-studied; however, the major works in this subfield have found contrasting results, and thus the overall narrative on name recognition is murky.

The third category of explanations for the incumbency advantage concerns electoral explanations. This category has three main subcomponents: challenger quality, cues, and redistricting. Challenger quality refers to the argument that incumbents enjoy an incumbency advantage because they face low-quality opponents in elections. Sometimes called the "scare-off effect," the lack of high-quality challengers has become a popular explanation for the incumbency advantage in some of the most central articles on the subject (see Cox and Katz 1996; Levitt and Wolfram 1997).

However, many scholars challenge the candidate quality explanation and instead examine electoral explanations from the perspective of the electorate. In general, this subset of the literature focuses on the tension between partisanship and incumbency in the electorate and suggests that a lack of partisanship in the 1960s was responsible for the large incumbency advantage that arose in this time period (Jacobson 2015). Many explanations in this vein approach the topic from a purely psychological perspective, focusing on cue-taking and the tension between partisan cues and incumbency cues (Fowler 2018). These explanations are especially common in recent years, as many scholars track what appears to be a decline in the incumbency advantage (e.g., Jacobson 2015). A final electoral explanation offered for the incumbency advantage is that of redistricting, which will be the primary focus of this research and described in further detail below.

Overall, numerous theories have been put forth by scholars to explain the causes of the incumbency advantage, all of which have at least some degree of evidence to support them. Many of these explanations may be correct simultaneously, in the sense that the incumbency advantage is likely not caused by any one particular factor, but rather a multitude of factors

working together. Nonetheless, scholars are still in disagreement about the relative importance of the aforementioned factors and their overall contribution to the incumbency advantage.

Another key topic to explore before answering this research question is the topic of redistricting. Redistricting, or the redrawing of congressional district boundaries (usually every ten years, immediately following the census), is a constitutionally-imposed requirement which aims to ensure that the apportionment of congressional seats accurately represents the population distribution in the United States. Art. I, § 4 of the Constitution delegates the power of redistricting to state governments. Traditionally, states have treated redistricting just like any other legislative matter, requiring the state legislature to create and pass a bill redrawing congressional lines that is subject to the approval of the governor. Although the majority of states still treat the redistricting process this way, another method is rapidly gaining favor among voters: independent commissions. In states with independent commissions, control of the redistricting process is taken out of the hands of state legislatures and given to a "commission," effectively limiting the control of politicians in the state legislature over the redistricting process.

Given that redistricting is typically controlled by the state government, the process for redistricting can play out differently in each state depending on the composition of the state legislature and the state's laws. The literature on redistricting identifies three common types of redistricting schemes: partisan, bipartisan, and independent. Partisan and bipartisan redistricting schemes are similar in that both retain the power to redraw congressional maps for the state legislature and governor. Thus, when the state government controls the redistricting process, redistricting may be implemented differently depending on the distribution of power among the political parties in the state government. Partisan redistricting occurs when there is unified party

control in the state such that districts are able to be drawn and approved solely by state lawmakers from a single political party. Bipartisan redistricting, on the other hand, occurs when districts are either required to be drawn by legislators from both major political parties or are subject to legislative or executive approval that necessitates support from members of both major political parties (such as in cases of divided state governments).

The third type of redistricting scheme, an independent redistricting scheme, occurs if either the process of drawing or approving the district boundaries is conducted by individuals who are not members of the state government (i.e. independent commissions). Importantly, this definition of independent redistricting schemes stipulates that circumstances where an independent commission draws district lines, but such lines are subject to the approval of the state legislature (or governor), are still considered to be independent redistricting schemes.

Redistricting has long been controversial because it allows for the possibility of gerrymandering, or the strategic redrawing of congressional lines to benefit a particular incumbent officeholder or political party. Gerrymandering generally occurs because state legislators act in their own self-interest, the interests of their political party, or the interests of their party's incumbents, and draw maps that favor such interests. Those critical of gerrymandering often argue that independent commissions, by taking the control of redistricting out of the hands of state legislators, can help to mitigate the negative impacts of gerrymandering (for examples, see One Virginia 2021 2019 and Voters Not Politicians 2019). However, how successful independent commissions are in preventing gerrymandering remains an open question (Brennan Center for Justice 2018).

There are two key objectives that legislators typically aim to achieve when implementing gerrymanders: the "party-protection" objective and the "incumbent-protection" objective. In the party-protection gerrymander, district boundaries are drawn for the purposes of maximizing the number of seats held by the party in power. In an incumbent-protection gerrymander, by contrast, the objective is to maximize the number of incumbents who win re-election and the margin of victory for those incumbents. These two objectives are not mutually exclusive in the sense that incumbent-protecting gerrymanders may lead to party-protecting results (and vice versa), but this categorization does represent two distinct objectives which can lead to different results (Davidson et al. 2018).

Additionally, the strategies employed to achieve these two objectives often differ. In a party-protection gerrymander, legislators usually implement one of three strategies. The first strategy is "cracking," whereby the majority party's gerrymander divides constituents likely to vote for the minority party across numerous districts. In doing so, cracking dilutes the strength of the minority party in each district and thus increases the likelihood that the majority party wins the district. The second strategy is "packing," whereby the majority party's gerrymander places as many of the minority party's voters as possible into a single district to maximize the number of "wasted votes" for the minority party. A final strategy is the competition strategy, whereby the majority party's gerrymander tries to minimize the margins of victory in each congressional district. This strategy tries to minimize the number of "wasted votes" for the majority party to maximize the number of seats the party wins. These three strategies make up the basic tool-set used by legislators attempting to craft a party-protection gerrymander.

In an incumbent-protection gerrymander, however, only one uniform strategy is employed. In their aim to maximize the incumbent's vote share, mapmakers' sole strategy is to draw districts that are favorable to incumbents, matching constituents to incumbents on factors such as party affiliation or race (Davidson et al. 2018; Friedman and Holden 2009). Thus, the goal of incumbent-protection gerrymanders is achieved by assigning voters who are predicted to have a favorable view of the incumbent to the incumbent's district.

Scholars almost unanimously agree that legislators have become much more successful at implementing these various redistricting strategies over time. In particular, scholars point to technological improvements as the primary reason for the increase in successful gerrymanders. According to this logic, "knowledgeable individuals and other groups can use census and other data to match people's voting patterns to where they live, even street by street… until they identify a redistricting map that they believe achieves their objectives" (Davidson et al. 2018). Overall, technological advancements have vastly improved the successfulness of redistricting strategies.

Despite the improved ability to draw congressional maps to achieve particular objectives, scholars widely disagree about the consequences of gerrymandering on congressional politics and legislative outcomes. For example, some scholars assert that redistricting contributes to polarization in the House of Representatives, whereas other scholars find little evidence of such a relationship (Altman & McDonald 2015; McCarty et al. 2009). Furthermore, scholars find mixed results regarding whether gerrymandering has contributed to the decline in the competitiveness of congressional elections (Abramowitz et al. 2006; Carson and Crespin 2004). Likewise, some scholars even doubt that gerrymandering has much of an impact on congressional politics at all

(Masket and Wright 2012). In sum, there is a wide range of disagreement among scholars about the impact of gerrymandering on congressional politics.

While there is a robust set of literature which examines the incumbency advantage and redistricting in isolation, literature which intersects the two topics has been much sparser. Furthermore, the existing literature that does explore such a relationship finds mixed results. For example, many scholars argue for a positive relationship between redistricting and the incumbency advantage in the theoretical literature, suggesting political parties engage in "duopolistic" behavior to ensure the protection of incumbents through redistricting (Isaacharoff 2002). However, empirical research finds little evidence to back these assertions, as many empiricists studying the issue find little to no relationship between redistricting and the incumbency advantage (e.g., Masket and Wright 2012; Glazer et al. 1987). Likewise, other scholars actually find a negative relationship between redistricting and the incumbency advantage, demonstrating that redistricting is a disruptive process which undermines incumbents (e.g., Ansolabehere et al. 2012; Friedman and Holden 2009; Gelman and King 1994). Overall, the theoretical literature does not match the empirical literature when examining the relationship between redistricting and the incumbency advantage, and a more thorough explanation of this relationship is thus warranted.

One reason that the literature may reach this dilemma is because it assumes that redistricting and the incumbency advantage are two concepts which should have a direct, uniform relationship to one another. However, this understanding of the relationship may be misguided, as it overlooks the complex nature of redistricting and the incumbency advantage. As recognized in the literature, there are numerous strategies and objectives utilized by those who

redraw congressional boundaries, some of which are in conflict with one another. Furthermore, there are numerous possible explanations for the incumbency advantage, which likewise have conflicting elements. Thus, when the literature treats these concepts as having a direct relationship, it is unsurprising that the results turn out to be less than satisfactory. Of course, not all scholars have overlooked the complexities of these topics (for example, see Carson and Crespin 2004); however, such literature is sparse.

The present research aims to fill this hole in the literature in two ways. First, this research will analyze the relationship between redistricting and the incumbency advantage by exploring such a relationship within each type of redistricting scheme (partisan, bipartisan, and independent). In doing so, this research will overcome the spurious conclusions of the present literature by recognizing and addressing the complex nature of these concepts. Furthermore, the research will rely on an innovative methodological approach that resembles a natural experiment, providing for much more causal conclusions than the current literature, which mostly relies on correlational data. In these two ways, this research will address an important shortcoming of the literature on the relationship between redistricting and the incumbency advantage.

Overall, this chapter has highlighted many of the key concepts that will be instrumental in studying how the incumbency advantage varies based on the type of redistricting scheme. Furthermore, this chapter has justified why it is so important to treat the relationship between redistricting and the incumbency advantage as a complex and nuanced topic. Although this research will not be able to address all of the issues surrounding the present literature on these topics, it takes a step in the right direction in recognizing the complexity of these issues. In the

upcoming chapter, a theoretical construct will be outlined that explores the relationship between redistricting and the incumbency advantage in more detail.

Chapter 3: Theory

Given the limited prior research on this topic, it is important to propose a theoretical framework for why one would expect the type of redistricting scheme employed in a congressional district to have an impact on the incumbency advantage. The primary purpose of this chapter is to outline this theoretical logic. The chapter will lay out the basic assumptions of the theory, detail how the theory should operate based on the type of redistricting scheme, and highlight some potential shortcomings of the theory. Overall, this chapter will thus provide a theoretical answer to how the incumbency advantage differs based on the type of redistricting scheme employed in a congressional district.

Before diving into the theory, it is important to again highlight the basic concepts used in this research. First, redistricting processes are classified into three schemes according to those established in the literature (partisan redistricting, bipartisan redistricting, and independent redistricting). While these distinctions are commonly used in the literature, the concept of the artificial incumbency advantage deserves more explanation. The artificial incumbency advantage is defined as the incumbency advantage which arises due to strategic redistricting. In this sense, showing that there is a difference in the incumbency advantage across the three types of redistricting schemes is evidence of an artificial incumbency advantage.

The first step of the theory considers the motivations that state legislators have when drawing congressional districts. The basic premise is that there are two primary motives for state legislators when drawing congressional maps: first, acting in a way that will benefit the state legislator's political party; and second, acting in a way that will protect the incumbent U.S. representatives of the state legislator's political party. In terms of drawing district boundaries,

these objectives will operate in different ways: a state legislator whose sole focus is to benefit his political party would seek to maximize the number of seats held by his party, whereas a state legislator whose sole focus is to protect an incumbent of his own political party would seek to maximize the margin of victory for that incumbent.

It is important to note that these strategies are not always in conflict with one another. For example, adding Republican voters to a Republican incumbent's district who recently won a closely contested election and whose district is trending toward Democrats is beneficial to both the incumbent legislator and the incumbent political party. However, these two motives are often in conflict. For example, an incumbent-protecting motive that seeks to maximize the number of votes for the incumbent in a certain district would likely lead to a large number of wasted votes for the party in that district, in turn harming the party's chances of maximizing its share of congressional seats.

When the party-loyalty motive and the incumbent-protection motive are in conflict, it is assumed that the party-loyalty motive is the more powerful motive. This assumption is made because, unlike for state legislative districts, members of Congress do not draw their own congressional districts. Instead, state legislators are responsible for crafting the congressional district maps. These state legislators are likely to have a stronger connection to their own political parties than to the incumbent members of Congress who represent their political parties. Therefore, state legislators have a stronger incentive to benefit their political party than to benefit the incumbent representatives of their political party.

Of course, this is not to say that the protection of incumbents is not an important factor in the decision-making of state legislators. For one thing, members of Congress often do have a

close relationship to the state party, and many representatives are former members of state assemblies. Second, U.S. representatives are likely to use their leverage amongst state legislators to advocate for the protection of their legislative districts. Nonetheless, the party-loyalty motive is still likely to be stronger in the state assembly than the incumbent-protection motive due to the stronger connections state legislators feel to their political party than to the party's incumbent representatives.

Under these assumptions, one can now consider how the incumbency advantage will differ based on the type of redistricting scheme employed in a congressional district. One can view each type of redistricting scheme as imposing a particular set of constraints on the available district maps that a state government can draw. For a partisan redistricting scheme, such constraints are imposed only on the minority party. Since the majority party, by definition, controls the redistricting process in a partisan redistricting scheme, there are few constraints on the actions that the party can take, excepting the legal requirements of redistricting.[1] However, since the minority party does not have enough votes to enact its own maps, it faces a serious set of constraints which essentially render it powerless in the redistricting process.

This differing set of constraints ultimately leads to the conclusion that the majority party in a partisan redistricting scheme will focus on maximizing the number of seats for its own party. Therefore, in terms of the incumbency advantage, any incumbency advantage that emerges for the majority party would result from the spillover of benefits in a party-protecting scheme on

[1] The only official requirements by federal law are that districts be equal in population size (Art. I, §2) and that districts cannot effectively dilute the power of voters on the basis of race (Voting Rights Act of 1965). State laws generally supplement federal law with additional requirements, such as contiguity and compactness. However, the U.S. Supreme Court has generally been reluctant to hear cases on gerrymandering, labeling them as "political questions." While some state courts have played a more active role (such as in Pennsylvania), these legal battles often take years to reach a decision.

incumbents. However, in certain districts, there may actually be spillovers which create an incumbency *dis*advantage. The reason for this is that if the party actively tries to maximize the number of seats it can win by making districts more competitive, there may be spillover effects that actually harm an incumbent from the majority party by assigning unfavorable voters to that incumbent's district. Ultimately, this leads to a complex set of potential outcomes for the majority party under a partisan redistricting scheme.

The opposite is true for the minority party in a partisan redistricting scheme. By virtue of the two-party system, the majority party's attempt to maximize its own number of seats is equivalent to attempting to minimize the number of seats for the opposition. In this case, one would not expect to see many positive spillovers on the incumbency advantage for the minority party's representatives. However, there is one exception, which is when the majority party "packs" voters of the minority party to waste votes (and minimize the number of seats) for the minority. In this case, one may expect positive spillovers on the incumbency advantage for minority party representatives because voters favorable to the minority party are all in a single district. In sum, the minority party is unlikely to see many spillovers onto the incumbency advantage, but could see some in instances where the majority party attempts to pack voters into districts.

It is important to recognize that the relationship between partisan redistricting schemes and the incumbency advantage is only tangential. The incumbency advantage is not intended to measure the "partisan advantage" that is created through redistricting, but rather measures the benefits to incumbent legislators once partisanship is controlled for. Because it is assumed that party loyalty is the primary driver of mapmaking in partisan redistricting schemes, the

incumbency advantage in these schemes ought to be small and only caused by any spillovers of partisan actions. However, the extent to which these "spillovers" exist is an open question.

