Geographic Information Systems-based Approaches to Study Congressional Redistricting in the United States

by

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Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Political Science in the Graduate School of Duke University 2016
Abstract

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Abstract

The ability for the citizens of a nation to determine their own representation has long been regarded as one of the most critical objectives of any democratic electoral system. Without having the assurance of equality in representation, the fundamental nature and operation of the political system is severely undermined. Given the centuries of institutional reforms and population changes in the American system, congressional redistricting stands as an institution whereby this promise of effective representation can either be fulfilled or denied. The broad set of processes that encapsulate congressional redistricting have been discussed, experimented with, and modified to achieve clear objectives and have long been understood to be important. Questions remain about how the dynamics which link all of these processes operate and what impact the realities of congressional redistricting hold for representation in the American system. This dissertation examines three aspects of how congressional redistricting in the United States operates in accordance with the principle of “One Person, One Vote.” By utilizing data and data analysis techniques of Geographic Information Systems (GIS), this dissertation seeks to address how congressional redistricting impacts the principle of one person, one vote from the standpoint of legislator accountability, redistricting institutions, and the promise of effective minority representation.
To Jack –
## Contents

Abstract iv  
List of Tables ix  
List of Figures xi  
Acknowledgements xiii  

1 The Geography of “One Person, One Vote” 1  
1.1 Apportionment and Redistricting in the American System 2  
1.1.1 The Backdrop 2  
1.1.2 The Early American System and the Need for Reform 5  
1.1.3 One Person, One Vote at the Constitutional Convention 7  
1.1.4 Evolving Issues 11  
1.2 Plan of the Dissertation 14  

2 Congressional Redistricting and Strategic Decision-Making: Re-election, Relocation, Retirement, or Higher Office? 17  
2.1 Introduction 17  
2.2 The Calculus of Candidacy 19  
2.2.1 Model Specification 20  
2.2.2 Hypotheses 23  
2.3 The Study 28  
2.3.1 Literature 29  
2.3.2 Data and Variables 33  

vi
List of Tables

<table>
<thead>
<tr>
<th></th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Incumbent Decisions Full</td>
<td>42</td>
</tr>
<tr>
<td>2.2</td>
<td>The Decision to Relocate</td>
<td>44</td>
</tr>
<tr>
<td>2.3</td>
<td>Incumbent Choice of District</td>
<td>47</td>
</tr>
<tr>
<td>2.4</td>
<td>Incumbent Reelection Statistics</td>
<td>51</td>
</tr>
<tr>
<td>2.5</td>
<td>Incumbent Decisions Condensed</td>
<td>52</td>
</tr>
<tr>
<td>2.6</td>
<td>Influences on the Likelihood MCs will seek Reelection</td>
<td>55</td>
</tr>
<tr>
<td>2.7</td>
<td>Influences on the Likelihood MCs will seek Reelection</td>
<td>60</td>
</tr>
<tr>
<td>3.1</td>
<td>Non-State Legislative Redistricting</td>
<td>68</td>
</tr>
<tr>
<td>3.2</td>
<td>Redistricting Institution Changes</td>
<td>77</td>
</tr>
<tr>
<td>3.3</td>
<td>Redistricting Institution Descriptive Statistics 1</td>
<td>83</td>
</tr>
<tr>
<td>3.4</td>
<td>Redistricting Institution Descriptive Statistics 2</td>
<td>84</td>
</tr>
<tr>
<td>4.1</td>
<td>Hypothesis Overview</td>
<td>101</td>
</tr>
<tr>
<td>4.2</td>
<td>Classification of Districts, 1962-2012</td>
<td>115</td>
</tr>
<tr>
<td>4.3</td>
<td>ANES Respondents by Districts</td>
<td>118</td>
</tr>
<tr>
<td>4.4</td>
<td>ANES Respondents Descriptive Statistics</td>
<td>122</td>
</tr>
<tr>
<td>4.5</td>
<td>Ordinal Logit of Efficacy and Trust</td>
<td>127</td>
</tr>
<tr>
<td>4.6</td>
<td>Hypothesis Findings: Blacks</td>
<td>128</td>
</tr>
<tr>
<td>4.7</td>
<td>Hypothesis Findings: Latinos</td>
<td>129</td>
</tr>
<tr>
<td>4.8</td>
<td>CSES Respondents Satisfaction</td>
<td>130</td>
</tr>
<tr>
<td>B.1</td>
<td>District Fractionalization in Oklahoma</td>
<td>156</td>
</tr>
</tbody>
</table>
List of Figures

2.1 MC Decision Tree ......................................................... 20
2.2 Reapportionment. ......................................................... 37
2.3 District Selection Predicted Probabilities. ............................ 49
2.4 Marginal Effects on Career Choices. ................................. 56
2.5 Incumbents Decisions. ..................................................... 59
2.6 Fitted Probabilities – Decision. ......................................... 63
3.1 Map of Redistricting Institutions ....................................... 69
3.2 Redistricting Changes 2000/2010 ...................................... 74
3.3 Votes:Seats Redistricting Institutions .................................. 79
3.4 Votes:Seats Party Control of Redistricting ........................... 81
3.5 Votes:Seats Non-Legislative Institutions .............................. 82
4.1 Racial Composition and District Types ................................. 111
4.2 MCs by District and Ethnicity, 1992-2012 ............................ 112
4.3 Clustering of MCs by Race and District ............................... 113
4.4 District Types in the South, 1982 and 2012 .......................... 117
4.5 Respondent Differences By Region ..................................... 120
4.6 Efficacy and Trust over District Composition ....................... 124
4.7 Racial Composition and District Types ............................... 132
4.8 Racial Composition and District Types ............................... 134
A.1 Spatial Overlay. ......................................................... 143
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Gentlemen of the House of Representatives... The Constitution has prescribed that representatives shall be apportioned among the several States according to their respective numbers; and there is no one proportion or divisor which, applied to the respective numbers of the States will yield the number and allotment of representatives proposed by the bill.

-George Washington’s explanation to Congress on veto, 5 April 1792

In the first presidential veto in U.S. history, George Washington blocked an apportionment plan which would have divided the unallocated Congressional seats following the 1790 Census equally among the eight most underrepresented states. Washington exercised this power after intense deliberation and mixed advice from his Cabinet, fearing that inaction would escalate the still unresolved debate concerning the nature of representation between Northern and Southern states in the national government. This was a debate so intense that it threatened to undermine

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the authority of the Constitution and tear the young nation apart. Much to Wash-
ington’s relief, Congress listen to his warning and passed a bill which increased the size of the House and set about an arithmetic standard for determining apportion-
ment. With these changes, Washington signed the Apportionment Act of 1792 into law and established a precedent which would shape debate and policy over the nature of representation in the American system for generations to come.

In this chapter, I explore the history and development of the principle of one person, one vote as a key question of representation. This chapter will begin by exploring the origin of this principle, discussing its transformation over time and its unique role in the American system. This chapter will then conclude by providing an overall plan for this dissertation.

1.1 Apportionment and Redistricting in the American System

In order to understand how the principal of one person, one vote has remained key questions of democracy in the 21st Century, it is important to explore the origins, developments, and reforms of this in political systems.

1.1.1 The Backdrop

The principle of equality in representation is a thoroughly modern connotation with elements that harken back to the earliest systems of democracy and representative government. Most often, the transition to geographically-defined constituencies in these early systems was simply a matter of logistical necessity and political con-
venience. In the first such system, the Athenian city-state selected citizens by lot from among the family tribes and organized them into a council of leaders known as the Boule. This assembly, tasked with handling the affairs of the state, set an early (and an admittedly imperfect) model for the use of geographic constituencies to apportion a national governing body. As the needs of the city-state evolved, the
reformer Cleisthenes sought to reorganize the Boule in order to better united the separate tribes into a single state. This was accomplished by increasing the number of tribal groups and dividing each into geographically-bounded subunits (demes), each of which was drawn around existing populations. As the demes were unequal in size, Cleisthenes established population-based council quotas to ensure that no deme – and, by extension, no tribal group – was overrepresented in the Boule (Ober 2015).

The reforms of Cleisthenes stand as a remarkable advancement in democratic principles, establishing a basis for one person, one vote two and a half millennia before the U.S. Supreme Court mandated the same precedent.

Concurrent with the reforms of Cleisthenes, Servius Tullius, the legendary king of Rome credited for laying the groundwork for the Roman Republic, instituted a series of reforms that established a basis for equality in representation west of the Adriatic. From the time of its founding, Rome vested many powers of governance in the Curiate Assembly. This elected body of representatives drew apportionment from among the three original tribes established by Romulus and Remus, each of which was subdivided along ethnic lines. As Rome expanded into new territories and centralized power in its capital, the apportionment of the Curiate Assembly was not adjusted to reflect the addition of new populations. In a short period of time, the Assembly was so malapportioned to the benefit of the more patrician/less foreign tribes that disorder strained the functions of daily life. To ease tensions, Servius issued a series of reforms which led to the establishment of the Centuriate Assembly. This new Assembly offered representation to the disenfranchised citizenry and, most interestingly of all, abolished the grouping of citizens along racial lines in the drawing of geographic units (Thom 1995). These changes, in the words of Rousseau, “corrected an existing inequality and forestalled any future inequality... ensure[ing] that the division should be one of men and not of places” (Rousseau 1762, Book IV). This shift away from apportioning representation based on geography towards basing representation on
population came to full force in the U.S. throughout the 1960s with court cases, legislative action, and the abandonment of at-large constituencies.