For bipartisan redistricting schemes, the expected relationship between the incumbency advantage and the type of redistricting scheme is much more uniform. The reason is that a bipartisan redistricting scheme imposes a different set of constraints on the state government, and one that is uniform across parties. Namely, this constraint is that neither party can pursue a party-loyalty motive in a bipartisan redistricting scheme. This constraint arises because redistricting is a zero-sum game: when the majority party attempts to maximize the number of seats for its own party, it intrinsically is attempting to minimize the number of seats for the minority party. Since maps drawn by bipartisan redistricting schemes require approval from members of both parties (e.g., a Democratic-controlled lower chamber and a Republican-controlled upper chamber), a map which favors one party over another will be unworkable, and ultimately will not pass the state legislature in the zero-sum game of redistricting. Therefore, bipartisan redistricting schemes impose a constraint on both the minority and the majority party which renders the party-loyalty motive unavailable.

Given that the party-loyalty motive is unavailable in bipartisan redistricting schemes, legislators must turn to the second, weaker motive: incumbent-protection. Therefore, one ought to see state legislatures behave in a way that leads to a large incumbency advantage under a bipartisan redistricting scheme. Furthermore, the new maps drawn under bipartisan redistricting schemes are expected to remain relatively similar to the current congressional boundaries. This is because attempts by one party to drastically change the current maps will likely be viewed by the other party as attempts to benefit the opposition, leading to disagreement and, in turn, unpassable

congressional maps. In sum, bipartisan redistricting schemes are likely to see a large incumbency advantage with a relatively small change in congressional district boundaries.

Finally, in the case of independent commissions, there is an especially binding set of constraints which operate equally for both parties. Specifically, by taking control of the redistricting process out of the hands of the state government, independent commissions effectively prevent state governments from being able to implement either of the motives they desire through redistricting. Therefore, for independent redistricting schemes, one would expect the incumbency advantage to be small or nonexistent. Additionally, because the party loyalty motive is unavailable, one should also expect the lack of an incumbency advantage to be uniform regardless of the incumbent legislator's position as a member of the majority or minority party. Overall, the incumbency advantage is expected to be small and uniform across all districts with an independent redistricting scheme.

Table 1 presents a summary of the theoretical approach to this research question. Overall, the theory suggests that there should be a large artificial incumbency advantage only in the case of bipartisan redistricting schemes. For partisan redistricting schemes, one should find a minimal or nonexistent artificial incumbency advantage, as incumbent-protection is only a tangential goal for partisan mapmakers. Additionally, for independent redistricting schemes, one should also find that the artificial incumbency advantage is small or nonexistent.

Table 1: Summary of Theory

Redistricting Scheme	Redistricting Objective	Incumbency Advantage
Partisan	Party-loyalty	Small
Bipartisan	Incumbent-protection	Large
Independent	Neither	Small

There are a few shortcomings of this theory which must be addressed. One potential limitation concerns whether mapmakers are successful in drawing congressional districts that meet their desired interests. While there are ample opportunities to gerrymander in large and symmetrical states, smaller states and states with unusual geographical shapes are frequently constrained by the requirement of geographic contiguity and the fact that a predetermined number of districts must be drawn. Therefore, if these forces are more constraining than the constraints posed by the types of redistricting schemes, it is possible that the expectations of this theory will not hold. It is often assumed that gerrymanders are incredibly sophisticated and able to create whatever maps they want; however, geographic and legal constraints may prevent a mapmaker from gerrymandering a district to its fullest potential.

A second shortcoming concerns the fact that redistricting laws vary widely in each state, which is especially relevant for independent commissions.[2] Because independent commissions

[2] Note that, with the exception of "politician commissions" (none of which are examined in this research), state laws for each state that uses an independent commission require that the commission be made up of individuals who are not involved in the state government or closely tied to it (i.e. lobbyists or relatives of elected officials). Furthermore, all independent commissions require balanced partisan composition on the commission. While laws vary regarding the number of commissioners, who appoints commissioners, and the degree of control the state government has over the commissions, all independent commissions share the common features of requiring balanced partisan composition and forbidding politicians and close allies from serving on the commission (All About Redistricting 2019)

are the most constraining on state governments, they also require the most laws to govern them. In turn, this creates the potential for significant variation in the effect of independent commissions on the incumbency advantage based on the laws governing each state's commission. In states where independent commission laws are less binding, it is possible that commissions may be able to work around the laws to achieve one of the two redistricting objectives. If this is the case, the theory outlined above may not be as predictive for states with looser laws than it is for states with stricter laws.

Overall, these two shortcomings present the greatest potential challenges to the theoretical answer to this research question. However, despite these challenges, the theory outlined in this chapter offers a strong prediction about the artificial incumbency advantage. Specifically, the theory predicts that the artificial incumbency advantage will be large for bipartisan redistricting schemes, and small for partisan and independent redistricting schemes. Furthermore, the theory suggests that the incumbency advantage in districts drawn by partisan schemes may differ based on an incumbent's political party and the type of redistricting strategy employed by the majority party. The next chapter will discuss the research design used to test the validity of this theory.

Chapter 4: The "Old Voters, New Voters" Research Design

The approach taken to analyze this research question is an adaptation of a research design used by Ansolabehere et al. (2000) in "Old Voters, New Voters, and the Personal Vote: Using Redistricting to Measure the Incumbency Advantage." Given the centrality of this research design to the project, it is important to provide a thorough explanation of how it operates. In this chapter, the old voters, new voters research design will be explained. Specifically, the chapter will describe the research design and its strengths and weaknesses as an analytical tool, discuss the adaptations made to the design to fit the research question at hand, and examine potential challenges with this adapted model.

The basic idea of the old voters, new voters design is best illuminated by its authors in the abstract of the original paper:

> [The model] take[s] advantage of the 'natural experiment' that attends decennial redistricting: every ten years, most incumbents are given new districts that contain a combination of old and new territory. By contrasting an incumbent's vote in the new part of the district with his or her vote in the old part of the district, [the model] can estimate the magnitude of the personal vote--the vote that the incumbent receives because he or she represented the voters in the past. (Ansolabehere et al. 2000, 17)

It is important to note that the original conception of the model focuses on the use of the "old voter, new voter" design as it relates to the personal vote aspect of the incumbency advantage. Traditionally, the term "personal vote" refers to a particular explanation of the incumbency advantage, which concerns a legislator's "homestyle." As a reminder, this explanation focuses on the nonpartisan ways in which legislators serve their constituents, such as

engaging in casework, understanding and being a presence in the community, and advocating for federal spending in the district (Ansolabehere et al. 2000, 18). While the "personal vote" is an important component of the incumbency advantage, it is not the only factor which contributes to the incumbency advantage. In fact, Ansolabehere et. al. (2000, 18) note that the effect of a legislator's "personal vote" on the overall incumbency advantage is only between one-half and two-thirds of the total incumbency advantage. Nonetheless, a legislator's "personal vote" captures a significant portion of the incumbency advantage and is thus a useful concept when studying the incumbency advantage.

However, the "personal vote" ought to be understood more broadly in the context of this research design than it is typically portrayed in the literature. For the purposes of this project, the personal vote can be defined as any action undertaken by a legislator within her district that would lead to an increased vote share in a subsequent election. Of course, this includes the nonpartisan aspects of the incumbency advantage as traditionally captured by a legislator's "homestyle." However, the personal vote in this context would also include more "partisan" actions by a legislator, including building campaign networks and fundraising bases, garnering the support of local activist groups, and engaging in media appearances. In essence, the aspect of the incumbency advantage measured by this research design might better be described as "direct officeholder benefits," rather than the personal vote, since any action which a legislator takes in her own district preceding the election could potentially have an impact on the subsequent electoral results (Ansolabehere et al. 2000, 18).

To better understand how the "old voters, new voters" research design operates, an example is helpful. Following the 2010 Census, Illinois lost one congressional seat and

reapportioned its congressional districts accordingly, drawing new congressional districts which first took effect in the 2012 election. One district that was redrawn was Illinois' 9th congressional district, which is represented by Jan Schakowsky. Following reapportionment, Rep. Schakowsky's district consisted of "old" constituents (who she represented from 2010 to 2012) and "new" constituents (who she did not represent from 2010 to 2012 but would represent going forward). Rep. Schakowsky was re-elected in 2012, but by a new constituency that consisted of this combination of old voters and new voters.

Theoretically, Rep. Schakowsky's old constituents should be familiar with her "homestyle" (or broader actions in office), since she represented the district from 2010 to 2012. However, new constituents should be unfamiliar with Rep. Schakowsky's homestyle, since she did not represent these voters from 2010 to 2012. Therefore, if there is a benefit to Rep. Schakowsky's electoral prospects because of her homestyle (as is suggested by the literature), she should have received a larger vote share from her old constituents than from her new constituents. In Ansolabehere et al.'s (2000) model, the difference in vote share between old and new voters thus captures the incumbency advantage for Rep. Schakowsky due to the "personal vote."

One immediate confounding factor that arises in this research design is partisanship. If Rep. Schakowsky, a Democrat, is assigned a new territory which is heavily Republican, she can expect to receive a low vote share from her new voters regardless of her homestyle. To address this issue, the research design controls for partisanship through the use of the normal vote. In particular, Ansolabehere et al. (2000, 19) use the normal presidential vote share, which measures "the strength of support for the competing parties… as they are represented by the presidential

candidates." While the use of the presidential vote to capture the normal vote is questioned by some scholars, Ansolabehere et al. (2000, 22-23) offer a thorough defense of the use of this measure of the normal vote by showing that the presidential vote tracks incredibly closely to the congressional vote in open seat elections (where there is no incumbency advantage), which justifies its use as a measure of the normal vote. The logic of Ansolabehere et al.'s (2000) approach is that once the research design controls for the normal vote, the difference in vote share between the old voters and new voters in a congressional district will represent the incumbency advantage due to the personal vote in that district.

A second confounding factor that emerges in this research design is that of challenger quality. Districts with high-quality challengers may see different electoral outcomes than districts with low-quality challengers. While this design's "natural experiment" keeps within-district challenger quality constant by measuring observations within districts, challenger quality can vary across districts. Therefore, a failure to include a control for differences in challenger quality across districts could impact the results when comparing multiple districts at once. To address this problem, the research design includes a control for challenger quality across districts.

After accounting for these factors, the "old voters, new voters" research design offers a powerful tool to analyze the incumbency advantage. There are several major strengths of the model. Perhaps most crucial is the fact that the research design does not rely on time-series data. In nearly all other research designs for measuring the incumbency advantage, time-series data which compares the vote share received by a candidate in her first election to subsequent elections is used to measure the incumbency advantage. However, using this time-series data is problematic because its temporal nature inherently leads to several confounding variables, such

as differences in the national mood of the electorate, differences in turnout between election cycles, and many other factors. While a strategy of attempting to control for all of these confounding variables is one way to skirt these issues, the "old voters, new voters" design offers a much more effective way of addressing the problem. This is achieved by using variation within districts in a single election cycle to measure the incumbency advantage (rather than using time-series data), which keeps many of the confounding variables that change over time constant.

While the "old voters, new voters" research design offers a key strength in that it avoids the problems associated with time-series data, there are also a few weaknesses which should be noted. Several of these weaknesses are related to a common thread: the need to exclude certain congressional districts from the research design. Regardless of the methodology, measurement of the incumbency advantage requires that certain districts be eliminated from the analysis, namely, those districts where the incumbent chooses not to run for re-election. There is little that can be done to avoid this necessary exclusion in any study of the incumbency advantage. However, there are at least two scenarios where the "old voters, new voters" design excludes voters from the analysis above and beyond this generic exclusion of districts in the incumbency advantage literature.

The first of these exclusions occurs in states which only have one congressional district. If a state only has one congressional district, it cannot be redistricted, and therefore cannot be analyzed under this research design.[3] This is potentially problematic for the research design, since states with only one congressional district may be categorically different because of the

[3] For the 2012 election cycle (which is the focus of this project) there are seven states that are only allocated one congressional district: Alaska, Delaware, Montana, North Dakota, South Dakota, Vermont, and Wyoming.

statewide nature of congressional races. Instead of catering to a narrow community interest (as many representatives in urban and suburban areas do), representatives in these states must cater to a broad range of constituents. In this sense, these congressional races in these states are much more likely to behave like Senate elections, which generally see a lower incumbency advantage than House races. However, since the motivation of this project is to examine differences in the incumbency advantage based on the type of redistricting scheme, rather than estimate the magnitude of the incumbency advantage across all states, the exclusion of states which do not participate in redistricting should not be viewed as a major flaw.

A second situation which leads to the exclusion of districts occurs when a district has an insufficient number of new voters added to the district following redistricting. There are a few scenarios where this may occur. The first scenario occurs when states that gain congressional districts following redistricting are forced to create a new congressional district, which makes each corresponding district cover less land area. Although unusual, this may lead to certain districts which only contain old voters. Examples of these type of congressional districts are most common in the South and West, where population growth is the fastest, leading to a potential bias against these regions in the analysis.

The second scenario where a district may have an insufficient number of new voters occurs when there is a significant growth in the district's population between Census years. Given the equal population requirement for congressional districts, a district that gains a substantial number of residents may have to be divided along lines that only remove old voters from a district, rather than adding new voters. This scenario is most likely to occur in areas where urban sprawl is occurring, such as in fast-growing suburban districts. Ultimately, such a

scenario may therefore bias the research design against suburban districts and toward rural districts and urban districts that are losing population.

A third situation where there may not be enough new voters assigned to a district arises when states do not witness any change in their allocation of congressional seats nor any significant shifts in population. In these states, there is generally little rationale to redraw the congressional maps (unless there is a change in party control of the state government), and thus there may be no change in the constituencies of each congressional district. This scenario is especially common in states with two congressional districts, such as Hawaii and Idaho. In these states, the only change which can be made to district boundaries is to slice out a sliver of one district and place it into the other district based on population changes. In sum, districts that do not witness major shifts in population may ultimately remain the same, without any new voters being added to the area.

Ultimately, the exclusion of congressional districts from the analysis (above and beyond what is typical for studies of the incumbency advantage) suggests potential methodological problems of this research design. When one takes a macro-level view of this "exclusion" problem, it shows that the districts which are least likely to be excluded from the research design are those districts which are losing population. Furthermore, there is reason to believe that the over-weighting of districts that are losing population in the research design may be problematic. In general, districts which are suffering from large population losses are generally districts where economic opportunity is scarce, which likely leads to voter dissatisfaction. If voters "punish" their representatives for poor economic conditions, one might expect incumbents to be re-elected at a lower rate in these districts than in other districts across the country, leading to a smaller

incumbency advantage in these over-weighted districts. Ultimately, by over-weighting districts which are losing population, it is possible that this research design underestimates the true effect of the incumbency advantage.

A final potential weakness of the "old voters, new voters" research design concerns the unit of analysis. In the original design, Ansolabehere et al. (2000) classify districts along the old voter, new voter dimension by county. While this strategy provides a feasible (and perhaps the only realistic) way to collect and analyze data across many districts over several years, it nonetheless may be a problematic design. There are two reasons for this. First, a county-level analytical approach necessarily requires that districts with boundaries that lie entirely within a single county be excluded from the analysis, as there will be no variation in the old voters, new voters variable. Second, counties which are split across multiple districts are also excluded from the original analysis (Ansolabehere et al. 2000, 19). Each of these factors leads to the disproportionate exclusion of districts from urban areas, particularly urban areas in the South and Southwest (where counties are generally larger).

The exclusion of districts from urban areas may not be problematic for the purposes of measuring the incumbency advantage overall; however, it presents a major problem for the research question at hand. This is because districts in areas with high population density are also most likely to be gerrymandered. The logic here is straightforward: in areas with greater population density, districts can be more finely drawn to match the ideal preferences of the mapmaker while still following other requirements in redistricting (e.g., respecting communities of interest or compactness). Therefore, the exclusion of urban counties from the research design could lead to a potential bias when answering this research question.

Given the powerful strengths of the "old voters, new voters" research design, it offers a compelling approach through which to answer this research question. However, because of some of the limitations of the model, a few important adjustments need to be made to the design to better suit the topic at hand. The first (and most significant) of these changes is that precinct-level election returns, rather than county-level election returns, are used in the modified research design employed by this study. By utilizing a smaller unit of analysis, this modification allows for the inclusion of urban congressional districts in the analysis which are likely to be excluded in the original design. A precinct-level analysis helps to make the research design more accurately represent the actual landscape of congressional districts.

However, the use of precinct-level data requires sacrificing some of the breadth that was achieved in the original research design. Therefore, the scope of the data collection in the modified design is limited to a single election (the 2012 general election), rather than analyzing a span of 60 years, as undertaken by the Ansolabehere et al. (2000)'s original study. Second, rather than including every eligible congressional district in the research design, the modified design limits the study to a sample of 10 congressional districts from each type of redistricting scheme, or 30 districts total. Although sacrificing some breadth, the benefits of using precinct-level election returns far outweigh this limitation.

This chapter has outlined the "old voters, new voters" research design, which is the key analytical tool used to test the theories of this research. Specifically, the "old voters, new voters" design measures the incumbency advantage as the difference in the incumbent's vote share between the voters who remain in the district following redistricting ("old voters") and the voters who are added to the district following redistricting ("new voters'). The research design offers

several key advantages by exploiting this natural experiment; however, a few adjustments are made to the design to better suit the research at hand. First, precinct-level election returns are analyzed, rather than county-level election returns. Second, the research is limited to a single election and a sampling of congressional districts. After making these two adjustments, the "old voters, new voters" research design provides an innovative and effective mechanism to answer this research question.

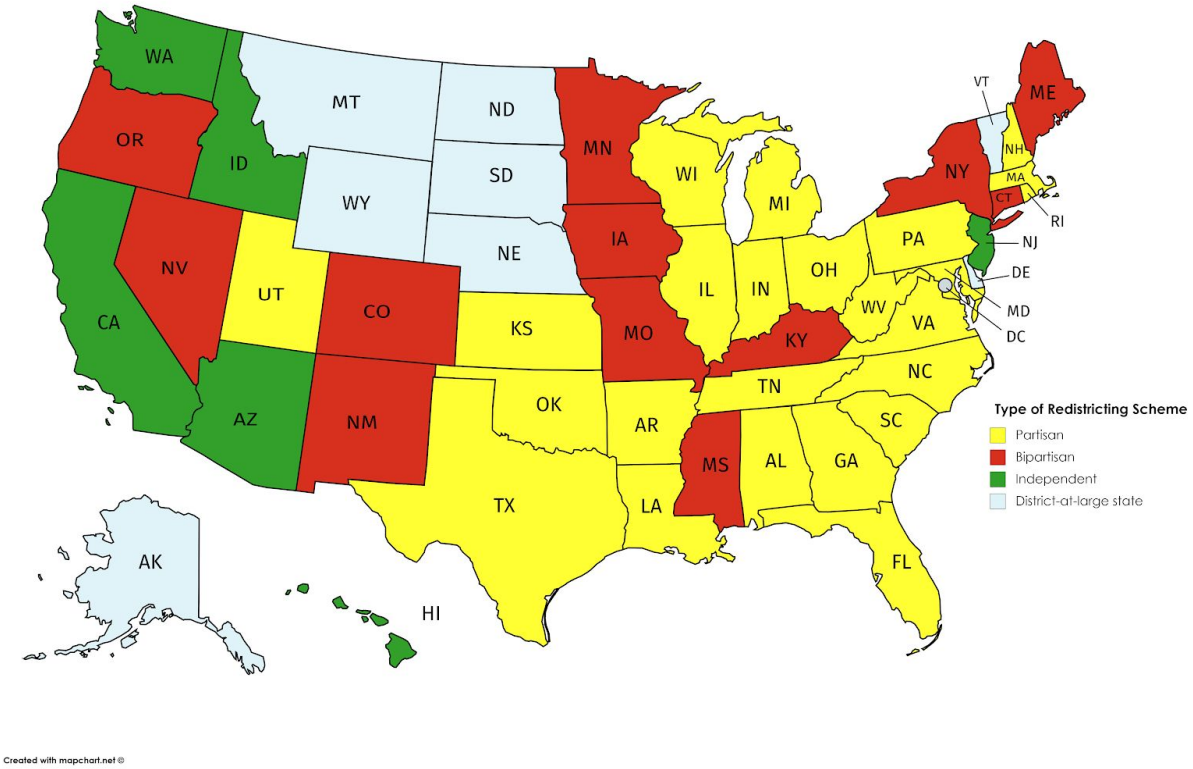
Chapter 5: Data Collection

The goal of this chapter is to provide an explanation of the data collection process and the operationalization of the data used in this research. Given the implementation of the "old voters, new voters" research design at a microscopic unit of analysis, the research requires the collection of data at the precinct-level. In total, data is collected for 17,731 precincts from 38 congressional districts in 18 states. This data consists of three components: data on the type of redistricting scheme employed in each state, precinct-level election returns, and the "old voter, new voter" indicator variable. This chapter will examine each of these components of the data, focusing on three elements: the sourcing of the data, the operationalization of the data into variables, and the limitations of the data.

The first category of data focuses on the type of redistricting scheme utilized by each state. This variable is the primary independent variable of interest and consists of the three types of redistricting schemes: partisan, bipartisan, and independent. The primary source of data for classifying districts comes from Professor John Levitt's website entitled "All About Redistricting" (2018). Not only does the site identify states which have independent redistricting commissions, but it also compiles information about the balance of power in state legislatures and governors' offices, which allows for easy classification of bipartisan versus partisan districts as well. Finally, the website notes any abnormalities in the redistricting process within each state (such as the requirement of supermajorities to pass maps in Connecticut and Maine). Given the website's depth and breadth, all necessary information on the type of redistricting scheme employed in each state is able to be collected through this source.

Operationalizing the type of redistricting scheme follows a fairly simple procedure. First, each precinct is classified with a dummy variable for whether it uses a particular type of redistricting scheme. For example, a precinct in a state with a bipartisan redistricting scheme would be coded "1" on the bipartisan variable and coded "0" in the partisan and independent variables. The determination of whether a district is a bipartisan, partisan, or independent redistricting scheme applies the criteria for classifying redistricting schemes (as laid out in Chapter 2) to the data provided by the "All About Redistricting" project. Figure 1 shows the type of redistricting scheme employed in each state for the newly drawn congressional districts in the 2012 election.

Figure 1: Redistricting Schemes By State, 2012



As mentioned in Chapter 4, the analysis only includes a sample of congressional districts from each type of redistricting scheme. To select which districts are included in the analysis, a stratified random sampling technique is used which separates districts into three groups based on the type of redistricting scheme employed in the district (i.e. partisan, bipartisan, or independent). Then, each district is assigned a unique identification number within each type of redistricting scheme. From here, one district (based on its identification number) is randomly selected from each type of redistricting scheme, and data is collected from this district. If a district is selected which must be excluded from the analysis, it is replaced with another district selected by random number draw. This process is repeated until data is collected for ten congressional districts from each type of redistricting scheme. Appendix 2 provides further details on the sampling process and lists which districts are included in the main analysis.

There are a multitude of reasons why a district may be excluded from the analysis. As outlined in Chapter 4, districts cannot be analyzed if the incumbent legislator does not run for re-election, if the district is from a state that only has one "at-large" congressional district, or if a district has an insufficient number of new voters. For this research, an insufficient number of new voters is determined to occur when less than 5 percent of voters in a congressional district are "new voters." Besides these circumstances, a district is excluded when the congressional race is uncontested by another major party candidate in 2012, since there will not be enough variation in the dependent variable of incumbent vote share to produce meaningful results. Finally, districts where a third-party candidate receives 5 percent or more of the total vote share are

excluded from the analysis. This step is taken to eliminate the circumstances where a third-party candidate has a substantial impact on the vote share received by the incumbent.[4]

While this data provides a reasonably clear classification of each type of redistricting scheme, there are a few important limitations which should be noted. Each of these limitations is related to the same theme, namely, that the use of an indicator variable to identify the type of redistricting scheme does not adequately capture the potential variation between districts within each type of redistricting scheme.

There are at least three potential cases where this limitation may be relevant to the study's results. The first of these occurs in the case of independent commissions. A subset of the independent commission category includes "politician commissions," which act in a similar manner to independent commissions but allow for politicians, as well as citizens, to sit on the redistricting commission. The categorization scheme employed here classifies "politician" commissions as independent commissions; however, it is possible that these politician commissions behave differently than purely independent commissions. Specifically, one might expect a politician commission to behave much more like the theory suggests a bipartisan redistricting scheme should behave, with lawmakers from both parties on the commission attempting to draw lines that favor the incumbents of their own parties. Thus, the existence of politician commissions has the potential to bias the results of this research. [5]

[4] Although cases of a third-party candidate receiving more than 5 percent of the vote are present among congressional races in 2012, they are infrequent, and none of these districts were randomly selected as part of the sampling process.

[5] Although this represents a potential limitation to the study design, this problem does not bear out in the research. While a few with political commissions were randomly selected, they were ultimately excluded based on one of the factors of exclusion outlined above, or data was unavailable from these districts (i.e. New Jersey).

A second (and perhaps more general) problem with this binary classification is that it does not account for the size of the minority party in state legislatures. In other words, the binary classification treats a state with a minority party that has a one-seat disadvantage in both chambers the same as a state with a minority party that has a thirty-seat disadvantage in both chambers. Although such a scenario is unlikely to have a substantial impact on the results (as a scenario with a one-seat disadvantage in both chambers is unlikely), it is a noteworthy limitation, since minority parties may behave differently if they only have to convince one or two members of the majority party to vote for the minority party's redistricting maps. As an example, one could easily imagine the minority party of a large state offering a single legislator a district map of his own choosing to convince him to buck the majority and instead vote for the minority party's maps. Thus, although this problem is unlikely to occur on a wide scale, the binary classification of redistricting schemes could mask some of the underlying motives of legislators.

A third limitation concerns the use of a binary variable to classify partisan redistricting schemes. Due to the variety of potential redistricting strategies available for legislators from states with partisan redistricting schemes, the binary indicator fails to capture the variation which might exist between districts within those states that implement a partisan redistricting scheme. Specifically, one might expect such variation to occur depending on whether the incumbent legislator is in the majority or minority party and depending on the type of redistricting strategy employed. This issue will be explored more thoroughly in Chapter 7.

The second category of data collected for this project is precinct-level election results for the 2012 general election. Fortunately, much of this data was compiled by Ansolabehere et al. (2014) and is available for public use through the Harvard Data Election Archive. This dataset

includes precinct-level election results for the 2012 general election for U.S. House of Representatives and United States President, both of which are widely used throughout the research. While data is not available for every state in the Ansolabehere et al. (2014) dataset, it nonetheless serves as the primary source in circumstances where data is available.

In states where the Ansolabehere et al. (2014) dataset does not have available data, a few different strategies are implemented to collect the missing data. The first of these strategies relies on election results made publicly available online by each state's Secretary of State office.[6] While many of these offices provide downloadable precinct-level election returns, there are some cases in which election returns are not publicly available from the Secretary of State's office. In these cases, a county-by-county method of data collection is used. This process involves visiting each county clerk's website within the district and downloading available precinct-level election data for each county, then compiling this data into a single workbook for analysis. In the vast majority of circumstances, one of these methods sufficiently compensates for the lack of data in the Ansolabehere et al. (2014) dataset. The remaining cases of missing data are excluded from the analysis.

Once the data is collected, the two-party vote share for the incumbent (as a percentage) is calculated. This measure divides the total number of votes received by the incumbent by the sum of the votes received by the incumbent and the votes received by the incumbent's major-party challenger. The two-party vote share, rather than the raw vote share, is chosen to eliminate differences in election returns across districts due to variation in the percentage of the vote received by third-party candidates. Although districts where greater than 5 percent of the vote

[6]There is one exception to this rule. Data for California is collected from the Statewide Database, administered by the University of California, Berkeley School of Law, rather than from the Secretary of State's website.

share is captured by third-party candidates are excluded from the analysis, districts with less than 5 percent of the vote share captured by third-party candidates do still exhibit differences in the percentage of the vote share captured by third-party candidates. Therefore, to eliminate any potential impacts of this variation in vote-share across districts, the two-party vote share for the incumbent is used.

For each precinct, the two-party vote share for the 2012 general presidential election is simultaneously measured using the same process. This measure is useful for calculating the normal vote for each precinct within a congressional district, which serves as a measure of the partisanship of the precinct. Again, percentages are calculated for the two-party vote share, which in this case represents the two-party vote share received by Barack Obama or the two-party vote share received by Mitt Romney in each precinct. To measure the normal vote, the two-party vote share for the presidential candidate of the same political party as the incumbent representative is used. For example, the normal vote for a Republican incumbent is the two-party presidential vote share for Mitt Romney, and the normal vote for a Democratic incumbent is the two-party presidential vote share for Barack Obama.

Despite the overwhelming amount of data available in this domain, the precinct-level election data does have some limitations. To begin, there are a few states for which none of the three methods of data collection are successful.[7] Primarily, the inaccessibility of the data stems from the lack of a statewide repository for election results, which therefore requires a county-by-county approach to data collection. While some county clerk's offices within these states do publish precinct-level election results, many others do not publish the data publicly. For

[7] These states are New York, New Jersey, and Missouri.

these counties, county clerk's offices were contacted directly, and although some offices responded with data, many others were unresponsive. Given that congressional districts often span a wide area, getting a complete picture of precinct-level returns for a district requires data from multiple counties. Unfortunately, not enough data was collected from districts within these states to include them, and they are therefore excluded from the analysis.

One noteworthy problem emerges from the lack of available data in New Jersey. New Jersey is an example of a state which employs a "politician" commission, where congressional boundaries are redrawn by a group of politicians outside of the state legislature. As mentioned above, one might expect politician commissions to behave much more like bipartisan redistricting schemes than independent redistricting schemes when redrawing district boundaries. Therefore, to the extent that politician commissions behave like bipartisan redistricting schemes, the exclusion of data from New Jersey may lead to an underestimation of the incumbency advantage for independent commissions in the research. Nonetheless, the exclusion of data from New Jersey also means that no "politician" commissions are sampled and included in the analysis, allowing for a cleaner interpretation of the findings.

Another limitation that comes with using precinct-level election returns is that there is variation in both the number of precincts per district and, correspondingly, the average size of a precinct within each district. Each state has different laws which govern its election processes, including laws concerning the minimum number of precincts per district and the maximum number of voters per precinct. As a result, the number of voters in each precinct and the number of precincts per district are not even across districts. For example, Minnesota's 7th congressional district has 1,315 precincts (the largest number of precincts in the dataset), whereas Arizona's

6th congressional district contains only 155 precincts. Ultimately, this problem leads to certain districts being weighted more heavily than others in the analysis, which could skew the results in favor of districts with a large number of precincts. This concern will be addressed more thoroughly in Chapter 8.

Despite these limitations, the importance of utilizing precinct-level data for this analysis should not be overlooked. Precinct-level data offers a key advantage over county-level data because it permits the classification of districts on a much more microscopic level, and at the level which map-makers may be strategically redrawing districts. Furthermore, many counties in the dataset contain multiple districts. Without using precinct-level data, it would be necessary to exclude these counties from the research, leading to a murkier interpretation of the findings.