Although the reforms of Cleisthenes and Servius provide early examples of systems focused on establishing elements of representational equality, it is a stretch to call either system a strong manifestation of democratic principles. If anything, the lasting legacy of these ancient reforms was to influence Enlightenment thought that would not come for over a millennia. Systems of government in the intermediate period experimented with and advanced many democratic elements, yet the advancement of equality in representation progressed very little. The system of Swiss communes in the Middle Ages ceded power to committees of locally-elected leaders yet soon fell to prey to feudal lords who consolidated and expanded their own power; the systems of Italian city-states modernized republicanism in transformative ways yet retained a rigid dependence on centuries-old nobility holding the reigns of republican power; the French Assemblies expanded enfranchisement yet placed insurmountably high financial and social obligations on citizens in order to participate.

The system of representative government which exerted the greatest impact on the development of the American system was that of the English/British House of Commons. Emerging out of rights established in the Magna Carta, major reforms to the system included the use of boroughs to select representatives beginning in 1265, strengthening the power of the chamber during the English Commonwealth, the popularization of suffrage and equal representation by the Levellers, and asserting the need for free elections for MPs in the English Bill of Rights of 1689 (Jones 2009). But in spite of these pro-democracy transitions, Parliament repeatedly fell under absolute dominance by the monarchy and saw the use of Rotten and Pocket Boroughs lead to rampant malapportionment. It was not until the 1830s that a series of sweeping

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2 Rotten Boroughs where boroughs in which district boundaries were not changed to keep up with the changing population, while Pocket Boroughs were boroughs in which the election of MPs was controlled by the land-holding families.
reform bills pushed forward to institute higher levels of representational equality.\textsuperscript{3} But by then, the American Colonists, who, as British subjects, were granted no rights of representation in Parliament, had already embarked on their own experiment.

1.1.2 The Early American System and the Need for Reform

When the U.S. separated from Great Britain, the Colonies sought a system which would unite the nation while simultaneously protecting against the abuses of a disconnected government. The solution came with the Articles of Confederation. As the first national charter, the Articles served the purpose of bringing the Colonies into a loose union and managing the affairs of a nation at war. The structure gave each state equal representation within the Congress of the Confederation yet reserved most of the power to the state governments: both necessary compromises to gain approval from the Colonies to enter such a union. Within a few short years of victory over the British, however, the Articles proved unable to overcome the numerous collective action problems the young republic faced. The United States was failing to live by the words of George Washington, who warned that there must be a “friendly Disposition, among the People of the United States, which will induce them to forget their local prejudices and policies, to make those mutual concessions which are requisite to the general prosperity, and in some instances, to sacrifice their individual advantages.”\textsuperscript{4} Immediate action on this matter was required.

The general difficulties of uniting a group of separate regions into a single country were particularly pronounced in the United States due to two key factors. First, there existed many general difficulties surrounding the fact that the States (under the Articles) were truly separate entities. States had unique populations, industries, social structures, and cultural differences, not to mention the differences which

\textsuperscript{3} Working to heed the calls of Jeremy Bentham’s dictum that “everybody to count for one, nobody for more than one” (attributed to Bentham by John Stewart Mill).

\textsuperscript{4} George Washington: \textit{Circular to the States}, 8 June 1783.
originated out of the separate charters and state constitutions. Quite simply: “no country, with the possible exception of Switzerland, has ever been more fragmented than the United States of America was in the eighteenth century” (Everdell 2000, pg. 155). Second, the vast size of the United States presented challenges to national union and effective governance. Even after the American Revolution, King Frederick II of Prussia predicted the United States was simply too large to operate as a republic and would rejoin Great Britain with representatives in Parliament (Rosen- garten 1906). Like the reforms of Cleisthenes in Athens and Servius in Rome, reforms to the Articles were needed to unite a people, suppress political instability, and strengthen the country.

But it wasn’t just that reforms were needed to unite the nation: reforms were also pushed for the purpose of expanding representational equity across the states. The end of the eighteenth century saw a global wave of political reforms focused on individualism in government. While some of these reforms were part of violent upheavals (such as the France Revolution), other nations saw calls for reforms being issued peacefully by political reformists. These sentiments were present in the United States as many of the Founding Fathers looked to Enlightenment philosophers for inspiration. Although there were examples in the U.S. under the Articles where one person, one vote was present,⁵ most major systems – such as the Congress of the Confederation and the majority of state legislatures – relied upon unequal systems derived from English traditions. One prominent example was the use of at-large constituencies for membership in state legislatures, constituting a unequal, one city/county, one vote basis of representation (Ansolabehere and Snyder 2008).

In studying Enlightenment thought, the Founding Fathers “learned the technique of the independent geographical constituency” (Everdell 2000, pg. 12). With-

⁵ One such example was the New York state constitution of 1777 which established equality in district populations and provided for a redistricting procedure based on a census count.
out ensuring representational equity for populations that are dispersed along existing
graphic boundaries (e.g. states), reforming the political system of the U.S. could not proceed. In his Second Treatise on Civil Government (1689), John Locke argued that unequal apportionment undermined the legitimacy of elected leaders and government: “it often comes to pass, that in governments, where part of the legislative consists of representatives chosen by the people, that in tract of time this representation becomes very unequal and disproportionate... therefore the people... have no power to act as long as the government stands.” Indeed, this Enlightenment thought marked a dramatic transformation in conceptions of what it means to have the consent of the governed. As stated by political scientist Bernard Manin (1997):

When representative government was established, concern for equality in the allocation of offices had been relegated to the background... By the time representative government arose, the kind of political equality that was at center stage was the equal right to consent to power, and not – or much less so – an equal chance to hold office. This means that a new conception of citizenship had emerged: citizens were now viewed primarily as the source of political legitimacy, rather than as persons who might desire to hold office themselves.

Without enumerating the principle of one person, one vote within the structure of the reformed government, there could not be the effective and long-lasting political reforms which were needed. This task was in the hands of the Framers when they gathered in Philadelphia in the summer of 1787.

1.1.3 One Person, One Vote at the Constitutional Convention

At the Constitutional Convention, no single issue was more fiercely debated than the nature of representation in the national legislature. Although most delegates agreed
that the current system of representation under the Articles needed expanding, there were wide discrepancies as to which systems were best suited to both united the nation and provide effective representation. Failure to resolve this critical issue would bring about disastrous consequences.

As is known to students of American history, the great divide among the Founders in regards to representation came down to two plans: the Virginia Plan and the New Jersey Plan. Proposed by James Madison on May 29, 1787, the Virginia (or “Large States” Plan) called for a bicameral national legislature in which apportionment to both chambers was proportionate to the populations of each state. Delegates from the least populous states argued that the plan took away their representation, while supporters argued that the Plan provided the necessary reforms to establish the system of government needed. Madison made further augments that the Virginia Plan granted long-overdue natural rights to the citizens of the U.S.: he “considered an election of one branch at least of the Legislature by the people immediately, as a clear principle of free Govt. and that this mode under proper regulations had the additional advantage of securing better representatives, as well as of avoiding too great an agency of the State Governments in the General one.”

Debate over the Virginia Plan waged on for weeks. In mid-June, William Paterson introduced the so-called New Jersey (“Small States”) Plan which called for a unicameral legislature apportioned equally among the states. While Virginia proposed a one person, one vote standard for apportionment in the national legislature, New Jersey called for further protections for state interests in the national government. In Paterson’s estimation, the system in place under the Articles in which apportionment was based on equal state share was essential to keep the country united as a set of more independent states. Opponents disagreed and Edmund Randolph, the Governor of Virginia, warned: “If a fair representation of the people

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6 James Madison, Notes at the Constitutional Convention. June 6, 1787.
be not secured, the injustice of the Govt. will shake it to its foundations.”

For a total of eight weeks – half the length of the entire Convention – delegates debated, amended, voted, and rejected various broad proposals of the Plans.

Ultimately, it took a proposal so revered as to be called America’s “Great Compromise” to settle the score and persuade delegates on both ends to approve the Constitution. This compromise granted equal state apportionment in the upper chamber of the legislature while maintaining a system of proportional representation in the lower chamber. But although this compromise (as debated and amended) was successful in getting delegate approval of the Constitution, it is important to note that the establishment of proportional representation for the House of Representatives came with several glaring asterisks. Quite simply, it is impossible to talk about the issues of representation and the principle of one person, one vote without discussing the status of blacks persons, both free and enslaved.

In addition to the large versus small states divide at the Constitutional Convention, there also existed a large gulf between Northern and Southern states. This too was a cultural divide that existed long before the first shots of the American Revolution were fired and posed a significant threat to any chance of success in Philadelphia. Slavery was the economic lifeblood of the South and the vested interests not only wanted to ensure the continuation of the system under the new laws of the United States (by permitting the legal importation of slaves for another twenty years, for example), but also that the long-term institutional arrangements would be structured in a way to offer a greater voice to Southern interests. To achieve the latter, Southern delegates renewed calls to include black persons in the official populations on which the House of Representatives would be apportioned.

Including enslaved populations for purposes of determining population counts was not a concept introduced at the Constitutional Convention. In fact, this was an

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7 Edmund Randolph, Notes at the Constitutional Convention. July 11, 1787.
issue the Congress of the Confederation took up as a 1783 amendment to a bill for determining the amount of state contributions to the federal treasury (Tucker 1899). In this instance, including slaves was not about gaining extra apportionment (the Congress of the Confederation apportioned representation on an equal basis across the states, after all), but rather about maximizing the economic status of the South. The amendment failed to pass as New Hampshire and New York voted against it.

Fast forward to the Constitutional Convention and the Southern delegation was making once again making the case to include slaves in population counts to improve its economic well-being. By counting slaves, the South could gain extra seats in a popularly apportioned chamber of the national legislature (should such a proposal materialize). This was no insignificant figure. Of the 4 million persons living in the U.S. in 1790, 700,000 of them were enslaved. Slaves lived in every state except for Massachusetts and Vermont and accounted for large percentages of the population in many Southern states. Without a measure to include slaves in population counts, there existed little possibility for widespread Southern support of a popularly apportioned chamber of the legislature. As George Washington remarked in a letter to Alexander Hamilton on July 10th, the situation was “if possible, in a worse train than ever; you will find but little ground on which the hope of a good establishment can be formed.” In the interests of pushing forward, the Large and Small, Northern and Southern states agreed to include the three-fifths compromise to count blacks for the purposes of apportioning House seats. Even though many Founding Fathers were against such a proposal, they deemed this proposal as less objectionable than failing to submit an approve Constitution to the states for ratification.

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8 The actual ratio of three-fifths was proposed by James Madison himself.

9 The greatest was in South Carolina, where 45% of the population were enslaved blacks. “Statistics of Slaves,” Report by the U.S. Census Bureau.

10 Even James Madison, the man responsible for proposing a three-fifths ratio in 1783, was conflicted, referring to the matter as a “peculiar one” in Federalist No. 54.
Although the compromises which established the bases of apportionment in Congress were successful in quelling the concerns the competing interests brought to the table, it did not settle the issue forever. In many ways, the Great Compromise and the three-fifths compromise marked the beginning, rather than the end, to our national conversation about the nature of equality in representation in the American republic. As Supreme Court Justice Joseph Story later noted: “the arrangement adopted by the Constitution was a matter of compromise and concession, confessedly unequal in its operation, but a necessary sacrifice to that spirit of conciliation, which was indispensable to the union of States having a great diversity of interests, and physical condition, and political institutions.”

1.1.4 Evolving Issues

With the ratification of the Constitution in 1788, a new system was in place which granted representation in a national legislature on the basis of equal apportionment. But in order to draft a document which would meet with the approval of delegates and states, many essential aspects of equality in representation were left unaddressed. In addition to the problems of equality in representation discussed in the previous section, new and evolving issues would emerge over time which warranted governmental and judicial interventions.

A primary facilitator of these issues was what the Constitution itself permitted. In Art. I, §4 of the Constitution, the “Times, Places and Manner of holding Elections... shall be prescribed in each State by the Legislature thereof.” This left states with tremendous leeway in many matters of representation. Most immediately, states were granted the license to determine their own basis for how elected Representatives would be selected and who these Representatives would serve. In the First Congress, six of the thirteen states used general tickets and at-large con-

11 Joseph Story, Commentaries on the Constitution, 1833.
stituencies while five used individually-drawn districts.\textsuperscript{12} For many reasons, the use of at-large constituencies was simply a matter of logistical convenience for states. Although the Constitution mandated the taking of a decennial Census for the allocation of districts to states, and although the vast majority of state constitutions required Census results to be used in matters of districting, the actual process of drawing boundaries around populations was an effort many states were unwilling to undertake. By drawing at-large constituencies, states were giving an overwhelming advantage to whichever party held even so much as a slim majority of support (Hacker 1964). Whereas single-member districts would enable a supporters of a minority party to win seats and gain representation, the at-large districting prevented the realization of one person, one vote for millions. This was corrected for in the Apportionment Act of 1842, which mandated that Representatives chosen from states with multiple seats must be done so in bounded districts.\textsuperscript{13}

Another significant threat to the principle of one person, one vote in matters of Congressional redistricting concerns the use of the political gerrymander. As states are permitted under the Constitution to determine the process for drawing their own lines, there was a remarkable degree of freedom for those in charge of the process to use it to their own advantage.\textsuperscript{14} In 1812, Elbridge Gerry, the Governor of Massachusetts, oversaw the drawing of state senate boundaries. As a Democratic-Republican, Gerry took the unusual step (at the time) to draw districts to benefit the electoral chances of his party across the state. One district which wrapped around the Northern and Western edges of Essex County was said to resemble a salamander— and thus, the portmanteau “gerrymander” was born. The tactics and practices of gerrymandering can dilute minority voting power, creating a favorable partisan bias

\textsuperscript{12} The two remaining states—Delaware and Rhode Island—were each apportioned only one seat.

\textsuperscript{13} The use of general tickets was still permitted in rare instances, most notably when a new state was admitted to the Union and the boundaries of districts could not be readily drawn.

\textsuperscript{14} See Section 3.2 for a discussion of the numerous types of districting institutions.
in the composition of state delegations which impact the overall balance of power in the chamber (Engstrom 2006). Thus, the concerns of gerrymandering pose a very significant threat to equality in representation. Although the question of gerrymandering is one of the most complicated and oft-studied areas of representation (not to mention the host of legal and judicial restrictions, prohibitions, and permissions placed on the practice), this section will keep matters brief by stating gerrymandering is an area of undeniable impact for the principle of one person, one vote.

One final aspect of representational equality which needs to be addressed concerns malapportionment in Congressional districting. As mentioned, the vast majority of state constitutions have required the periodic redrawing of district boundaries in accordance with the counts of the latest Census. Once again, the problem did not rest with the rule of law itself, but rather its implementation (or lack thereof). On matters of regular redistricting, “states often nullified the explicit provisions of their constitutions by failing to carry out regular redistricting. There was a natural temptation to inaction” (Butler and Cain 1992). After decades population growth and no changes to district boundaries, the degree of malapportionment in representation was staggering in many states. But through a series of Supreme Court cases and governmental interventions beginning in the 1960s, the principle of one person, one vote became a matter of law for the purposes of districting.\textsuperscript{15} This, of course, is not to say that matters of inequality in representation are no longer persuasive; rather, it is to highlight the importance that action and implementation can hold in enforcing the basic principles of the Constitution.

In the 229 years since the drafting of the Constitution, the United States has expanded the promise of representation in dramatic and far-reaching ways. There have been advancements and setbacks, challenges and triumphs. Although the Constitution has many instances where the principle of one person, one vote is violated

\textsuperscript{15} For a full discussion of the Reapportionment Revolution, see Section 4.2.
(such as the malapportionment in the U.S. Senate and the lack of equal voting power created by the Electoral College), it still stands as a remarkable development for democratic systems providing individual rights of representation. Further still, new threats to the principle of one person, one vote are arising from the creation and enactment of institutions such as Voter ID requirements, felon disenfranchisement, and limiting access to the ballot. To address these and others concerns, “Less reliance on the courts, and more on structural revisions in our election systems, will make fair and effective representation a more achievable goal” (Engstrom 2005, pg. 334). Nonetheless, there are many aspects relating to equality in representation in the American system which are worthy of study. This dissertation is narrowly focused on addressing how Congressional Redistricting impacts the principle one person, one vote from the standpoint of legislator-constituent dynamics, redistricting institutions, and effective minority representation.

1.2 Plan of the Dissertation

This dissertation will be composed of four subsequent chapters, each of which addresses topics relating to Congressional Redistricting and the promise of one person, one vote. These chapters will address the questions at hand with the use of GIS data and data analysis techniques.

Chapter two explores the impact that redistricting has on the career decisions of incumbent Members of Congress. As a job description, MCs provide a number of constituent and legislative services to the residents of their districts. Holding these legislators accountable to their constituencies through regular elections is a fundamental principle of representative systems of government. And when these districts change in redistricting, these constituent-MC connections should remain an influence on MC action and behavior. In order to test these connections, this chapter draws the calculus of candidacy literature and uses a rational choice framework to understand
how the changes to districts brought about by redistricting impacts the strategic decision-making process of incumbents. As a point of departure from existing research, this chapter uses incumbent residency to expand the set of career options which are available to incumbents. Hypotheses which draw on the connections that incumbents forge with their constituents through home style and the cultivation of a personal vote are empirically tested using an original dataset.

Chapter Three investigates the impact of various redistricting institutions on the drawing of Congressional District boundaries. Taking advantage of the natural experiment that exists when states change the ways by which they draw their district boundaries, this chapter provides a research note for how the adoption of a new system of redistricting is likely to impact the drawn lines. Several analysis techniques are run in GIS to determine how districts are likely to change, holding constant the set of political and demographic variables which are the bread and butter of modern redistricting. These analyses are also carried out over multiple groups of districts drawn by state legislatures (including times when there is and is not a change in party control) and various independent and non-independent commissions. As more and more states are changing and/or considering changing the processes through which they draw district boundaries, this chapter seeks to better understand the set of districting outcomes which are the likely results.