Additionally, several districts exist entirely within one county, especially in heavily populated areas. A county-level approach to this research design would necessitate that such districts are excluded from the analysis. While one cannot be certain that the exclusion of single-county congressional districts leads to bias, there are reasons to suspect that it could. For example, single-county districts are most common in areas with a high population density. In turn, these high-density districts allow for mapmakers to draw gerrymandered maps to a greater extent than in districts which are drawn over multiple counties. Thus, these single-county districts are likely to see the greatest impact of gerrymandering. The omission of single-county districts would likely lead to the omission of districts which have a high incumbency advantage, biasing the study's estimates of the incumbency advantage downward.

The third element of data collected is an indicator variable which classifies each precinct as an "old" precinct or a "new" precinct based on the "old voters, new voters" research design

outlined in Chapter 4. The data collection for this step of the process is the most labor intensive. To begin, ArcGIS software is used to overlay each incumbent's congressional district in 2010 and the incumbent's congressional district in 2012. Next, each precinct is coded as "old" or "new" based on whether the precinct was or was not part of the incumbent's congressional district in 2010. Precincts are coded with an indicator variable, with 1 indicating that the precinct consists of old voters and 0 indicating that the precinct consists of new voters.

It is important to note that congressional districts in 2010 and 2012 are matched by the incumbent who represents the district, not by the district's number. This is important for two reasons. First, many states re-number congressional districts following redistricting, either for convenience or out of necessity after gaining or losing apportioned seats. Second, in a situation where an incumbent's old district is redrawn substantially, the incumbent may choose to run in a district other than the one they reside in. This may occur because incumbents feel that one district is more favorable to their re-election prospects, and many states do not require representatives to live in the district they are elected to represent.[8] Overall, these two factors require that districts are matched by incumbent rather than by district number.

Once old and new districts are overlaid, there are three strategies that can be employed to determine whether a precinct consists of "old" voters or "new" voters. The first strategy consists of a county-by-county classification of precincts within a district. Since some rural districts span numerous counties, entire counties can be classified as consisting of "old" or "new" voters. In

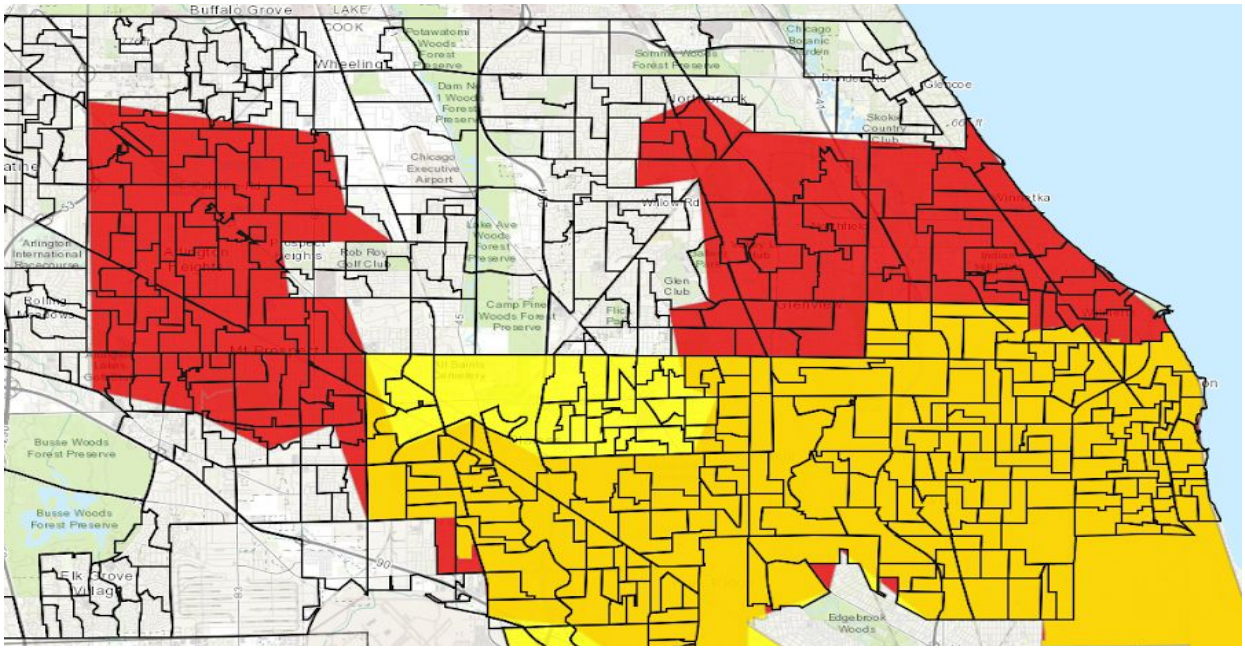
[8] Art. II § 2, clause 2 of the Constitution states "No Person shall be a Representative who shall not have attained to the age of twenty five Years, and been seven Years a Citizen of the United States, and who shall not, when elected, be an Inhabitant of that State in which he shall be chosen." However, this does *not* state that a representative must live in the *district* they represent, but only in the *state* they represent.

this case, the classification of precincts is conducted based on the county in which the precinct is located. This method is by far the most efficient.

While county-by-county classification offers a simple and quick way to code "old" and "new" precincts, this strategy is not adequate for most districts, as many counties are made up of multiple districts. For these districts, a county's precinct-level shapefiles (which show the precinct boundaries for all precincts in the county) are overlaid on top of the congressional maps. Then, each precinct is examined individually and coded as "old" or "new" based on where it falls in relation to the 2010 and 2012 congressional districts. Of course, this strategy is limited by the availability of precinct-level shapefiles. Most of the precinct-level shapefiles used in this project are aggregated by county, so this strategy is unavailable for counties that do not publish precinct-level shapefiles.

This second strategy is the most common approach used to classify districts as "old" or "new" voters in the research. Figure 2 presents a visual representation of the classification process for the suburban Cook County portion of Illinois's 9th congressional district, represented by Jan Schakowsky (D-IL). Rep. Schakowsky's 2010 congressional district is highlighted in yellow, whereas her 2012 congressional district is highlighted in red. Therefore, the area highlighted in dark yellow/orange consists of "old" voters and the area in bright red consists of "new" voters. The light yellow area consists of voters who were drawn out of Rep. Schakowsky's district following the 2010 redistricting process, and the remainder of the area shaded in off-white represents voters who were not constituents of Rep. Schakowsky in 2010 or 2012.

Figure 2: Classifying Old Voters and New Voters



Note: Rep. Schakowsky's 2010 district is shown above in yellow and her 2012 district is shown above in red. The dark yellow/orange area shows the overlap between the two districts, which represents Jan Schakowsky's old voters in the 2012 election. The red area represents Jan Schakowsky's new voters in the 2012 election, and the light yellow area is no longer represented by Jan Schakowsky in 2012.

It is important to note that there are a few limited cases where precincts are split between "old" voters and "new" voters. In these cases, multiple factors contribute to the decision of how the precinct is classified. One such factor is the population distribution within the precinct. Even though a precinct may be divided between two districts in terms of land mass, some areas within a precinct (especially in rural and mountainous regions) are unpopulated. The ArcGIS Online software easily allows for an examination of population clusters in a precinct through an examination of where housing units are located within the precinct. In the rare case that the population is split roughly evenly between "old" and "new" voters, the district is coded as an "old" voter precinct. Again, this scenario happens very infrequently and is not expected to bias

the results, since it happens across all three types of redistricting schemes and does not appear to be systematic in any way.

In cases where precinct-level shapefile data is unavailable, a third strategy is implemented, which makes use of municipal boundaries. In this strategy, precincts are matched with the municipality within which the precinct exists. Then, ArcGIS is used to search for the municipality's boundaries. If the municipality lies within the 2010 congressional boundaries, then all precincts in the municipality are coded as old voters. Otherwise, the precincts within the municipality are classified as new voters. Again, problems arise in a limited number of cases where municipalities are split between old voters and new voters, but this is infrequent and does not appear to be systematic in any way.

There are a few general limitations of this data which should be addressed. Perhaps the most consequential of these concerns the use of precinct-level shapefile data. Where possible, precinct-level shapefiles are matched to precinct boundaries as of the 2012 election. However, data limitations require the use of a limited set of shapefiles which do not match the 2012 election cycle. This limitation will lead to the omission or incorrect classification of precincts if changes are made to precinct boundaries between the 2012 election and the subsequent election cycle where the precinct maps are drawn. However, there are several reasons to believe that this problem will only have a minimal impact on the results. First, most states choose to redraw their precinct maps when they redistrict and only implement minor changes in intermediate years. Second, many precincts are not only identified by a numerical ID, but also by the name of their precinct location, which allows for verification of the precinct's location by the precinct address. As an example, Norfolk County Precinct 506 in Virginia's 2nd congressional district is also

identified as “Ocean View Center.” In the case of ambiguity about the precinct boundaries, the address of the Ocean View Center in Norfolk County can be inputted into the ArcGIS software and pinpointed based on GPS coordinates to show if the polling location lies within the “new” voter or “old” voter territory. For these reasons, the limitations of the precinct-level shapefiles do not pose a significant concern for the results of this study.

In sum, this chapter has presented the key sources of data used to implement the modified “old voters, new voters” research design and has highlighted potential limitations to the data collection process. While the limitations of this research design should not be overlooked, they ultimately do not pose a significant threat to the integrity of the study’s results. Certain challenges do exist in using precinct-level data with the “old voters, new voters” design, but the benefits of this data far outweigh its limitations. The next chapter examines this data and uses it to explain how strategic redistricting in bipartisan redistricting schemes creates an artificial incumbency advantage.

Chapter 6: Key Tests and Results

This chapter will be focused on discussing the implementation of the "old voters, new voters" design to test the theoretical framework outlined in Chapter 3. As a reminder, the theory suggests that the largest artificial incumbency advantage should occur under bipartisan redistricting schemes, with a smaller (or nonexistent) artificial incumbency advantage in partisan schemes, and no artificial incumbency advantage in independent redistricting schemes. Thus, if the theory holds, one should see a large, positive incumbency advantage in bipartisan redistricting schemes and a small incumbency advantage for partisan and independent redistricting schemes.

Furthermore, the theory suggests that there may be variation in the incumbency advantage for partisan redistricting schemes based on the type of redistricting strategy employed in a district and whether the district's incumbent is a member of the majority or minority party. This part of the theory will be addressed in Chapter 7. For now, the primary goal is to show that an artificial incumbency advantage exists in bipartisan redistricting schemes and that it is created through strategic redistricting.

To begin, it is important to briefly revisit the "old voters, new voters" research design to explain each of its variables quantitatively. The main independent variable in the research design is the "old voter" dummy variable, which is equal to 1 if a precinct is located in an incumbent's 2010 district and equal to 0 if the precinct is not located in an incumbent's 2010 district (but is located in the incumbent's 2012 district). The main dependent variable in the research design is the two-party vote share captured by the incumbent. As discussed in Chapter 4, the difference in the incumbent vote share between old voters and new voters can be identified as a measure of the

incumbency advantage; therefore, the coefficient on the old voters variable in each regression is used to measure the magnitude of the incumbency advantage.

Before progressing, it is important to expand upon the measurement of the two control variables included in the research design: the normal vote and challenger quality. The normal vote is measured as the two-party vote share for the presidential candidate who is of the same party as the incumbent legislator. While numerous measures of the normal vote have been proposed throughout the literature, the use of the presidential vote is sufficient for this research. The presidential vote is an easily measurable variable, and presidential elections were held in 2012 (the election of study) in every state, providing readily available data. To the extent that presidential elections are determined on party lines, the presidential vote therefore serves as a useful measure of the normal vote (Ansolabehere et al. 2000, 22).

Of course, the presidential vote is not a perfect measure of the normal vote. For one thing, presidential elections are certainly decided by more than a simple party-line vote. The presidential vote may capture short-term impacts, such as economic fluctuations, that may impact voting above and beyond simple partisanship. However, since these effects are generally expected to be generally consistent across all states, they are not expected to bias the measurement of the normal vote in a meaningful way.

The normal vote is included in this analysis as a control variable to account for the "partisan" element of an incumbent's vote share. Because of the role of partisanship in elections, incumbents are expected to perform better in areas where support for their own political party is higher. However, a better performance in these areas is not evidence of an advantage for the incumbent in the district but is rather evidence of a partisan advantage. Therefore, to isolate the

impact of the incumbency advantage from the partisan advantage, the normal vote is included as a control variable in the analysis.

Likewise, challenger quality is included as a control variable in the research design because incumbents may face challengers who differ in their degree of political experience. While the old voters, new voters research design controls for differences in candidate quality within districts, differences in candidate quality across districts are not accounted for in the model. Furthermore, there are several reasons to believe that high-quality challengers are more likely to be elected than low-quality challengers. For one thing, high-quality challengers are likely to be more adept in campaigning, raising money, and galvanizing support in their communities (Bond 1981). Additionally, high-quality challengers are likely to have higher name recognition. All of these factors are beneficial to challengers seeking office. For each these reasons, the model adds challenger quality as a control variable.

Challenger quality is measured as a dummy variable equal to 1 if the challenger has previously held elected office and equal to 0 if the challenger has not previously held elected office. Note that under this measure, incumbent quality will not be included as a control variable, since all incumbents will be considered high-quality candidates.

There are at least two reasons for using this measure as a measure of challenger quality. First, most elected officials possess the characteristics of a high-quality challenger, as they have demonstrated an ability to run a successful campaign for office and, by nature of holding that office, are likely have at least some name recognition within the community. Second, prior scholars have justified the use of this measure as an indicator of challenger quality (e.g., Jacobson 1983a). Although the elected officeholder dummy variable is not a perfect

operationalization of challenger quality, these two reasons provide justification for the adequacy of such a method of operationalization.

Finally, it is important to note that each of the regression models used in the remainder of the research cluster standard errors by congressional district. Since precincts are nested within congressional districts, there is undoubtedly a correlation of the error terms between precincts within each congressional district, since there are various idiosyncrasies within districts that are not captured by either the independent or control variables. Therefore, by failing to cluster standard errors, the model would essentially treat each precinct as an independent observation, leading to a significant underestimation of the error term. Therefore, to avoid this problem, standard errors are clustered by district, providing a higher but more realistic threshold for statistical significance throughout the research.

Before testing the theory, a simple regression is executed with all districts pooled together. This is done for two reasons: first, to ensure that the model is operating according to the expectations of the "old voters, new voters" design; and second, to see if any of the modifications made to the original research design significantly impact the results. This regression is estimated as follows:

$$(1)\ Y_{id} = \beta_0 + \beta_1 Old\ Voter_{id} + \beta_2 Normal\ Vote_{id} + \beta_3 Challenger\ Quality_d + \varepsilon_{id},$$

where Y_{id} is the two-party vote share for the incumbent in precinct i in district d in the 2012 election, $Old\ Voter_{id}$ is the "old voter, new voter" dummy variable for precinct i in district d, $Normal\ Vote_{id}$ is a measure of the normal presidential vote share in precinct i in district d, and $Challenger\ Quality_d$ is a measure of whether an incumbent in district d faces a high-quality challenger in the election.

The interpretation of the coefficients in Equation (1) is as follows. The coefficient on the $Old\ Voter_{id}$ variable (β_1) estimates the difference in the incumbent vote share between voters in "old" precincts and voters in "new" precincts. Therefore, this coefficient represents the estimated magnitude of the incumbency advantage. It is expected that this coefficient in Equation (1) will be positive and statistically significant if the "old voters, new voters" model is operating as theorized by Ansolabehere et al. (2000). The coefficient on the $Normal\ Vote_{id}$ variable (β_2) represents the effect of a precinct's normal vote on the incumbent's vote share in that precinct. This can be understood as the effect of a precinct's partisanship on the incumbent's vote share. Thus, a value of 1 on this coefficient would indicate that the normal vote perfectly predicts the incumbent's vote share in the precinct, whereas a value of 0 on the coefficient would indicate that the normal is unrelated to the incumbent vote share in the precinct. This value is expected to be positive and statistically significant in all cases. Finally, the coefficient on $Challenger\ Quality_{d}$ (β_3) represents the expected impact of facing a high-quality challenger on the incumbent's vote share, relative to facing a low-quality challenger. This coefficient is expected to be negative, as incumbents who face high-quality challengers are expected to receive a smaller vote share than incumbents who face low-quality challengers.