Chapter Four examines the institution of majority-minority districts in the South to assess their impact on the representation of minority communities. As an institution designed to facilitate one person, one vote, majority-minority districts have been a tool to correct for long-standing imbalances in effective representation. These are the districts from which the vast majority of nonwhite MCs are selected and, as such, have been the focus of significant scholarship on descriptive and substantive representation. In building on this research, this chapter uses restricted access ANES data to examine minority respondent efficacy and trust in government. GIS data and
techniques are employed to decouple the broad class of majority-minority districts and study their separate impacts, as well as to control for the effects of location. Using the Supreme Court’s 1986 decision in *Thornburg v. Gingles* as an anchor, this chapter assesses how the changes which led to a wave of majority-minority districts has advanced the representation of black and Latino communities in the South.

And finally, Chapter Five will close with a discussion of the conclusions which may be drawn from the substantive findings of this dissertation.
2

Congressional Redistricting and Strategic Decision-Making: Reelection, Relocation, Retirement, or Higher Office?

“I’ve always lived in the district I represent and always will.”

-Rep. Jerry McNerney (D-CA), 2012

2.1 Introduction

Following the 2012 redistricting in California, Democrat Jerry McNerney found himself in a situation that many incumbent Members of Congress (MCs) face every decade: drawn out of his district. His Pleasanton home was carved from the district he had represented and placed in a district where the majority of the population was unfamiliar to him. On its face, McNerney’s situation came with the silver lining that this new district was more favorable in partisanship for a Democratic candidate than the district which contained the greatest share of his former constituency. But in spite of this apparent good fortune, McNerney decided run in the more familiar

1 Candidate statement quoted by *The Record*, August 1, 2012.
but less partisanly advantageous district, going so far as to move to that district. McNerney’s actions in this situation raise two important questions. First, what are the motivating factors that lead an incumbent MC to decide to seek reelection in a newly-redrawn district following a round of redistricting? Second, why would an MC in this situation take on the burden of legally relocating his residence in order to seek reelection when he was under no Constitutional or state obligation to do so?

In the literature on incumbent decision-making, political scientists have long held that MCs are strategic actors, focused on a set of goals pursued with calculation. Chief among these is the desire for reelection – not simply as a goal in itself, but also as a necessary condition for an MC to be able to pursue her full agenda in Washington and to increase her chances of winning higher levels of office at later stages in her career. To achieve this goal, a strategic incumbent will develop a personalized set of constituent-focused strategies to increase the likelihood of reelection by maintaining a district presence throughout the permanent campaign. It is this connection that will lead constituents to support their MC at higher levels in subsequent elections, eliminating many of the costs assumed by seeking elective office.

With this constituent-based reelection strategy in mind, an interesting dynamic is created for incumbents when their constituencies change in the game of musical chairs that is redistricting. Following a round of redistricting, there is no reason to suspect that the desire of incumbents to remain in office (or seek higher levels of office) has changed, nor is there any reason to suspect that constituent-based reelection strategies are no longer effective. Rather, the questions which emerge are about the extent to which incumbents choose to rely upon this strategy when the set of voters most familiar to them (i.e. their former constituents) has changed. How do the constituency changes brought about by redistricting impact the decision-making process of incumbent MCs? And how do MCs weigh the competing benefits and costs of selecting one from among a set of newly-redrawn districts?
In this chapter, I explore what factors motivate incumbent MCs to reach the decisions they do regarding their political future following redistricting. Drawing on a calculus of candidacy model, this chapter analyzes supporting theories as they operate at times when the geographic boundaries and constituent composition of an incumbent’s district has changed. To test these theories, the cases of incumbent members of the 107th (2001-2003) and the 112th (2011-2013) Congresses who represent states with more than one district will be analyzed. Each of these incumbent MCs faced newly-redrawn district boundaries leading into the 2002 and 2012 elections.

Broadly, this chapter will proceed in five parts. The first section will provide a theoretical overview of the calculus of candidacy and derive a set of testable hypotheses. The second section will discuss the empirical observations from existing research and define the scope, data, and methods for the present study. The third section will investigate district residency, examining whether the actions of MCs like Jerry McNerney are a component of the constituent-based reelection strategy. The fourth section will examine the set of districts available to the MC and analyze which are likely to be selected as a strategic choice. And finally, the fifth section will examine the link between constituency and incumbent decision-making, testing the factors that influence the decision of an incumbent to seek reelection after redistricting.

2.2 The Calculus of Candidacy

In his seminal study of the motivations of incumbent MCs, David Rohde employed a calculus of strategic decision-making to understand how incumbents reach decisions regarding the next stage of their political careers (Rohde 1979). Operationalized around the pursuit of available opportunities, Rohde’s study departed from much of the existing research that tested hypotheses on office-seeking behavior, ex post facto, using measures of candidate backgrounds. Rather, Rohde’s prospective approach en-
abled his study to develop a theoretical framework which better connects ambition and risk in the office-seeking calculus. His dynamic model enables individual-level approaches to understand how various factors, alternatives, and opportunities influence the strategic decision-making of incumbents. As the present study is seeking to understand how changes in the electoral environment (those brought about by redistricting) impact the strategic decision-making calculus of incumbents, the frame of Rohde’s study offers a strong theoretical approach. In this section, I define a model of the strategic decision-making calculus and draft a set of hypotheses which will be tested by this model.

2.2.1 Model Specification

Derived from a decision calculus advanced by Black (1972) and Riker and Ordeshook (1973), Rohde gave a formal assessment of the career ambitions of MCs as a product of the benefits received, the likelihoods of success, and costs of selecting each of the available alternatives. For every MC, the values of each component will be contingent upon a myriad of district- and election-specific factors and considerations, each of which is impacted by the changes brought about by redistricting. A visual display, as well as a formal statement, or the model is as follows:

![Figure 2.1: The MC Decision Tree](image-url)

Figure 2.1: The MC Decision Tree
\[ E(a_1) = U(O_1) - c_1 \]  

\[ E(a_2) = \max_{d_k} \left[ \max_{m_l} \left( P_{2d_km_l}(O - 2)U(O_2) + (1 - P_{2d_km_l}(O_2))U(O_1) - c_{2d_km_l} \right) \right] \]  

\[ E(a_3) = P_3(O_3)U(O_3) + (1 - P_3(O_3))U(O_1) - c_3 \]

where \( E(a_i) \) is the expected utility of choosing alternative \( i \),

\( P_i(O_j) \) is the probability that outcome \( j \) will occur if alternative \( i \) is chosen,

\( U(O_j) \) is the utility the actor receives if outcome \( j \) occurs,

\( c_i \) is the direct utility cost incurred by choosing alternative \( i \),

\( d_k \) is district \( k \ldots n \),

\( m_l \) is move or not move,

and where \( O_1 = \) no office is occupied after the election,

\( O_2 = \) the presently held office is occupied after the election,

\( O_3 = \) the higher office being considered is occupied after the election,

\( a_1 = \) the actor retires,

\( a_2 = \) the actor runs for the presently held office,

\( a_3 = \) the actor runs for higher office.

Equations 2.1, 2.2, and 2.3 each calculate the expected utility an MC would receive from selecting among the alternatives of retiring (2.1), running again for the U.S. House (2.2), or seeking higher office (2.3). The value for each branch of the tree is determined by backwards induction – the same process an MC goes through when reaching a decision about her career future. After redistricting, an MC would first

\[ ^{2} \text{These alternatives are mutually exclusive due to prohibitions against dual office holding enumerated by constitutional provisions, legislative statutes, executive orders, and judicial rulings. See Barbano (2014) for a full discussion.} \]
look to the each district and decide if she would need to move (or not) in order to be electorally viable in the district. With an expected value for moving and an expected value for not moving, the MC would maximize over both and select the option which gives the highest expected utility. With a single expected utility calculation for every district option, the MC would then maximize over the set of $n$ districts and select the one which gives the highest expected utility. This selected district and chosen plan (either move or not move) represents her clearest path to reelection. Finally, the MC would then decide from among the three broad options: retire, the reelection option, or seek higher office. To discuss each formula more specifically:

- Equation 2.1 models the expected utility for an MC choosing to retire. With this, there is no need to estimate the probabilities of more than one outcome: it is certain that a decision to retire will result in a retirement and nothing else. Thus, the expected utility an MC receives from choosing to retire is simply that, less the costs of pursing this option (which are likely fairly low).

- Equation 2.2 models the expected utility for an MC choosing to seek reelection. Here, the decision to either move or not move in a given district is the multiplicative of the probability an MC chooses wins with moving (or not) and the utility she would receive from winning reelection, plus the multiplicative of the probability she does not win reelection with moving (or not) and the utility she receives from not holding office after the next election. The costs of seeking reelection with moving (or not) are subtracted. The set of options is maximized first for move decision and then again for district selection. What results is a single calculated value for the expected utility of choosing to seek reelection: $E(a_2)$.

- And finally, equation 2.3 models the expected utility for an MC choosing to seek higher office. For this, the first term is the multiplicative of the probability that an MC wins higher office and the utility received from winning that office, to which
is added the probability that an MC does not win the higher office multiplied by the utility of such an outcome. The costs of seeking higher office are subtracted.

With the assumption that candidates are rational in their selection of alternatives, an MC should select the alternative which provides her the greatest expected utility. This model provides a straightforward and efficient way to estimate the impact of each component of the strategic decision-making calculus on incumbent MCs at all stages of the process. The hypotheses outlined in the next section will be tested using this specification of the model.

2.2.2 Hypotheses

Incumbent MCs must make decisions regarding their electoral future every two years. For the most part, these decisions are made with little-to-no fluctuations in many of the key factors upon which an MC bases her decision. The boundary of her district has not changed, the set of constituents she represents is the same,\textsuperscript{3} and she does not have to face other incumbents in her district. But when redistricting occurs, the environment in which she must now make her decision has undergone dramatic transformations in these and other areas. With the calculus of candidacy as the theory guiding this study, hypotheses are devised which broadly assess factors relating to the three major components of the calculus.

The first broad group of hypotheses focuses on how an incumbent’s reelection calculus is impacted by changes in the likelihood of a success and the variations in the costs for pursuing alternatives. Within this first group, the first hypothesis will examine how redistricting changes to an MC’s constituency impacts her calculus.

When redistricting occurs, sets of constituents grouped within the same district and represented by an MC for as many as ten years have been redistributed

\textsuperscript{3} Discounting the small fluctuations which are a result of migration, death, and residents joining the voting age population.
among a set of newly-redrawn districts in that state. While some MCs will find that their former constituency has been “preserved” and drawn entirely into a single new district, this is most often not the case. For the majority of incumbents, their former constituency has been divided among several new districts, leaving them to make a reelection decision while facing the reality of a changed constituency. From the calculus, the first hypothesis is as follows:

H1a With a higher degree of district constituency preservation following redistricting, an incumbent should be more likely to seek reelection to the House.

H1b Following redistricting, an incumbent will be most likely to seek reelection in the district which contains the greatest share of her former constituency.

H1c If an MC decides to seek reelection in a district where she does not presently live, she will choose to move there.

Based on the calculus of candidacy, I would expect there to be a positive relationship between higher levels of constituency preservation and an incumbent’s chance of reelection (H1a). When a cycle of redistricting preserves the greatest possible number of an incumbent’s former constituents by not dividing them among many districts, the probability of reelection should be greater. For the MC in this instance, the number of districts among which their former constituency is divided are fewer, meaning that the advantages of her incumbency status remain more intact. Furthermore, the relative costs of her seeking reelection should be lower, mostly for the reason that she has less unfamiliar districts and does not face the prospects of waging a new campaign to mostly unfamiliar voters in any district she chooses. As a result, the expected utility from her pursuing the alternative of seeking reelection in these instances should be higher. This same logic explains the related hypothesis of H1b.
In the broad decision chain of seeking reelection, an MC must decide to move her residency to a district if she does not already live there. Although there are no legal prohibitions against seeking reelection in a district where an MC does not maintain residence, my expectation is that an MC would value this branch of the decision tree higher than the decision not to move (H1c). The reason for this has to do with the probability term. Although the MC undeniably needs to assume expense by moving into a district (the c term), she stands to dramatically improve the probability of the winning reelection. Should an MC decide to seek reelection in a district in which she does not live, she opens herself to become the target of negative campaigning, forced to explain her loyalty to the district while fending off charges of carpet-bagging. Such a reduction in the probability of winning reelection is an unwieldy burden that most MCs should want to avoid, particularly if it can be done simply by moving.

The next hypothesis focuses on the forces behind the redistricting process and how these impact the strategic calculus. Given that redistricting is a zero-sum process across the country, some states are apportioned additional seats at the expense of others. Furthermore, the actual process of redistricting is most often a highly charged political matter where groups of partisan leaders are working towards the advancement of particular party goals. Brought together, these two underlining realities about the nature of redistricting comprise the second hypothesis:

H2a If a state gains district(s) through reapportionment, an incumbent MC should be more likely to seek reelection.

H2bi When the party controlling the redistricting is favorable to the incumbent, she should be more likely to seek reelection than when a neutral commission is in charge of redistricting.

4 See Section 2.4.1 for a full discussion.
H2bii When there is a neutral commission in charge of redistricting, an incumbent should be more likely to seek reelection than when the opposition party is in charge of redistricting.

I expect that MCs in states which gain a seat are likely to have a less contested path to victory (H2a). Via the reelection calculus: when a state neither gains nor loses a seat in reapportionment, the ratio of seats to incumbent MCs is the same as during non-redistricting years. In these instances, each incumbent should (in theory) be able to select a district and not face competition from an opposition incumbent. But when reapportionment removes a district from a state, the incumbents can no longer be assured of this. My expectation is that when a state gains a district through apportionment, the relative probability of winning reelection has increased for the MC; thus, the MC's expected utility from choosing to seek reelection should increase.

Another component of the redistricting process that is likely to influence the decision-making of MCs concerns the redrawing itself — most notably, who draws the lines. Redistricting is not a random process: the political powers which control the process are eager to maximize the redistricting to their own party's advantage. As such, it is not hard to imagine that an MC would look to which method is employed and make a strategic decision. If an MC's own party controls the process of redistricting, the expectation would be that her seat would be a priority to be protected in the midst of cutting and dividing of constituencies. She should prefer this to having a neutral commission control the process, where the same partisan focused, incumbent protecting plans would not be the focal point (H2bi). And finally, an MC should prefer having a neutral commission control the process versus having the opposition party control the process, particularly as she is likely to be a target for removal at the hands of the other party (H2bii). Accordingly, the likelihood that she would be able to win reelection is tied to this important consideration.
And finally, the last hypothesis within the first group of hypotheses addresses the factors which impact the likelihood of winning higher office:

H3 The presence of an open seat for higher office should increase the likelihood that an MC chooses to seek higher office versus seeking reelection.

Strategic actors are focused on taking advantage of opportunities in order to achieve their goals. On the assumption that strategic MCs would prefer career advancement to reelection and would prefer reelection to retirement, an MC should look at opportunities which increase the likelihood she would be able to win higher office. As is well known, the likelihood of defeating an incumbent in the vast majority of electoral contests is exceedingly low. But when these incumbents retire or move on to other ventures, the presence of an open seat creates an open field where challenges – although more likely to face a higher number of challengers – are far more likely to win (H3). With or without the changes brought about by redistricting, I would expect strategic MCs to be more likely to select the alternative of seeking higher office if and when the seat is open.

Turning to the second broad group of hypotheses, these will assess how the changing benefits of the available alternatives impacts the reelection calculus. Together, these are the fourth hypothesis:

H4a As an incumbent becomes older or qualifies for a Congressional pension, she should be more likely to retire versus seeking reelection or higher office.

H4b If an incumbent is in the majority party, she should be more likely to seek reelection.

H4c As the level of an incumbent’s power in the chamber increases, she should be more likely to seek reelection.

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5 All else being equal. This is the same preference order theorized by Rohde (1979).
There nearly always comes a point in a political career (yes, even in John Dingell’s record-setting career tenure) when I would expect an MC to step aside and let the younger generations take charge. Due to the high levels of energy and effort that are needed to both campaign for and hold elected office, I would expect that seeking reelection would have less appeal and constitute a lower level of benefit for older MCs (H4a). Relatedly, if an MC qualifies for a Congressional pension, it should be more likely that she will choose to retire, particularly as the alternative of retirement now comes with a clear benefit of pension checks.

On the final parts of the fourth hypothesis, the benefits an MC derives from holding office is a critical component of the calculus of candidacy and of the decision to seek reelection. Given that the House is a purely majoritarian institution, the members of the minority party may find themselves in a rather frustrated position. As a result, it is reasonable to expect higher likelihoods of seeking reelection for MCs who are in the majority compared to those who are not (H4b). Further, as we would expect MCs to be focused on securing and expanding their power within the chamber, it is likely that holding higher levels of power should be an added benefit to the office – and thus, an incentive to retain it (H4c). When an MC has power, they are able to achieve their goals with greater ease. Thus, an MC should be more likely to seek reelection if they hold higher positions of power than if they do not.

Together, these four hypotheses represent my expectations about the impact that redistricting will have for incumbent MCs in their strategic calculus of candidacy.

2.3 The Study

With the four hypotheses devised and stated in terms of the strategic calculus of candidacy, it is important to discuss the findings from the existing literature – not only to provide context and evidential support, but also to effectively specify the terms of the calculus. This section will provide an overview for the empirical methods
for testing these hypotheses, in addition to devising the general scope and approach of the study.

2.3.1 Literature

For a generation of political scientists, the pioneering work of David Mayhew has set the stage for academic research on MCs as a group of rational decision-makers. In his groundbreaking book on behavior in Congress, Mayhew (1974) concisely puts forth that MCs are “single-minded seekers of reelection” (pg. 5) – that MCs are focused on the pursuit of reelection as an important goal. Subsequent research built upon this framework, reinforcing the idea that the desire for reelection is a very powerful motivation for MCs. Among the most influential of these works are those of Richard Fenno (1977; 1978), who theorizes that MCs are also motivated by achieving power within the Congress and seek the opportunity to enact good public policy. But in order to achieve these additional motivations, Fenno again points to the importance of reelection, arguing it is “the prerequisite for a congressional career and, hence, for the pursuit of the other goals” (1977, pg. 889).