Table 2 presents the results of Equation (1). As can be seen in Table 2, the coefficient on β_1 is positive and statistically significant ($p<0.05$). Specifically, the coefficient on β_1 indicates that the overall incumbency advantage for the districts sampled in this research is 4.42 percentage points. These findings closely mirror those of Ansolabehere et al. (2000, 28), which place the incumbency advantage at 4.1 percentage points in the most recent period studied (1972-1988). In sum, both the positive and statistically significant coefficient on β_1 and the

analogous magnitude of the incumbency advantage in Equation (1) to the original Ansolabehere (2000) model demonstrate the internal validity of the methodology in this research.

Table 2: The Incumbency Advantage (Pooled)

VARIABLES	Incumbent Percent (DV)
Old Voter (Incumbency Advantage)	4.422**
	(1.723)
Challenger Quality	-3.551
	(2.553)
Normal Vote	0.787***
	(0.0633)
Constant	15.12***
	(4.344)
Observations	13,704
Number of Districts	30
R-squared	0.827

Robust standard errors in parentheses, clustered by district.
*** p<0.01, ** p<0.05, * p<0.1

A few other features of the initial model are worth mentioning. As can be seen in Table 2, the coefficient on *Challenger Quality* is -3.55, indicating that the average incumbent in a district with a high-quality challenger receives a vote share that is 3.55 percentage points lower than an incumbent in a district with a low-quality challenger. While the sign of this coefficient is in the right direction, it is not quite statistically significant in the aggregate model (p=0.18). Therefore, the aggregate model suggests that challenger quality does not affect the incumbent vote share in a significant way. This finding, however, should not be overinterpreted, since there is a high bar for statistical significance in this research due to the clustering of standard errors.

Second, as can be seen in Table 2, the coefficient on β_2 is positive and statistically significant ($p<0.01$). Specifically, the coefficient of 0.79 on β_2 indicates that for every one percentage point increase in the normal presidential vote in a district, the incumbent vote share is expected to increase by 0.79 percentage points. Overall, these findings comport closely with the expectation that partisanship is a strong driver of an incumbent's vote share.

The first step toward testing whether an artificial incumbency advantage exists is to run Equation (1) separately for each type of redistricting scheme. Doing so will determine the magnitude of the incumbency advantage for each scheme. Thus, this initial test is executed identically to that of Equation (1), and the interpretations of its coefficients are equivalent. The only difference is that the model is executed three times, with each model examining only a subset of districts based on their redistricting scheme (partisan, bipartisan, or independent).

Table 3 presents the results of this model for each type of redistricting scheme. Column (1) presents the results of the model for partisan districts, column (2) for bipartisan districts, and column (3) for independent districts. As can be seen in Table 3, the incumbency advantage coefficient (β_1) for bipartisan redistricting schemes has a value of 7.45, which is the only positive and statistically significant incumbency advantage coefficient in the table ($p<0.01$). By contrast, the coefficient on β_1 for partisan redistricting schemes is only 1.51, and the coefficient on β_1 for independent redistricting schemes is even lower, at 1.20. Neither of these coefficients is statistically significant at any conventional standard. These findings support the expectation that only bipartisan redistricting schemes are likely to see an artificial incumbency advantage.

Table 3: Incumbency Advantage by Type of Redistricting Scheme

	(1) Partisan	(2) Bipartisan	(3) Independent
VARIABLES	Incumbent Percent (DV)	Incumbent Percent (DV)	Incumbent Percent (DV)
Old Voter	1.509	7.454***	1.196
	(1.642)	(1.687)	(0.995)
Challenger Quality	-4.418	-5.919	
	(5.254)	(3.648)	
Normal Vote	0.843***	0.696***	0.892***
	(0.0203)	(0.0895)	(0.0304)
Constant	13.88***	20.12**	7.892**
	(2.124)	(7.097)	(2.460)
Observations	3,555	5,843	4,306
Districts	10	10	10
R-squared	0.896	0.776	0.885

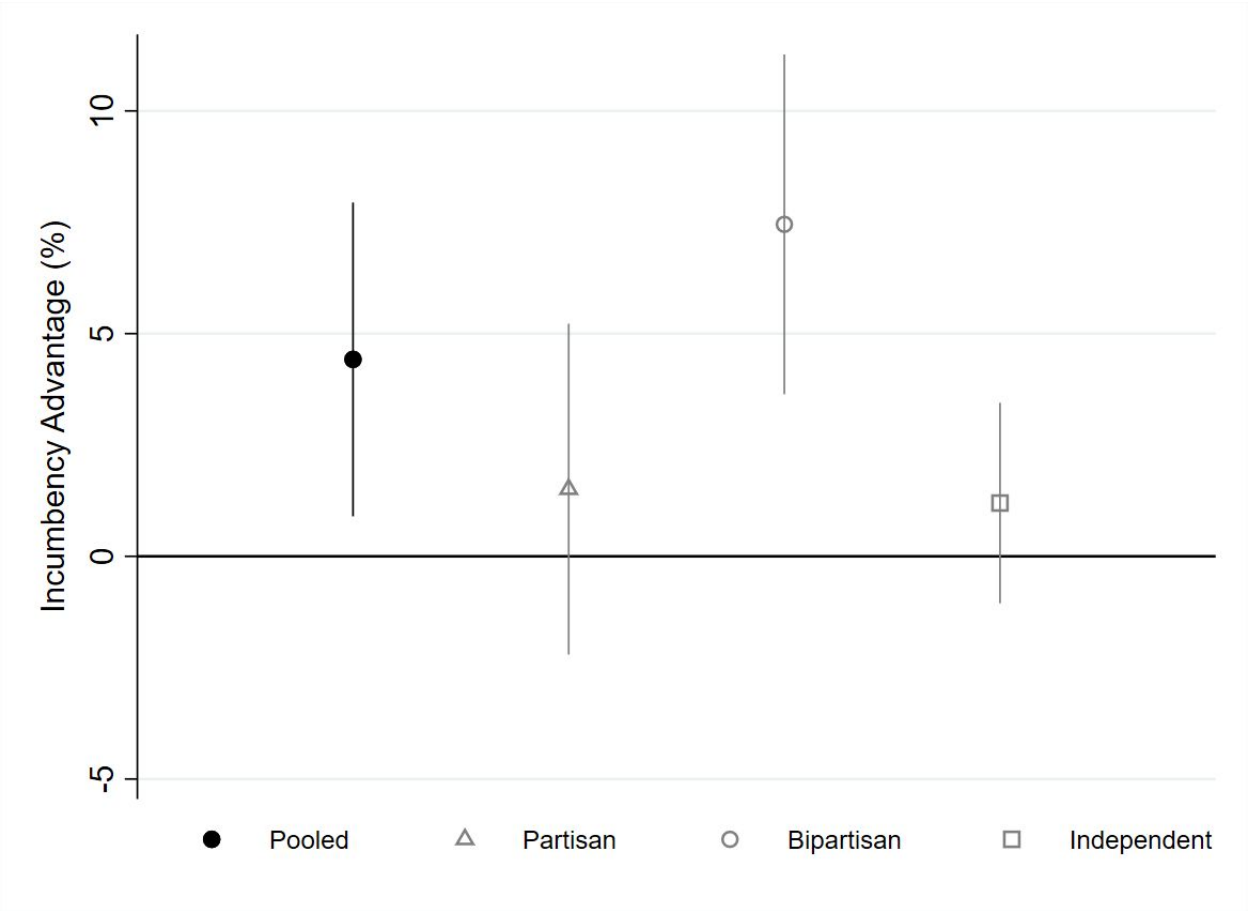
Robust standard errors in parentheses, clustered by district.
*** p<0.01, ** p<0.05, * p<0.1

One feature to note in Table 3 is that the challenger quality variable is left blank for independent districts. The reason is that in all districts sampled in this research, incumbents in independent commissions face a low-quality challenger. This finding is intriguing, but probably arises simply due to chance, as partisan and bipartisan districts also see a low number of incumbents facing high-quality challengers. Specifically, only two out of ten incumbents in partisan districts face a high-quality challenger, and four out of ten incumbents in bipartisan districts face a high-quality challenger. Further research should explore how the different redistricting schemes impact the likelihood of incumbents facing a high-quality challenger.

While the findings above provide an idea of the magnitude of the incumbency advantage for each type of redistricting scheme, they are insufficient to indicate whether there are statistically significant differences in the incumbency advantage based on the type of

redistricting scheme. As a first step toward understanding whether these differences are significant, one can compare the confidence intervals surrounding the point estimates for each of the three types of redistricting schemes. Figure 3 shows the point estimates and 95 percent confidence intervals for each type of redistricting scheme in Table 3. As can be seen in Figure 3, the confidence intervals for partisan and independent schemes largely overlap. However, the confidence intervals for partisan and bipartisan districts overlap only slightly, and the confidence intervals for bipartisan and independent schemes do not overlap. Therefore, Figure 3 suggests that bipartisan districts see a higher incumbency advantage than independent districts, and also possibly suggests that bipartisan districts see a higher incumbency advantage than partisan districts (as the confidence intervals overlap only slightly).

Figure 3: Incumbency Advantage Confidence Intervals by Redistricting Scheme



To definitively determine whether there is a statistically significant difference in the magnitude of these coefficients, an additional model can be introduced. This model makes use of interaction terms and is of the following form:

$$(2)\ Y_{id} = \beta_0 + \beta_1 OV_{id} + \beta_2 P_d + \beta_3 I_d + \beta_4 (OV_{id} * P_d) + \beta_5 (OV_{id} * I_d) + \beta_6 NV_{id} + \beta_7 CQ_d + \varepsilon_{id}$$

where Y_{id} is the two-party incumbent vote share in precinct i in district d, OV_{id} is the old voter, new voter dummy variable as in Equation (1), P_d is a dummy variable equal to 1 if the congressional district's boundaries are drawn by a partisan redistricting scheme, I_d is a dummy variable equal to 1 if the congressional district's boundaries are drawn by an independent redistricting scheme, and NV_{id} and CQ_d are control variables for the normal vote and candidate quality, respectively, both functioning in the same manner as in Equation (1).

The interpretation of the coefficients in Equation (2) deserve careful explanation. To begin, the interpretation of β_1, the old voter coefficient, no longer represents the effect of the incumbency advantage, but rather represents the incumbency advantage only in districts drawn by bipartisan redistricting schemes (that is, districts where both P_d and I_d are equal to 0). The coefficient on P_d, or β_2, represents the difference in the incumbent vote share for new voters in partisan districts relative to new voters in bipartisan districts. Likewise, the coefficient on I_d, or β_3 represents the difference in the incumbent vote share for new voters in independent districts relative to new voters in bipartisan districts. The coefficient on $OV_{id} * P_d$, or β_4, represents the difference in the effect of old voters on the incumbent vote share in partisan districts relative to bipartisan districts. In other words, this coefficient represents the difference in the incumbency advantage between partisan districts and bipartisan districts. The interpretation of the coefficient on $OV_i * I_d$, or β_5, is analogous, but for independent commissions. Therefore, this coefficient

represents the difference in the incumbency advantage between independent districts and bipartisan districts. Finally, the interpretation of the coefficients on the control variables of the normal vote and challenger quality, or β_6 and β_7 (respectively), are identical to the interpretations in Equation (1), since it is assumed that these control variables have a similar effect in each type of redistricting scheme.

This interaction model offers a determinative test for whether there is a statistically significant difference in the incumbency advantage between bipartisan, partisan, and independent commissions. It is important to note that the interaction model relies on the comparison of coefficients relative to a baseline condition. Bipartisan redistricting schemes are chosen as the baseline condition in this model. The reason for doing so is that the theory suggests that the incumbency advantage will be higher in bipartisan schemes relative to both partisan independent schemes. Therefore, making bipartisan schemes the baseline condition allows for the use of a single model to test the hypothesis that bipartisan schemes see a higher incumbency advantage than both partisan schemes and independent schemes.

Based on the theory, the coefficients on both the partisan interaction term and the independent interaction term (that is, β_4 and β_5) should be negative and statistically significant. Such a result would indicate that the incumbency advantage in partisan and independent districts is significantly lower relative to bipartisan districts. Likewise, there should not be a statistically significant coefficient on β_2 or β_3, since it is not expected that new voters in each type of redistricting scheme will vote for the incumbent at a different rate once controlling for the normal vote.

Table 4 presents the results of the regression in Equation (2). As can be seen in the table, the coefficients on both interaction terms are negative and statistically significant ($p<.05$), indicating that both partisan and independent districts see an incumbency advantage that is lower than bipartisan districts. Furthermore, the coefficients on β_2 and β_3 are not statistically significant, as predicted.[9]

Table 4: Disparities in the Incumbency Advantage (Interaction Model)

VARIABLES	Incumbent Percent (DV)
Old Voter	6.703***
	(1.625)
Partisan	1.996
	(2.710)
Independent	-1.796
	(3.054)
Old Voter*Partisan	-5.576**
	(2.517)
Old Voter*Independent	-4.451**
	(1.724)
Challenger Quality	-5.324
	(3.245)
Normal Vote	0.800***
	(0.0448)
Constant	14.93***
	(4.816)
Observations	13,704
Districts	30
R-squared	0.843

Robust standard errors in parentheses, clustered by district.
*** p<0.01, ** p<0.05, * p<0.1

[9] A similar model which uses independent districts as the baseline finds no statistically significant differences in the incumbency advantage between partisan and independent redistricting schemes, but finds a larger incumbency advantage in bipartisan schemes compared to independent schemes that is statistically significant.

These findings indicate that there are statistically significant differences in the incumbency advantage based on the type of redistricting scheme employed in a congressional district. However, the findings do not show whether strategic redistricting is the factor which contributes to these differences. Therefore, further evidence is needed to establish a causal link between the disparities in the incumbency advantage and elements of strategic redistricting.

There are two pieces of evidence which point to the fact that strategic redistricting is at play here. Recall that the theory suggests that bipartisan districts will see a higher incumbency advantage in part because strategic mapmakers will aim to keep an incumbent's favorable "old voters" in the incumbent's district. If this part of the theory holds, one should expect to see a higher proportion of old voters remaining in a district following redistricting in bipartisan districts than in partisan and independent districts. Table 5 shows the percentage of precincts remaining in a congressional district after redistricting, separated by the type of redistricting scheme. As can be seen in Table 5, nearly 85 percent of precincts remain in a district after redistricting for bipartisan schemes, compared to only 71 percent of precincts for partisan schemes and 61 percent of precincts for independent schemes. These findings suggest that mapmakers in bipartisan schemes are attempting to keep old voters in an incumbent's district. In turn, this bolsters the argument that bipartisan redistricting schemes see a higher incumbency advantage than partisan and independent schemes because of strategic redistricting.