As for how MCs go about the pursuit of reelection, Fenno offers an explanation based upon the Mayhewvian framework in his seminal text *Home Style* (1978). By traveling with a group of MCs and observing their actions, Fenno discovered that it was the behavior of the MCs at home, not in Washington, which constitutes their basis for electoral support. Fenno argues that this district-focused reelection strategy is not one size fits all. Rather, it is the case that every MC views her constituents as belonging to one of four concentric groups\(^6\) and strategically targets each in different ways. By adjusting the ways in which she allocates time and resources to her district,

\(^6\) From largest to smallest: the Geographic Constituency (all those in her district), the Reelection Constituency (all those who are likely to electorally support her), the Primary Constituency (her strongest set of supporters, likely to volunteer/donate), and the Personal Constituency (those with whom she has a personal relationship).
presents herself to her constituents, and explains her actions on the Hill, the MC is developing her own brand of what Fenno labels “home style” (pg. 33). It is this home style that Fenno argues is the basis of the MC’s reelection campaign, marking a point of departure from most of the existing research on incumbent behavior which rarely focused on the incumbent in her district.

By cultivating her unique brand of home style, the MC is working to increase the size of her Reelection Constituency. In doing so, she is transforming the constituencies which support her reelection into a relatively stable electoral coalition known as the “personal vote.” By definition, the personal vote refers to “the portion of a candidate’s electoral support which originates in his or her personal qualities, qualifications, activities, and record” (Cain et al. 1984, pg. 111) – or, put more succinctly, “the vote an incumbent receives because of the ‘homestyle’ he or she develops” (Ansolabehere et al. 2000, pg. 18). To grow her personal vote, it is essential for the MC to draw on the direct advantages her status as the incumbent brings.\footnote{“Direct” versus the “indirect” advantages of incumbency as observed by Cox and Katz (1996).} Assets such as franking privileges, having an office staff perform constituent casework, the opportunity to frequently appear in local media, and the ability to visit her district with an elevated profile brings the MC to the attention of her constituents. Using the advantages of incumbency to cultivate a specific home style in order to grow the personal vote is important for two key reasons. For one, research by Cain et al. (1987) has found that individual voters are much more likely to support candidates they know – an association positively related with the degree to which MCs represent their constituents (Rosenberg et al. 1986; Ansolabehere et al. 2001). Second, research reviewed by Morrill (1987) has shown that constituents, over time, become accustomed to supporting their incumbent with a shared sense of belonging. Together, these two processes help to insulate the MC from short-term electoral insecurities and has long been a successful strategy in Congressional elections (An-
solabehere et al. 2000; Carson et al. 2007a). Both of these are fundamentally tied to the calculus of candidacy: increase the probability of achieving desired outcomes while distributing the cost over the duration of a multi-year term.

For most of her reelection bids, the MC is campaigning to – and relies upon the personal vote from – the same of constituents as two years earlier. But when redistricting occurs and the set of constituents has changed, “the subject may be a fateful one for members affected” (Fenno 1978, pg. 11). Fundamentally, redistricting adds uncertainty to the MC’s reelection calculus (Hetherington et al. 2003). In their study on the personal vote component of the incumbency advantage, Ansolabehere et al. (2000) find that after redistricting, incumbents rely most heavily on their former constituents retained in their new district for electoral support. Along the same lines, research by Cain (1984) and Desposato and Petrocik (2003) has shown that the loss of old constituents and the addition of new population to an incumbent’s district has a negative impact on her chance of reelection, even if this old population was unfavorable and the new population favorable to her in terms of partisanship. This is due to the fact that an MC cannot appeal to her new constituents on the same nonpartisan grounds as she can with her old constituents with whom she had cultivated a personal vote (McKee 2013). And finally, research by Hayes and McKee (2009) and Windburn and Wagner (2010) has shown that constituents drawn into a district represented by a different MC are far less likely to support her, all else equal. All of this is to say: the exogenous shock of redistricting and the resulting changes to districts fundamentally alters the decision-making environment for the MC.

The control of the process of redistricting has also been shown to impact the probability of an MC winning reelection. When a party is in charge of redistricting, MCs of that party can expect a less difficult path to reelection (which Gelman et al. 1996 demonstrated equates roughly to a 6% advantage). And research has

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8 The small fluctuations from migration, death, and changes in voter eligibilities notwithstanding.
shown that the neutral commission-drawn redistricting results in much more even levels of competition when compared to the partisan, state legislatively-driven processes (Carson and Crespin 2004).

Specific to the decision of an MC to relocate as part of the reelection effort, this is perhaps one of the strongest stands of home style an incumbent can make. The ways in which an MC presents herself to her constituents is largely built around the concerted effort to spend a significant amount of time on the ground in her district. One of these efforts Fenno singles out – the decision of an MC to maintain a family home within the district – has been shown to have a dramatic increase on the district presence of the MC. This decision is all the more important as “home appearances can be fairly construed as further evidence of the congress[wo]man’s desire to help [her] constituents” (Fenno 1978, pg. 106). By living within the district, an MC has taken a very personal approach to presenting herself to her constituents, helping to strengthen her position among them and, in turn, increase the size of her personal vote constituency. Although some states prohibit taking the location of an incumbent’s residence into consideration for redistricting purposes, most states permit the drawing of lines which allow the MC’s residence to be separated from her constituent base (Levitt 2008). When redistricting occurs, Fenno finds that an MC seeking reelection should “accommodate [her]self to the changed situation” (Fenno 1978, pg. 187) – and a significant part of this should be the decision to move.

Although most theories of incumbent motivation center on the desire for reelection, research has shown numerous instances where incumbents step aside. Most notably, Jacobson and Kernell (1983) advance a strategic retirement hypothesis – that even “voluntary congressional departures are, to an important degree, strategic” (pg. 59). These voluntary retirements can be a result of many specific variables

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9 One of the key elements Fenno identifies as part of a successful home style along with allocation of resources and explanation of Washington activities.
in the cost-benefit calculation, such as a decline in the benefits of holding office (Frantzich 1978; Hibbing 1982), an increase in the cost of running for and holding office (Brace 1985), or the availability of attractive other options (Rohde 1979; Kieweit and Zeng 1993). Further still, retirements may be a result of even more practical matters such as age (Groseclose and Krehbiel 1994; Fukumoto 2009) and a tougher national climate (Jacobson 1989). But in spite of these voluntary departures, “the low overall rates of retirement even during adverse periods suggest that the reelection goals of most incumbents are not much affected by short-term forces” (Jacobson and Kernell 1983, pg. 55). The effects of redistricting are not short-term forces; rather, redistricting very often represents a significant alteration of the decision-making environment for incumbent MCs for years to come. It is against this backdrop that this chapter proceeds.

2.3.2 Data and Variables

To test the hypotheses, a dataset containing all incumbent members of the U.S. House of Representatives who served in either the 107th or the 112th Congresses, who occupied their office in the second year of their term, who represented states apportioned at least two Congressional Districts, and whose state had Congressional redistricting redraw district boundaries prior to the subsequent election was assembled. In total, this dataset has an $n$ of 854: 870 total MCs, less those from Alaska, Delaware, Montana, North Dakota, South Dakota, Vermont, and Wyoming, as well as the two MCs from Maine in 2002.\footnote{Maine did not redraw its district boundaries on the decennial cycle in 2002.}

Fundamentally, the models used to test the hypotheses evaluate expected utility as a function of three broad classes of factors: those which affect the probability of the selected alternative occurring, those which capture the utility an MC receives from achieving the selected alternative, and those which represent the costs
of choosing the alternative. Based upon the findings of previous studies, a general set of variables that have been shown to influence the reelection calculus was drawn. To supplement these, an entire set of geographic variables that capture the changes brought about by redistricting was coded. Collectively, these variables represent the most measurable components of the calculus of candidacy used by incumbent MCs to select from among the set of available alternatives.

**Dependent Variable**

All of the dependent variables used in this study will be measures of (or measures derived from) the alternatives selected by each of the incumbent MCs. In the next part of this study, the decision of the MC to either move or not move when seeking reelection (a binary dependent variable) is examined for the set of MCs who have decided to seek reelection in a district in which they do not live. From here, the decision of MCs in selecting a district in which to run out of the entire set of available districts (a categorical dependent variable) is examined. And finally, the third part of this study considers the broadest decisions to be made by each incumbent (a trichotomous categorical variable): to retire, to seek reelection to the House via the maximized district/move options, or to seek higher office.

In order to code each of the dependent variables, the complete residential history for each MC must be determined. This is done by drawing on a set of verified sources and cross-checking the acquired data, determining the legal residence(s) of the MC during the time period around the redistricting cycle and the subsequent election. Next, a set of GIS overlay procedures are carried out with the information, out of which three descriptive variables are recorded for each MC: their pre-redistricting district(s) of residence, their post-redistricting district(s) of residence, and the district

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11 These variables are calculated by using a suite of geoprocessing tools in GIS known as “Overlay.” For an introduction to the operation of these mechanisms, see Appendix A.

12 For a full discussion of these procedures, see Appendix D.
in which they ran for reelection. From here, the determination of the MC’s reelection decision is determined by comparing the latter two variables in light of the MC’s complete residential history.

**Independent Variables**

For the independent variables, it is best to once again return to the three broad factors which comprise the strategic calculus of candidacy: the benefits, likelihood of success, and costs for selecting among the alternatives. The variables which should influence the decision-making calculus are largely determined from the opportunity structures MCs face in post-redistricting elections. By considering these factors in the strategic calculus of candidacy, it is possible to determine the expected utilities an MC will receive from selecting from among the choices available to her.