Table 5: Old Voters and New Voters by Redistricting Scheme

Type of Redistricting Scheme	**Percentage of Old Precincts in District**
Partisan	71.1%
Bipartisan	84.7%
Independent	61.3%
Pooled	**73.8%**

While these findings point to the fact a higher percentage of old voters remain in bipartisan districts than in partisan or independent districts, additional evidence is necessary to determine whether districts are actually drawn in such a way so that "favorable" old voters remain in a bipartisan district. One way of examining this question is to look at the differences in the normal vote between old voters and new voters in each type of redistricting scheme. Although not a perfect indicator of a voter's favorability toward an incumbent legislator, a higher normal vote for the incumbent's political party ought to track closely with a higher vote share for the incumbent, since partisanship is a powerful force in determining electoral outcomes. Therefore, if the normal vote is systematically higher amongst old voters than new voters, this would suggest that districts are being drawn in a way which systematically favors incumbent legislators.

This theory is examined by running a simple linear regression. The regression is as follows:

(3) $Normal\ Vote_{id} = \beta_0 + \beta_1 Old\ Voter_{id} + \varepsilon_{id}$,

where $Normal\ Vote_{id}$ is the normal presidential vote share in precinct i in district d and $Old\ Voter_{id}$ is an indicator variable for whether a precinct is composed of old voters or new voters. Specifically, if legislators are assigning voters strategically to benefit the incumbent, one would expect to see a positive, statistically significant coefficient on β_1. As done earlier, this regression is run for each type of redistricting scheme. Note that this regression does not include challenger quality in the model, since challenger quality is measured for congressional incumbents and should therefore be unrelated to the normal presidential vote.

The results of the regression in Equation (3) are presented in Table 6. As can be seen in Table 6, column (1), the difference in the normal vote between old voters and new voters is insignificant when districts are pooled together. This finding is consistent with the findings of Ansolabehere et al. (2000, 24). In Ansolabehere et al. (2000)'s work, this finding is used to show that strategic redistricting does not substantially impact their results. Based on these pooled findings, Ansolabehere et al. (2000) are correct to make this assumption.

However, once the regression in Equation (3) is run for each type of redistricting scheme separately, the results suggest a different picture, and one where strategic redistricting is at play. This is supported by the fact that the coefficient on the old voter variable for bipartisan redistricting schemes is positive and statistically significant ($p<.05$). Specifically, these findings suggest that the normal vote is about 8.54 percentage points higher in incumbents' "old" areas compared to their "new" areas.

Table 6: Normal Vote by Redistricting Scheme

	(1) Pooled	(2) Partisan	(3) Bipartisan	(4) Independent
VARIABLES	Normal Vote (DV)	Normal Vote (DV)	Normal Vote (DV)	Normal Vote (DV)
Old Voter	2.034	-9.608	8.544**	11.48**
	(4.332)	(9.631)	(3.720)	(4.263)
Constant	57.79***	68.25***	47.27***	56.98***
	(3.827)	(9.511)	(2.459)	(2.611)
Observations	13,704	3,555	5,843	4,306
Districts	30	10	10	10
R-squared	0.002	0.040	0.027	0.085

Robust standard errors in parentheses, clustered by district
*** p<0.01, ** p<0.05, * p<0.1

One unusual finding in this set of results is that independent redistricting schemes also see a higher normal vote in old areas compared to new areas. However, this finding appears to be impacted by a state-specific phenomenon in California. Of the ten districts which are randomly selected to be analyzed for independent commissions, eight are from California. Once additional districts that use independent redistricting schemes are added to the analysis from states outside of California, the regression in Equation (3) for independent districts no longer yields a statistically significant coefficient on the old voter variable. (See Table A.1 in Appendix 1. A more detailed explanation of these tables can be found in Chapter 8.)

Overall, these findings indicate that bipartisan redistricting schemes see a higher incumbency advantage than partisan and independent redistricting schemes. Evidence from multiple regression models show that bipartisan redistricting schemes produce a significantly

larger incumbency advantage than other schemes, controlling for challenger quality and partisanship. Furthermore, additional tests support the notion that these differences are occurring because of strategic redistricting. In conclusion, the findings in this chapter support the theory that an artificial incumbency advantage exists for bipartisan redistricting schemes due to strategic redistricting, and that partisan and independent districts do not produce a similar artificial incumbency advantage.

Chapter 7: Partisan Schemes and the Incumbency Advantage

Given the wide variety of possible redistricting strategies that can be implemented in partisan redistricting schemes (e.g., cracking, packing, or competition), it is difficult to determine from a single regression how the incumbency advantage operates in these districts. The analysis outlined in Chapter 6 treats all districts drawn by partisan redistricting schemes as equivalent, even though a wide variety of redistricting strategies are often employed by partisan mapmakers. Therefore, breaking down partisan districts according to the type of redistricting strategy used will be helpful in understanding whether (and how) the incumbency advantage differs within districts drawn by partisan redistricting schemes. This chapter will present a rudimentary analytical approach to testing whether the incumbency advantage varies based on the type of redistricting strategy employed in a partisan district.

As a reminder, the theory suggests that partisan redistricting schemes, in the aggregate, should see a small incumbency advantage. However, this may vary according to two metrics: the party in control and the type of redistricting strategy employed. Numerous redistricting strategies are available to the majority party, but most important are cracking, packing, and drawing competitive districts. Each of these strategies may lead to a "spillover" effect on the incumbency advantage; however, the extent to which these "spillover" effects exist is unclear.

To address the role of these spillovers on the incumbency advantage, one should consider how they might operate within each type of redistricting strategy. To begin this analysis, a taxonomy can be developed to classify districts according to the redistricting strategy employed in the district. This taxonomy takes two factors as inputs: the margin of victory for an incumbent and whether the incumbent is a member of the majority or minority party in the legislature.

The margin of victory is determined according to the percentage point difference in the vote share for the incumbent and the incumbent's challenger in a district. Note that since redistricting strategies are employed by district (not by precinct), the margin of victory is calculated by examining the difference in vote share across the entire district, rather than by averaging the difference in vote share across precincts within a district. A margin of victory is classified as small if there is less than a ten percentage point difference in the vote share received by the incumbent and the incumbent's challenger. On the other hand, a margin of victory is classified as large if there is more than a twenty-five percentage point difference in the vote share between the incumbent and the incumbent's challenger. For districts with a margin of victory between ten percentage points and twenty-five percentage points, it is much less clear which redistricting strategy is employed. Therefore, these districts are not included in the analysis. Admittedly, this variable is an imperfect measure to classify the type of redistricting strategy employed, as numerous other factors (such as geographic sorting) are at play in determining the margin of victory for the incumbent legislator. Future research should explore metrics for a more rigorous classification of redistricting strategies.

Table 7 outlines this taxonomy. Districts where the majority party achieves a large margin of victory are classified as having an "incumbent-benefitting" strategy, and districts where the minority party achieves a large margin of victory are classified as having a "packing" strategy. All districts with a small margin of victory are classified as having a "competitive" strategy, regardless of the party in control. Again, these categorizations should be taken with a grain of salt because of the potential impact of the geographic sorting of voters.

Table 7: Redistricting Strategy Taxonomy

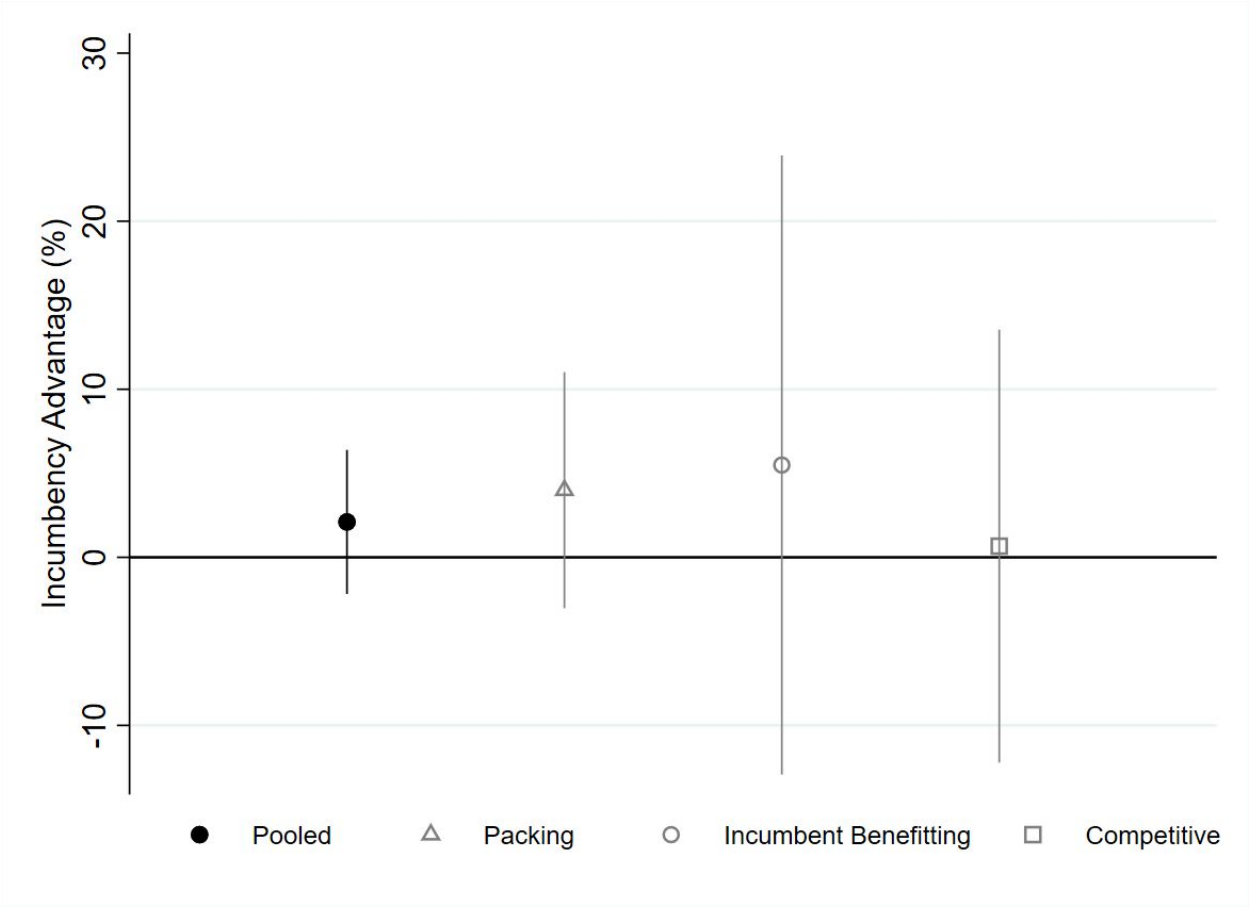
	Margin of Victory	
Incumbent's Party	***Large (>25 percentage points)***	***Small (<10 percentage points)***
Majority	Incumbent-benefitting	Competitive
Minority	Packing	Competitive

Based on this taxonomy, if spillover effects on the incumbency advantage exist, one would expect to see a difference in the incumbency advantage within partisan redistricting schemes based on the type of redistricting strategy employed. Therefore, to analyze this question, one can again use the "old voters, new voters" model, but this time separating districts according to their redistricting strategy, rather than their redistricting scheme. Thus, the first step of this analysis is to re-run Equation (1), but separating partisan districts by redistricting strategy according to the taxonomy in Table 7. However, it should be noted that the statistical power of this test is limited because it only examines a subset of partisan districts (10 districts total).

The results of this analysis are shown in Table 8. Column (1) shows the results for packed districts, column (2) shows the results for incumbent-benefitting districts, and column (3) shows the results for competitive districts. As can be seen in Table 8, there appear to be some differences in the magnitude of the incumbency depending on the redistricting strategy, although none of these coefficients appear to be statistically significant.

Figure 4 plots the point estimates of Table 8 and their 95 percent confidence intervals. As can be seen by Figure 4, there do not appear to be major differences between the redistricting strategies, although the confidence intervals are very wide, due to the reduced statistical power of this test.

Figure 4: Incumbency Advantage by Redistricting Strategy



Again, an interaction model can help to see whether these differences are statistically significant. That model is as follows:

(4) $Y_{id} = \beta_0 + \beta_1 OV_{id} + \beta_2 Packing_d + \beta_3 IB_d + \beta_4 OV_{id} * Packing_d + \beta_5 OV * IB_d + \beta_6 NV_{id} + \beta_7 CQ_d + \varepsilon_{id}$

, where Y_{id} is the two-party incumbent vote share in precinct i in district d, OV_{id} is the old voter, new voter indicator variable, $Packing_d$ is a dummy variable equal to 1 if the district employs a "packing" redistricting strategy and 0 otherwise, IB_d is a dummy variable equal to 1 if the district employs an "incumbent-benefitting" redistricting strategy and 0 otherwise, and NV_{id} and CQ_d are the same measures of the normal vote and challenger quality, respectively, which

have been used throughout the study. This model is only conducted with the subset of districts that are classified as using one of the three redistricting strategies outlined above. Therefore, this model is comparing packed and incumbent-benefitting districts to the baseline of competitive districts.

The interpretation of these coefficients is as follows. The coefficient on OV_{id} (β_1) represents the effect of old voters on the incumbent's vote share for districts drawn by a competitive strategy. The coefficient on $Packing_d$ (β_2) represents the effect of being in a district drawn by a "packing" strategy on the incumbent's vote share for new voters. Likewise, the coefficient on β_3 represents the effect of being in a district drawn by an "incumbent-benefitting" strategy on the incumbent's vote share among new voters. The coefficient on $OV_{id} * Packing_d$ (β_4) represents the difference between the incumbency advantage for "packed" districts compared to competitive districts, and the coefficient on $OV_{id} * IB_d$ (β_5) represents the difference between the incumbency advantage for "incumbent-benefitting" districts compared to "competitive" districts.

Table 8 column (4) shows the results of this interaction model. As can be seen from Table 8, neither of the coefficients on the interaction terms are statistically significant, suggesting that there are not spillovers on the incumbency advantage exist based on the type of redistricting strategy used in partisan districts.

Table 8: Incumbency Advantage by Redistricting Strategy in Partisan Districts

	(1) Packing	(2) Incumbent-benefitting	(3) Competitive	(4) Interaction Model
VARIABLES	Incumbent Percent (DV)	Incumbent Percent (DV)	Incumbent Percent (DV)	Incumbent Percent (DV)
Old Voter	3.995	5.492	0.665	0.118
	(1.632)	(4.281)	(2.993)	(2.424)
Normal Vote	0.880***	0.793**	0.773***	0.834***
	(0.0156)	(0.106)	(0.0657)	(0.0365)
Packing				2.553
				(2.768)
Incumbent-Protecting				-3.236
				(3.135)
Packing*Old Voter				2.662
				(3.357)
Incumbent-Protecting* Old Voter				5.250
				(3.867)
Challenger Quality			-1.717	-1.744
			(5.383)	(4.974)
Constant	11.42**	12.03	15.32**	12.72***
	(1.219)	(7.836)	(2.002)	(2.308)
Observations	901	1,516	610	3,027
Districts	3	3	3	9
R-squared	0.964	0.796	0.727	0.897

Robust standard errors in parentheses, clustered by district
*** p<0.01, ** p<0.05, * p<0.1

Again, this analysis has limitations and should be taken with caution. The classification system used to determine the types of redistricting strategies employed in each partisan district is

admittedly rudimentary. Moreover, the sampling design of districts in the initial analysis has reduced power to detect differences within partisan redistricting schemes. Nonetheless, these findings do suggest that partisan legislators behave in a manner that is consistent with benefiting their own political party and that any "spillover" effects on the incumbency advantage are negligible. Further research should be conducted using a different methodology and a more rigorous classification system for redistricting strategies.

Chapter 8: Robustness Checks

While the findings thus far give strong support to the notion of an artificial incumbency advantage in bipartisan redistricting schemes, alternative explanations could be at play. There are several additional tests that can be conducted to check the robustness of these results. This chapter is dedicated to describing and implementing these robustness tests.

To begin, one of the main limitations of the analysis concerns the sampling of independent districts. Given the small number of states which utilize an independent redistricting scheme and the wide population disparities between these states, the stratified random sampling technique selects districts which are almost entirely from a single state: California. In fact, eight of the ten districts in the sample are from California, with the other two being from Arizona and Washington.

Immediately, this raises concerns about the generalizability of the findings for several reasons. First, differences in exactly how independent commissions operate in each state may lead to differences in the corresponding incumbency advantage by state. Some of these factors include the number of members on the commission, the partisan breakdown of the commission, and whether the commission's boundaries are subject to approval by the state legislature. In each of these cases, an argument could be made about why the resulting incumbency advantage would differ.

Second, the 2012 election was the first election in which California drew its boundaries with independent commissions. This alteration of election laws surrounding redistricting injected a large amount of uncertainty into the electoral atmosphere in California in 2012. Such uncertainty may have made challengers less likely to enter the race, or may have caused

incumbents to retire to avoid a potential defeat in subsequent elections. Of course, one cannot be certain that the new redistricting laws had an impact on candidates' entry and exit decisions, but it is nonetheless worth testing, for strategic entry and exit into congressional races is likely to have an impact on the resulting incumbency advantage (Ansolabehere et al. 2000, 23).

To account for these concerns, additional independent districts are added to the analysis from states other than California. Although this process sacrifices the random sampling of districts, it nonetheless serves as an adequate way to assess whether the findings in Chapter 6 for independent commissions are simply the result of a California-specific phenomenon. This process leads to the addition of eight congressional districts, three from Arizona and five from Washington. Districts from Hawaii and Idaho are excluded due to an insufficient number of new voters in the districts, and districts from New Jersey are excluded due to lack of data. Additionally, a few districts from Washington and Arizona are excluded for a variety of reasons. The districts which are added to the analysis are termed "non-sampled" districts and are coded accordingly in the data.

After collecting data from the non-sampled districts, the analysis (as outlined in Chapter 6) is repeated, but adding in the non-sampled districts as data points for independent commissions. The results of these regressions are found can be found in Table A.1 of Appendix 1. While the result of the non-sampled districts model does indicate an incumbency advantage that is about 0.6 percentage points higher for independent commissions than in the sampled districts only model, the incumbency advantage coefficient in the non-sampled model is still not statistically significant. Furthermore, the regression of the normal vote on the old voter variable, as tested using Equation (3) in Chapter 6, no longer yields a positive and statistically significant

coefficient on the old voter variable for independent commissions. In turn, this suggests that the finding in Chapter 6 that favorable old voters in independent districts were drawn to remain in an incumbent's district was simply the result of a California-specific effect. The results of the non-sampled districts model for Equation (3) can also be found in Appendix 1 in Table A.2.

A second methodological issue arises when one considers the unevenness of the number of precincts per district, which weights the analysis more heavily toward congressional districts with a particularly large number of precincts. In general, most districts range between 400 and 700 precincts, although the maximum number of precincts is 1,316 (MN-7) and the minimum number of precincts is only 142 (AZ-8). Removing districts with a large number of precincts provides a simple way to test whether the over-weighting of these districts bias the results.

The only true outlier in the dataset is Minnesota's 7th congressional district, which contains 23 percent of the total observations analyzed for bipartisan redistricting schemes. To see whether this district is biasing the bipartisan district results, the analysis in Chapter 6 is once again executed, but excluding Minnesota's 7th congressional district. While the magnitude of the incumbency advantage in bipartisan redistricting schemes does decrease slightly when this adjustment is made, there are no differences in the statistical significance of the findings, suggesting that the over-weighting of Minnesota's 7th congressional district is not the cause of the observed patterns.

A third potential challenge to the findings stems from the possibility that the incumbency advantage could be larger for incumbents in highly competitive districts. This expectation is a crucial component of Ansolabehere et al. (2000)'s work, and could also be at play in this analysis. Specifically, Ansolabehere et al. (2000, 17) find "a significant interaction which shows

that incumbents develop larger personal votes in areas where they are electorally most vulnerable."

Perhaps what is most problematic about this finding in Ansolabehere et al. (2000) is that there is likely a correlation between the competitiveness of a district and the type of redistricting scheme employed in that district. Specifically, bipartisan redistricting schemes may be most likely to naturally see competitive races, as a divided state government is likely indicative of a state whose partisan lean is closer to the middle of the spectrum. Therefore, if incumbents see the highest incumbency advantage in areas where they are the most electorally competitive, and bipartisan districts are more competitive than partisan or independent districts, the larger incumbency advantage in bipartisan redistricting schemes could be simply be a byproduct of the increased competitiveness of elections in these districts.

Initial measures of competitiveness underscore the importance of testing this possibility. Table 9 presents the margin of victory for an incumbent legislator based on the type of redistricting scheme. As can be seen in Table 9, legislators from bipartisan redistricting schemes win their races with slimmer margins than legislators from partisan and independent redistricting schemes. Therefore, it is possible that the competitiveness of races is at play in determining the magnitude of the incumbency advantage in these races. However, it should be noted that even the relatively more competitive margins of victory under bipartisan redistricting schemes are still fairly safe districts.

Table 9: Margins of Victory by Redistricting Scheme

Redistricting Scheme	**Average Margin of Victory (in percentage points)**
Partisan	31.47
Bipartisan	24.31
Independent	30.59
Average	**28.79**

To test whether the competitiveness of a race matters for the results of this analysis, an interaction term is added to the model in Equation (1). This interaction term is functionally equivalent to the interaction term employed by Ansolabehere et al. (2000) to test the theory that the strength of the incumbency advantage varies based on the competitiveness of the district. Specifically, the interaction term interacts the old voter variable with the normal vote, which allows the effect of the old voter variable to differ based on the normal vote, which is the study's measure of partisanship. In doing so, the effect of the incumbency advantage is allowed to vary based on the competitiveness of a district, as measured by its normal vote. This modifies the regression in Equation (1) and creates the following new regression:

$$(5)\ Y_{id} = \beta_0 + \beta_1 Old\ Voter_{id} + \beta_2 Normal\ Vote_{id} + \beta_3 Old\ Voter_{id} * Normal\ Vote_{id} + \beta_4 Challenger\ Quality_d + \varepsilon_{id}$$

In this model, the incumbency advantage is no longer measured as simply the coefficient on β_1, but rather the coefficient of $\beta_1 + \beta_3$, since the value of the incumbency advantage is allowed to differ based on the competitiveness of each district. The coefficient on the $Normal\ Vote_i$ (β_2) is therefore interpreted as the relationship between the normal vote and the

incumbent's vote share in new precincts only. The interpretation of the challenger quality control variable remains the same.

This new regression in Equation (5) is executed for all districts pooled together, and also separately for bipartisan, partisan, and independent redistricting schemes. The results of the regression in Equation (5) are shown in Table 10. As can be seen in Table 10, this interaction term does appear to matter (at least in the aggregate and for bipartisan redistricting schemes, which have statistically significant values on the interaction term ($p<.05$)). However, even when including the interaction term, the predicted incumbency advantage for bipartisan redistricting schemes is almost always larger than it is for partisan and independent redistricting schemes.

Table 10: Incumbency Advantage (Controlling for Competitiveness) by Scheme

VARIABLES	(1) Pooled Incumbent Percent (DV)	(2) Partisan Incumbent Percent (DV)	(3) Bipartisan Incumbent Percent (DV)	(4) Independent Incumbent Percent (DV)
Old Voter	12.19**	6.068	13.03***	-0.0809
	(4.459)	(4.766)	(3.160)	(3.212)
Normal Vote	0.883***	0.888***	0.800***	0.878***
	(0.0341)	(0.0424)	(0.0720)	(0.0301)
Old Voter* Normal Vote	-0.133**	-0.0706	-0.116**	0.0209
	(0.0532)	(0.0587)	(0.0463)	(0.0419)
Challenger Quality	-3.466	-4.263	-5.921	
	(2.420)	(5.336)	(3.635)	
Constant	9.533***	10.83**	15.21**	8.659***
	(2.768)	(4.252)	(6.080)	(2.643)
Observations	13,704	3,555	5,843	4,306
Districts	30	10	10	10
R-squared	0.831	0.897	0.777	0.885

Robust standard errors in parentheses, clustered by district
*** p<0.01, ** p<0.05, * p<0.1

To understand how to calculate the incumbency advantage when the competitiveness interaction term is added, an example is helpful. Suppose that the normal vote in a precinct is 60 percent. In this case, this value (normal vote=60) can be inserted into Equation (5), using the estimates of the coefficients in Table 10. A normal vote of 60 percent, as in this example, would therefore lead to an estimated incumbency advantage of $6.068 - .0706 * (60)$, or 1.83 percentage points, for that precinct in a partisan district. For a bipartisan district with an equivalent normal vote, the incumbency advantage would be estimated at 6.07 percentage points in the precinct, and for independent districts, the incumbency advantage would be estimated at 1.73 percentage points in the precinct.

Using this calculation, one can determine how large the normal vote would have to be to change the rank-ordering of the findings in Chapter 6. In performing this calculation, it is shown that the normal vote would have to be larger than 95 percent for the rank-ordering of the incumbency advantage by redistricting scheme to change. (At normal vote values higher than 95 percent, independent districts see a larger incumbency advantage than bipartisan districts.) Cases where well-behaved precincts see a normal vote larger than 95 percent are incredibly rare--only 691 precincts, or about 4 percent of precincts in the study, have a normal vote greater than 95 percent. Therefore, although adding a measure of competitiveness may matter when estimating the incumbency advantage, it does not change the rank-ordering of the incumbency advantage in each type of redistricting scheme for nearly all well-behaved precincts.

In sum, although this model suggests that competitiveness is an important factor to consider when analyzing the incumbency advantage, it is unlikely that differences in competitiveness is the primary explaining factor for differences in the incumbency advantage in

the findings. However, given that the model does predict that the incumbency advantage is dependent on competitiveness for both partisan and bipartisan redistricting schemes, further research into this area is warranted.

Overall, this chapter highlighted three potential challenges to the findings presented in Chapter 6 and performed a series of robustness checks. Each of these robustness checks provided additional evidence that the most likely explanation for the differences in the incumbency advantage based on the type of redistricting scheme is strategic redistricting, rather than the factors examined by the robustness checks.

Chapter 9: Conclusion

This research examined whether an artificial incumbency advantage exists in congressional elections, and if so, to what extent the artificial incumbency advantage differs based on the type of redistricting scheme. A secondary aim of this project was to determine, to the extent that an artificial incumbency advantage exists, whether a move to independent commissions could help to mitigate the artificial incumbency advantage.

While a large amount of literature has examined the incumbency advantage and redistricting separately (and a fair amount of research explores the relationship between the two), there is little research which analyzes the relationship between the incumbency advantage and redistricting in detail. This research fills such a void in the literature, exploring the relationship between the incumbency advantage and redistricting by breaking down redistricting into three different schemes: partisan redistricting, bipartisan redistricting, and independent redistricting.

The research theorized that bipartisan redistricting schemes would see a large incumbency advantage, whereas independent redistricting schemes would see a small incumbency advantage, and partisan redistricting schemes would see an incumbency advantage that is small in the aggregate but could vary depending on the party in control of the redistricting process and the type of redistricting strategy employed by partisan mapmakers. In turn, this led to the theory that an artificial incumbency exists for bipartisan redistricting schemes, but not for partisan and independent redistricting schemes.

Using an innovative methodology, this research tested the theory that bipartisan redistricting schemes see a larger incumbency advantage than partisan and independent redistricting schemes. Specifically, the study relied on a methodology proposed by Ansolabehere

et al. (2000) which uses the "natural experiment" of redistricting to compare the vote share captured by an incumbent's "old voters" and "new voters." Based on this methodology, the study found that there is a larger incumbency advantage among districts which use a bipartisan redistricting scheme to redraw congressional boundaries compared to districts which use partisan and independent redistricting schemes.

Furthermore, the study suggested that the primary reason for this larger incumbency advantage in bipartisan redistricting schemes is because risk-averse congressional representatives encourage--and in turn, state legislators draw--boundaries which minimize the number of "new voters" assigned to a congressional district during redistricting. This assertion was supported by examining the percentage of old voters who remain in congressional districts based on the type of redistricting scheme, as well as examining differences in the normal vote between old and new voters in the different redistricting schemes.

A series of robustness checks were also performed to make sure the findings were not due to data limitations or confounding factors. Specifically, three potential problem areas were studied. The first of these concerned the overrepresentation of California in the data on independent commissions. A robustness check produced no significant differences between the initial findings and the new findings in regards to the incumbency advantage. A second concern arose due to the unevenness in the number of precincts per congressional district, and specifically the presence of a single outlier district which contained far more precincts than the other districts studied. Again, robustness checks on these findings did not lead to any significant differences from the original findings. A third potential problem concerned the fact that the incumbency advantage may differ depending on the competitiveness of a congressional district.

While the robustness check did indicate that the competitiveness of a congressional district may matter, it also showed that allowing the incumbency advantage to vary based on competitiveness ultimately did not change the rank-ordering of the incumbency advantage for the different redistricting schemes except in extreme cases.

Based on this series of tests and robustness checks, this research concluded that an artificial incumbency advantage does exist for bipartisan redistricting schemes, but not for partisan and independent redistricting schemes. Furthermore, the research concluded that there is little variation in the incumbency advantage based on the type of redistricting strategy employed in partisan redistricting schemes, although further research is warranted on this issue to reach a more definitive conclusion.

The research also suggested the reason for the higher artificial incumbency advantage was due to strategic redistricting on behalf of state legislatures. Specifically, since state legislatures must reach a compromise in district mapmaking when faced with a bipartisan redistricting scheme, it was posited that the agreed-upon outcome would be one where each party aims to protect its incumbents. In turn, this incumbent-protection would lead to a higher incumbency advantage in bipartisan districts than in partisan and independent districts. This causal story was supported by the conclusions of this research.

Finally, the research suggested that independent commissions would likely be successful in reducing the artificial incumbency advantage in congressional elections. Since the artificial incumbency advantage does not appear in districts drawn by independent commissions, a move to independent commissions would be a positive step in reducing the artificial incumbency advantage.

Although this research presented strong evidence for the existence of an artificial incumbency advantage in bipartisan redistricting schemes, it is not without its limitations. To begin, one of the most crucial limitations of this study is the scope of the data. The data collected for this study only examine a small sampling of the total number of congressional races in the 2012 election. Furthermore, the study only examines one election: the 2012 election. Although the findings are promising, the limited number of districts and the fact that the study is confined to a single election raises questions of generalizability. Therefore, additional research should be conducted which examines this research question across all congressional districts and across multiple election cycles.

Another important limitation of this study concerns the narrow implications of its findings. Although the study's findings demonstrate that there is a higher incumbency advantage in bipartisan redistricting schemes, the study does not aim to explore additional factors which are undoubtedly important when analyzing the effectiveness of independent commissions. Most notably, the study does not attempt to make any claims regarding the impact of independent commissions on issues of partisan gerrymandering. Therefore, additional research should be conducted on how the partisan advantage varies depending on the type of redistricting scheme to supplement the study's findings on the incumbency advantage.

An additional limitation of this research topic centers around the limited implementation of independent commissions nationwide. Even though independent commissions are ever-present in conversations around redistricting and gerrymandering, there are still relatively few states which use independent commissions to draw their congressional boundaries. Because of this, there are only a few elections in a few states where the study of independent commissions is

fruitful. However, this landscape is rapidly changing. The adoption of an independent commission to redraw congressional boundaries in California in 2010 provided a significant source of new data to study. Furthermore, several new states will use independent commissions to redraw congressional boundaries for the 2022 election. The 2022 election cycle will offer a crucial opportunity for further research on this topic.