For the variables which represent the probability that the selected alternative will occur, the most important two are derived from geographic measures of districts subsequent to redistricting. First, a measure of the degree to which an MC’s former constituency has been dismantled or preserved as a result of redistricting must be derived. This measure, known as the “fractionalization index,” is a continuous variable where higher values correspond to a greater degree of population dispersion among new districts.13 The second variable, known as the “joint population overlay” (JPO), is a measure of how an MC’s former constituents are drawn into each of the new districts following redistricting. Recorded for every possible district for every MC, the JPO is a continuous measure where higher values correspond to a higher percentage of the population in a new district which was represented by the MC in her old district.14 Where the fractionalization index is a retrospective measure of constituency change, JPO is a prospective measure of new district composition.

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13 See Appendix B for a discussion of how this variable is calculated and interpreted.

14 Appendix C.
This study will also take into consideration the types of constituents within the districts – both those the MC previously represented in her old district and those she could potentially represent in each of the new available district options. Although the personal vote constituency can transcend (at least partially) many of the factors which are indicative of electoral behavior, that is not to say that these differences have no impact on the incumbent’s calculus. Most notably, a variable which captures the partisan leanings of the constituents in every old and every new district is needed, defined in terms relative to each MC. Including this variable is important not only due to the high correlation between partisan identification and vote choice, but also to control for the potential confounding reasons for which district an incumbent seeking reelection will select.

As redistricting is a highly charged activity which operates largely along political lines, it is important to control for the way these political differences could impact the decision-making calculus of incumbents. Operationalized as a three category factor variable, “Party Control of Redistricting” takes account of which party controlled the redistricting process in the state and how this party is either favorable, unfavorable, or neutral for the MC. For the variable to be coded as either favorable or unfavorable, one of the political parties must run the entire process of redistricting in accordance with the partisan-controlled redistricting institutions used by the state. By contrast, neutral control of redistricting is coded for when states use nonpartisan commissions or judicial panels to redraw boundaries, as well as states in which no single party controlled the process of redistricting in the cycle.

Along with the impacts of redistricting, it is also important to control for how the changes brought about by reapportionment can influence the MC’s calculus. As

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15 This variable is calculated as the difference between the two-party presidential vote in her district and the national two-party vote in the last presidential election. The results of the presidential election (versus the congressional election) is used because “provides a more direct measure of the partisan or general ideological predispositions of each congressional district separate from the popularity of the incumbent representing the district” (Carson et al. 2007b, pg. 901).
reapportionment is a zero-sum process in the U.S., a gain of a district in one state comes at the expense of a loss in another state. To quantify the changes in state apportionment, the “State Gain/Loss” variable will capture the increase/decrease in the number of seats apportioned to the state the MC represents. The absolute changes in state apportionments for the 2000 and 2010 rounds of reapportionment, combined, are shown as the text in Figure 2.1.

![Figure 2.1: Reapportionment Map]

**Figure 2.2: State Gains/Loses in the 2000 and 2010 Reapportionments**

To best capture the intended effect, it is important that the State Gain/Loss variable take account of the magnitude of these changes within each state in each reapportionment cycle. From a purely probabilistic standpoint, the removal of one seat from a game of musical chairs with five players represents a greater reduction in the odds every player will find a seat when compared to removing one seat from a game with

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16 And has been since the Apportionment Act of 1911: 2 U.S.C. §2, Public Law 62-5. The one exception was the period of time between 1959-1963 where the size of the U.S. House was increased by two to accommodate the statehoods of Alaska and Hawaii. With the Eighteenth Census of 1960, the size of the House was reduced to 435 to take effect for the 1962 Congressional elections.
ten players. Just as the magnitude of the change matters for each player in the game of musical chairs, so too should the magnitude of the change in apportionment – be it positive, negative, or no change – matter for the reelection prospects of each incumbent MC. As such, this study will operationalize the State Gain/Loss variable as the percentage change in the number of apportioned seats in each state. This is shown above as the color gradient in Figure 2.1.

The final measure that comprises the probability that a selected alternative will occur is a binary variable indicating whether a state has an open Gubernatorial or U.S. Senate seat (“Open Seat”). This is coded when a vacancy is known at least a year prior to the election and captures the presence of an attractive alternative option for an incumbent MC to pursue a higher office.

In terms of the variables which represent the utility an incumbent receives from the selected alternative occurring, many are quantified as the benefits an MC receives from service. First, the “Majority Party” variable is a simple binary measure indicating whether the incumbent was a member of the majority party at the time.\(^{17}\) Second, the “Position” variable represents the relative influence an incumbent holds within the chamber. Operationalized as the value of formal positions in the House based upon John Hibbing’s index,\(^{18}\) this variable accounts for the relative level of power and influence each MC has within the chamber. Third, a measure known as the “Career Ceiling” is used to quantify the degree to which an MC might view her career as stagnant. This measure, developed by Sean Theriault (1998), is operationalized as the interacted effect of formal position and term.

\(^{17}\) For both 2002 and 2012, majority party status was any member of the Republican Party. As party control of the House did not change in either election (nor was it expected to), this variable adequately captures the anticipations of MCs regarding the likelihood that they might be a member of the majority party following the upcoming election.

\(^{18}\) A graduated scale from 1 to 100, where 1 represents no party leadership or committee assignments (with the exception of the least prestigious committees) and 100 represents serving as the Speaker. The values in-between are index based upon holding party leadership positions and/or serving in (or chairing) committees/subcommittees, categorized by prestige (Hibbing 1991).
The last variable which represents the utility incumbents receive concerns one of the reasons an incumbent may decide step aside: retirement benefits. The “Pension” variable is a simple binary indicator of whether the incumbent has earned a Congressional pension by the end of their present term of office. This variable is calculated as a combination of years of service and age.\textsuperscript{19}

Finally, this study will make use of three variables to capture the costs incurred by selecting each alternative. The first two, “Age” and “Term,” are straightforward measures, each defined as the numerical value of the MC’s current age or concurrent term of office on the day of the upcoming election. The final variable, “Other Incumbent,” is a binary indicator of whether the district the MC’s residence is drawn into or if the district the MC chooses in which to seek reelection is home to another incumbent MC.

Collectively, these variables represent the most tangible and quantifiable components of the MC’s opportunity structure for their post-redistricting decision-making calculus. With these outlaid, the analysis is can begin.

2.4 If I (Don’t) Go there Will be Trouble

The first section of analysis will examine the role an incumbent’s residence plays in her post-redistricting calculus of candidacy. How much does home style dictate the actions, behavior, and decisions of incumbents in post-redistricting elections in situations where the incumbent may find herself drawn into a different district than the one she intends to represent? Analyzing this is the first step of solving an MC’s decision tree via backwards induction.

\textsuperscript{19} An MC qualifies for a pension with any of the following: 62 years of age and 5 years of service; 50 years of age with 20 years of service; or any age with 25 years of service.
2.4.1 The Requirement of District Residency

The U.S. Constitution sets forth three requirements which must be satisfied in order to serve as a member of the House of Representatives: minimum age, a length of citizenship, and residency. On the latter of these, this residency requirement only states that the Representative must, “when elected, be an Inhabitant of that State in which he shall be chosen.”20 There is no requirement therein that an elected Representative must maintain a residency within the district he/she represents.

The need for such a requirement was one of the many issues debated at the Constitutional Convention. On the one side, delegates led by George Mason argued in favor of establishing a district residency requirement, warning that the lack of such an enumeration would lead to a system similar to the English boroughs where the wealthy could represent poorer areas from afar. Gouverneur Morris disagreed with this warning, arguing that “Such a regulation is not necessary. People rarely chuse a nonresident” (Arguments from August 8, 1787). Further, James Madison raised the concern that a residency provision would limit the ability for newly-added states to select their own representation. Given the balance of sentiment on this issue, the opponents of the district residency requirements prevailed and no such requirement was written into the Constitution.21 And although every single state maintains a district residency requirement to be elected to the state legislature,22 no such obligation has been required in order to serve in the U.S. Congress.23

20 U.S. Const. Art. 1 §2
21 For the first sixty or so years of the U.S., the use of districts themselves for Congressional representation was not widespread due to the prevalence of multi-member and at-large state delegations.
22 Beyond this requirement, many states also require a length of residency in a district for a period of time of up to two years to be eligible to run for the state legislature.
23 This dates from 1807 when the residency of Rep. William McCreery was challenged as a violation of a Maryland law mandating district residency for Members of Congress. McCreery was challenged by Joshua Barney, one of his opponents in the 1806 election, who took the matter to the House Committee on Elections. Writing on the matter, the Committee ruled that states did not have the right to “change, add to, or diminish those qualifications” enumerated in the Constitution (Annals
With no legal requirement for MCs to establish or maintain residency within the district they represent, it may be surprising that so many MCs actually do live within their districts. From a practical standpoint, maintaining a legal residence within one’s district while living and working in Washington – potentially thousands of miles away – can be quite a burden, financially and timewise (MCs do admittedly have to live in the state they represent, but living in the district is even more limiting). Political scientists have long pointed to frequent district trips as an essential element of home style, yet can the same effect be achieved without maintaining an official residence? And if the MC does choose to keep a district residence, what would her action be if this residence is drawn out of the district she intend to represent after redistricting? Would an incumbent bother to assume the trouble and financial expense of legally relocating her residence into the new district or would she continue to maintain a home style and campaign in the new district without moving there?