Finally, this study is limited in that it chooses not to focus on a deep examination of how the artificial incumbency advantage might differ depending on the party in control and the type of redistricting strategy employed in partisan redistricting schemes. Part of this limitation arose from time constraints; however, a more pressing limitation was the inability to develop an adequate methodological approach to studying the issue. Our knowledge of this topic would benefit from further research which develops a methodological approach that can adequately examine how the artificial incumbency advantage plays out in partisan redistricting schemes.

There are at least three general areas for additional research that would help to bolster these findings. The first involves replicating this study with more congressional districts and across multiple election cycles. The second involves diving more deeply into partisan redistricting schemes, where the relationship between the incumbency advantage and the type of redistricting strategy still remains unclear. The third involves conducting this research on the state level. Many states have laws for drawing state legislative districts that differ from one another, and especially for independent commissions. Furthermore, incentive structures may be different for legislators when they are drawing their own district boundaries. Therefore, a study of how the incumbency advantage might operate in different redistricting schemes on the state level would be incredibly fruitful.

Overall, the findings of this research are consequential because they demonstrate a crucial shortcoming in our electoral processes. In the United States, the right to vote and choose one's elected official is upheld as one of the most fundamental tenets of our democracy. However, these findings suggest that the opposite is happening (at least in bipartisan districts). Instead of voters choosing their elected officials through a fair electoral process, elected officials are choosing who votes for whom by drawing districts with boundaries that are favorable to their party's incumbents. In turn, this process is creating an artificial incumbency advantage, causing elections to be biased toward incumbents and minimizing the voices of voters.

However, the conclusions of this research also provide a solution to this problem. Since the incumbency advantage is significantly lower in districts with independent commissions, adopting independent commissions will help remove the bias in our elections created by self-interested legislators. Thus, the policy implications of this research are clear: states should adopt independent commissions to reduce the artificial incumbency advantage that arises due to incumbent-protecting mapmaking in bipartisan redistricting schemes. By passing referenda to establish independent commissions in 2018, voters in Michigan, Colorado, and Missouri have taken a positive step toward enhancing the fairness of the franchise. Other states should follow this example to uphold the sanctity of our democracy.

Appendix 1: Results for Non-Random Sampling of Independent Commissions

Table A.1: Incumbency Advantage for Non-Random Sampling

	(1) Partisan	(2) Bipartisan	(3) Independent	(4) Interaction Model
VARIABLES	Incumbent Percent (DV)	Incumbent Percent (DV)	Incumbent Percent (DV)	Incumbent Percent (DV)
Old Voter	1.509	7.454***	1.721*	6.713***
	(1.642)	(1.687)	(0.822)	(1.583)
Partisan				2.022
				(2.757)
Independent				-0.585
				(2.918)
Old Voter*Partisan				-5.600**
				(2.452)
Old Voter* Independent				-4.839***
				(1.721)
Challenger Quality	-4.418	-5.919		-5.333
	(5.254)	(3.648)		(3.192)
Normal Vote	0.843***	0.696***	0.851***	0.798***
	(0.0203)	(0.0895)	(0.0331)	(0.0382)
Constant	13.88***	20.12**	11.23***	15.00***
	(2.124)	(7.097)	(2.611)	(4.486)
Observations	3,555	5,843	8,275	17,673
Districts	10	10	18	38
R-squared	0.896	0.776	0.871	0.843

Robust standard errors in parentheses, clustered by district
*** p<0.01, ** p<0.05, * p<0.1

Table A.2: Normal Vote for Non-Random Sampling

VARIABLES	(1) Bipartisan Normal Vote (DV)	(2) Partisan Normal Vote (DV)	(3) Independent Normal Vote (DV)
Old Voter	8.544**	-9.608	2.879
	(3.720)	(9.631)	(3.594)
Constant	47.27***	68.25***	60.25***
	(2.459)	(9.511)	(2.804)
Observations	5,843	3,555	8,275
R-squared	0.027	0.040	0.007

Robust standard errors in parentheses, clustered by district
*** p<0.01, ** p<0.05, * p<0.1

Appendix 2: Sampling of Districts

Partisan Scheme Districts

ID Number	District	Name	Party	Excluded? (Y/N)	Reason for Exclusion
1080	**KS-4**	**Mike Pompeo**	**R**	**No**	
1000	*AL-1*	*Jo Bonner*	*R*	*Yes*	*Uncontested Election*
1114	**MI-10**	**Candice Miller**	**R**	**No**	
1037	**GA-2**	**Sanford Bishop**	**D**	**No**	
1100	**MA-6**	**John Tierney**	**D**	**No**	
1222	*TX-29*	*Gene Green*	*D*	*Yes*	*Uncontested Election*
1221	**TX-28**	**Henry Cuellar**	**D**	**No**	
1016	*FL-N/A*	*Clifford Stearns*	*R*	*Yes*	*Incumbent did not participate in 2012 general election*
1038	*GA-3*	*Lynn Westmoreland*	*R*	*Yes*	*Uncontested Election*
1212	*TX-19*	*Randy Neugebauer*	*R*	*Yes*	*Uncontested Election*
1113	**MI-14**	**Gary Peters**	**D**	**No**	
1014	*FL-4*	*Ander Crenshaw*	*R*	*Yes*	*Uncontested Election*
1044	*GA-N/A*	*Tom Graves*	*R*	*Yes*	*Incumbent did not participate in 2012 general election*
1165	*PA-8*	*Michael Fitzpatrick*	*R*	*Yes*	*Not enough new voters added to district*
1043	*GA-8*	*Austin Scott*	*R*	*Yes*	*Uncontested Election*
1128	**NC-7**	**Mike McIntyre**	**D**	**No**	
1096	*MA-1*	*Richard Neal*	*D*	*Yes*	*Uncontested Election*
1230	**VA-2**	**E. Scott Rigell**	**R**	**No**	

1057	**IL-9**	**Jan Schakowsky**	**D**	**No**	
1150	*OH-16*	*Jim Renacci*	*R*	*Yes*	*Incumbent faced off against another incumbent after their districts were drawn into each other*
1137	**OH-10**	**Mike Turner**	**R**	**No**	

Bipartisan Scheme Districts

ID Number	District	Name	Party	Excluded? (Y/N)	Reason for Exclusion
74	*NY-21*	*William Owens*	*D*	*Yes*	*Data unavailable (NY)*
19	**KY-3**	**John Yarmuth**	**D**	**No**	
24	*ME-2*	*Michael Michaud*	*D*	*Yes*	*Not enough new voters added to district*
6	**CO-6**	**Mike Coffman**	**R**	**No**	
57	*NY-5*	*Gregory Meeks*	*D*	*Yes*	*Data unavailable (NY)*
19	*NM-N/A*	*N/A*	*D*	*Yes*	*Incumbent did not participate in 2012 general election*
55	*NY-4*	*Carolyn McCarthy*	*D*	*Yes*	*Data unavailable (NY)*
48	**NV-3**	**Joe Heck**	**R**	**No**	
59	*NY-10*	*Jerrold Nadler*	*D*	*Yes*	*Data unavailable (NY)*
11	*CT-4*	*Jim Himes*	*D*	*Yes*	*Not enough new voters added to district*
40	*MO-4*	*Vicky Hartzler*	*R*	*Yes*	*Data unavailable (MO)*
14	**IA-2**	**Dave Loebsack**	**D**	**No**	
66	*NY-13*	*Charles Rangel*	*D*	*Yes*	*Data unavailable (NY)*
16	*IA-3*	*Tom Latham*	*R*	*Yes*	*Incumbent faced off against another incumbent after their districts were drawn into each other*
61	*NY-N/A*	*Edolphus Towns*	*D*	*Yes*	*Incumbent did not participate in 2012 general election*
84	*OR-4*	*Peter DeFazio*	*D*	*Yes*	*Not enough new voters added to district*

1	**CO-1**	**Diana DeGette**	**D**	**No**	
58	*NY-14*	*Joseph Crowley*	*D*	*Yes*	*Data unavailable (NY)*
17	**KY-1**	**Edward Whitfield**	**R**	**No**	
69	*NY-17*	*Nita Lowery*	*D*	*Yes*	*Data unavailable (NY)*
52	*NY-1*	*Timothy Bishop*	*D*	*Yes*	*Data unavailable (NY)*
71	*NY-19*	*Christopher Gibson*	*R*	*Yes*	*Data unavailable (NY)*
32	*MN-8*	*Chip Cravaack (2010) / Richard Nolan (2012)**	*R (2010)/ D(2012)*	*Yes*	*Not enough new voters added to district*
20	*KY-N/A*	*Geoff Davis*	*R*		*Incumbent did not participate in 2012 general election*
46	*NV-N/A*	*Shelley Berkley*	*D*	*Yes*	*Incumbent did not participate in 2012 general election*
12	*CT-N/A*	*Chris Murphy*	*D*	*Yes*	*Incumbent did not participate in 2012 general election*
72	*NY-20*	*Paul Tonko*	*D*	*Yes*	*Data unavailable (NY)*
53	*NY-3*	*Steve Israel*	*D*	*Yes*	*Data unavailable (NY)*
31	**MN-7**	**Collin Peterson**	**D**	**No**	
47	*NV-N/A*	*Dean Heller*	*R*	*Yes*	*Incumbent did not participate in 2012 general election*
8	*CT-1*	*John B. Larson*	*D*	*Yes*	*Not enough new voters added to district*
15	*IA-3*	*Leonard Boswell*	*D*	*Yes*	*Incumbent faced off against another incumbent*

					after their districts were drawn into each other
73	*NY-N/A*	*Maurice Hinchey*	*D*	*Yes*	*Incumbent did not participate in 2012 general election*
5	*CO-5*	*Doug Lamborn*	*R*	*Yes*	*Uncontested Election*
2	**CO-1**	**Jared Polis**	**D**	**No**	
25	**MN-1**	**Tim Walz**	**D**	**No**	
34	**MS-2**	**Bernie Thompson**	**D**	**No**	

*In these elections, incumbents ran for re-election but lost to the challenger

Independent Scheme Districts

ID Number	District	Name	Party	Excluded? (Y/N)	Reason for Exclusion
104	**AZ-6**	**David Schweikert**		**No**	
143	*CA-35*	*Maxine Waters*	*D*	*Yes*	*Uncontested Election*
179	*WA-N/A*	*Jay Inslee*	*D*	*Yes*	*Incumbent did not participate in 2012 general election*
178	*NJ-8*	*Albio Sires*	*D*	*Yes*	*Data unavailable (NJ)*
177	*NJ-12*	*Rush Holt*	*D*	*Yes*	*Data unavailable (NJ)*
163	*HI-2*	*Colleen Hanabusa*	*D*	*Yes*	*Not enough new voters added to district*
125	**CA-20**	**Sam Farr**	**D**	**No**	
185	**WA-7**	**Jim McDermott**	**D**	**No**	
113	**CA-6**	**Doris Matsui**	**D**	**No**	
102	*AZ-N/A*	*Benjamin Quayle*	*R*	*Yes*	*Incumbent did not participate in 2012 general election*
116	**CA-12**	**Nancy Pelosi**	**D**	**No**	
127	**CA-10**	**Jeff Denham**	**R**	**No**	
133	*CA-25*	*Howard McKeon*	*R*	*Yes*	*Data unavailable (CA-Los Angeles County)*
168	*NJ-3*	*John Runyan*	*R*	*Yes*	*Data unavailable (NJ)*
112	**CA-4**	**Tom McClintock**	**R**	**No**	
126	*CA-18*	*Dennis Cardoza*	*D*	*Yes*	*Uncontested Election*
121	*CA-15*	*Fortney Pete Stark (2010) / Eric Swalwell*	*D/D*	*Yes*	*Incumbent defeated in primary election, Uncontested Election*

		*(2012)**			
152	**CA-42**	**Ken Calvert**	**R**	**No**	
153	**CA-36**	**Mary Bono Mack (2010) / Raul Ruiz (2012)***	**R / D**	**No**	
165	*ID-2*	*Mike Simpson*	*R*	*Yes*	*Not enough new voters added to district*
141	*CA-37*	*Karen Bass*	*D*	*Yes*	*Data unavailable (CA-Los Angeles County)*
160	**CA-50**	**Duncan Hunter**	**R**	**No**	

*In these elections, incumbents ran for re-election but lost to the challenger

Glossary

Artificial incumbency advantage: An incumbency advantage that is created by legislators through strategic redistricting

Bipartisan district: A congressional district in which a bipartisan redistricting scheme is employed

Bipartisan redistricting scheme: A type of redistricting scheme which occurs when the state government controls the redistricting process and no single political party controls all branches of the state government, such that districts are cannot be drawn and approved solely by state lawmakers from a single political party

Competition: A type of redistricting strategy where the majority party's gerrymander tries to minimize the margins of victory in each congressional district to minimize the number of "wasted votes" for the majority party

Cracking: A type of redistricting strategy where the majority party's gerrymander divides constituents likely to vote for the minority party across numerous districts to limit the minority party's strength in any individual district

Gerrymandering: The strategic redrawing of congressional boundaries to benefit a particular incumbent officeholder or political party

Homestyle: An explanation for the incumbency advantage that focuses on the nonpartisan ways in which legislators serve their constituents, such as engaging in casework, understanding and being a presence in the community, and advocating for federal spending in the district

Incumbency advantage: The increased electoral support received by a candidate running for office simply because of his or her status as the current occupant of that office

Incumbent-protecting gerrymander: An instance of gerrymandering where district boundaries are drawn to maximize the number of incumbents who win re-election and the margin of victory for those incumbents

Independent commissions: Groups of individuals that are not members of (or closely related to) the state government, which are tasked with redrawing the congressional boundaries of a given state. Independent commissions take control of redistricting out of the hands of the state legislative body.

Independent district: A congressional district in which an independent redistricting scheme is employed

Independent redistricting scheme: A type of redistricting scheme which occurs when the state government places control of the redistricting process into the hands of either an independent commission or a politician commission

Packing: A type of redistricting strategy where the majority party's gerrymander places as many of the minority party's voters as possible into a single district to maximize the number of "wasted votes" for the minority party

Partisan district: A congressional district in which a partisan redistricting scheme is employed

Partisan redistricting scheme: A type of redistricting scheme which occurs when the state government controls the redistricting process and a single political party controls all branches of the state government, such that districts are able to be drawn and approved solely by state lawmakers from a single political party

Party-protecting gerrymander: An instance of gerrymandering where district boundaries are drawn for the purposes of maximizing the number of seats held by the party in power

Personal Vote: Any action undertaken by a legislator within her district that would lead to an increased vote share, and correspondingly an incumbency advantage, in a subsequent election. This definition differs from its original meaning in Ansolabehere et al. (2000), which focuses on homestyle (*see "homestyle" above)*.

Politician commissions: Groups of individuals that may or may not be members of (or closely related to) the state government, which are tasked with redrawing the congressional boundaries of a given state. Politician commissions take control of redistricting out of the hands of the state legislative body, but politicians may serve on the commission.

Redistricting: The redrawing of the congressional boundaries for U.S. House of Representatives elections, which typically occurs on a decennial basis following the Census

Redistricting scheme: The mechanism through which a congressional district is redrawn, which can be one of three types: partisan, bipartisan, or independent

Redistricting strategy: A method of redistricting which is employed by the majority party in a partisan redistricting scheme, which can be one of three types: cracking, packing, or competitive

Retirement slump: A widely used measure of the incumbency advantage in early research which measures the decrease in electoral support received by the incumbent political party in the election following the retirement of an incumbent legislator

Sophomore surge: A widely used measure of the incumbency advantage in early research which measures the increase in electoral support received by a candidate in his first bid for reelection compared to his first election

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