2.4.2 The Case of Relocation

In every redistricting cycle, the process of drawing new boundary lines inevitably places some incumbents in less-than-ideal districts. As discussed previously, incumbents are free to pursue options other than seeking reelection at any time, but we know that the changes brought about by redistricting and the new electoral climate created are associated with higher rates of MCs choosing a paths other than reelection. But within the decision to seek reelection, the MC can go about pursuing reelection in ways other than running in whichever newly-redrawn district contains her residence. Specifically, she can choose to seek reelection right where she is, she can choose to seek reelection in a different district and relocate her residence to that

of Congress, 10th Cong., 1st sess, 871.). This matter was ultimately laid to rest with the Supreme Court’s 1995 ruling in U.S. Term Limits, Inc., v. Thornton, which prohibits states from placing further limitations on the requirements to hold Congressional office (514 U.S. 779).

24 In 2000 and 2010, just under 99% of incumbents maintained a legal residence in their district.
district, or she can choose to seek reelection in a different district without relocating her residence. The total breakdown of career decisions incumbent MCs going into the 2002 and 2012 rounds of redistricting is shown in Table 2.1:

Table 2.1: Incumbent Decisions Over Full Set of Possibilities

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2012</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reelection</td>
<td>88.3% (376)</td>
<td>82.7% (354)</td>
<td>85.5% (730)</td>
</tr>
<tr>
<td>Relocation and Reelection</td>
<td>3.5% (15)</td>
<td>6.1% (26)</td>
<td>4.8% (41)</td>
</tr>
<tr>
<td>Run Outside District</td>
<td>0.2% (1)</td>
<td>1.9% (8)</td>
<td>1.1% (9)</td>
</tr>
<tr>
<td>Run for Higher Office</td>
<td>3.5% (15)</td>
<td>3.3% (14)</td>
<td>3.4% (29)</td>
</tr>
<tr>
<td>Retirement</td>
<td>4.5% (19)</td>
<td>6.1% (26)</td>
<td>5.3% (45)</td>
</tr>
</tbody>
</table>

Note: States apportioned one Congressional district are omitted.

\(^a\) Maine failed to enact new district boundaries in time for the 2002 elections.

For the 2002 and 2012 post-redistricting elections, a total of 50 incumbent MCs who chose to seek reelection had their residences drawn in a different newly-redrawn district than the one in which they sought reelection. As shown in Table 2.1, 41 of these 50 incumbents (or 82%) legally relocated their residences to their reelection district. The remaining 18% of these MCs chose to seek reelection without reestablishing a legal residence within their reelection district.

In order to test what influences the decision of an incumbent to relocate her residence during a post-redistricting reelection contest, this study will run a logistic regression over the subset of 50 MCs whose residences were drawn into a different district than the one in which they sought reelection. In order to clearly classify the multiple district options for each MC, this analysis will be conducted by differentiating between two districts: the one into which the MC was drawn and the one in which the MC sought reelection.\(^{25}\) Each of the key independent variables will be defined for for both the incumbent’s current district and her prospective district.

\(^{25}\) As this portion of the study is only interested in the decision of incumbents over the set of newly-redrawn districts, there is no need to take account of the old districts for each MC.
Before proceeding with this analysis, it is important to address one final consideration regarding the nature of MCs changing residences. It is likely that an incumbent may move from a district because she has been drawn into the same district as another incumbent – just as it is possible that the presence (or lack thereof) of an incumbent in another district could be a factor affecting the probability of winning and/or the costs for seeking office. In coding for the geographic location for the residences of each MC, this study found a number of districts into which two (or more) incumbents were drawn. Thus, this study take into consideration this new predictor (as a binary variable) alongside the other variables which are impactful on the decision-making of MCs in post-redistricting elections. The results of the model are shown in Table 2.2 on the next page.

With a dependent variable operationalized as the decision of an MC to either legally relocate her residence or seek reelection in a new district without doing so, the results reported in Table 2.2 yield JPO significant for the district in which the MC chooses to seek reelection. As the JPO of the district in which she chooses to seek reelection increases, an incumbent is more likely to decide to relocate her residence as part of her reelection strategy, affirming H1c. This is intuitive given the role of home style in guiding the reelection efforts. By relocating into a district which has a greater proportion of her former constituency, the MC stands to gain a stronger personal vote with a higher number of constituents. This effect is found in the results presented in Table 2.2.

Conversely, the results of this model also shows a negative impact for partisan advantage – that as the partisan advantage of the district in which an incumbent seeks reelection is greater, she is less likely to move to that district. Although this may be counterintuitive on its face, the explanation is that with a more secure path to reelection, the incumbent is less in need of the added advantages brought about by moving. The other significant variable in this model is Age in Model 2, which also
Table 2.2: Likelihood of Relocating for MCs Seeking Reelection who have been drawn out of their Districts

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef. (S.E.)</td>
<td>Odds Ratio</td>
<td>Coef. (S.E.)</td>
<td>Odds Ratio</td>
</tr>
<tr>
<td><strong>District Drawn Into:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JointPop Overlay</td>
<td>0.08 (0.06)</td>
<td>1.08</td>
<td>0.06 (0.06)</td>
<td>1.06</td>
</tr>
<tr>
<td>Partisan Adv</td>
<td>0.04 (0.08)</td>
<td>1.04</td>
<td>0.07 (0.08)</td>
<td>1.07</td>
</tr>
<tr>
<td>JPO:PartAdv</td>
<td>0.11 (0.09)</td>
<td>1.12</td>
<td>0.14 (0.08)</td>
<td>1.15</td>
</tr>
<tr>
<td>Other Incumbent</td>
<td>-0.08 (0.05)</td>
<td>0.92</td>
<td>-0.10 (0.05)</td>
<td>0.91</td>
</tr>
<tr>
<td><strong>District Running In:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JointPop Overlay</td>
<td>0.17*** (0.06)</td>
<td>1.19</td>
<td>0.14* (0.06)</td>
<td>1.15</td>
</tr>
<tr>
<td>Partisan Adv</td>
<td>-0.20** (0.07)</td>
<td>0.81</td>
<td>-0.20** (0.06)</td>
<td>0.82</td>
</tr>
<tr>
<td>JPO:PartAdv</td>
<td>-0.05 (0.06)</td>
<td>0.95</td>
<td>-0.03 (0.05)</td>
<td>0.97</td>
</tr>
<tr>
<td>Other Incumbent</td>
<td>-0.06 (0.05)</td>
<td>0.94</td>
<td>-0.04 (0.05)</td>
<td>0.96</td>
</tr>
<tr>
<td>Position</td>
<td>0.02 (0.05)</td>
<td>1.02</td>
<td>0.04 (0.04)</td>
<td>1.04</td>
</tr>
<tr>
<td>Term</td>
<td>-0.07 (0.05)</td>
<td>0.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td>-0.13* (0.05)</td>
<td>0.88</td>
</tr>
<tr>
<td>Constant</td>
<td>0.84*** (0.05)</td>
<td>2.32</td>
<td>0.84*** (0.04)</td>
<td>2.27</td>
</tr>
<tr>
<td>-2xLLF</td>
<td>-5.18 (n = 50)</td>
<td></td>
<td>-1.97</td>
<td></td>
</tr>
</tbody>
</table>

Cases correctly classified in both models: 81%

Note: all coefficients have been standardized to assess their effect on dependency.
*p < .05; **p < .01; ***p < .001

shows a negative impact on the likelihood of an incumbent will move. With this, older MCs are either less willing to make the move as part of the reelection strategy or more insulated from electoral vulnerabilities if they decide to stay put.
2.5 Which Seat Can I Take?

In non-redistricting elections, the decision of an incumbent about where to seek reelection should be a foregone conclusion. All of her former constituents remain within the same district, her district has neither increased nor decreased in geographic area, and she does not need to worry of being placed into the same district as another incumbent. But when redistricting occurs, none of this can be guaranteed. The fact of the matter is that post-redistricting elections do not just present incumbents with decisions to be made about whether to seek reelection (versus the other available options), but also the decisions about where to seek reelection. This portion of the study will examine the entire set of redrawn districts within each state for each of the incumbents who chose to seek reelection, examining which factors influence the district selection decision-making process.

Any incumbent MC is permitted to seek reelection to the U.S. House in any of the 435 districts, so long as she declares a district well in advance of the November general election. By the time candidates are required to select a district, the process of redistricting is either completed or, if incomplete, the approval of redrawn lines is only delayed due to court challenges and/or further federal review (Levitt 2008). This post hoc decision-making means that incumbent candidates are selecting a district with an awareness of the geographic and constituency changes which have been brought about by redistricting.

One final point to discuss before conducting the analysis is the set of districts in which incumbents are likely to seek reelection. Although MCs are free to seek reelection in any district in any state, it is rare for an incumbent to pursue seeking reelection in another state and even rarer for an incumbent to be successful in such

an endeavor.\textsuperscript{27} Furthermore, no incumbent pursued reelection in a different state during the selected time period in this study.\textsuperscript{28} Thus, the effective reality is that each MC has a choice to make among, at most, 53 alternatives (in the largest state).

Given that I am interested in what influences an MC to select one alternative from a discrete set of available options, the use of a conditional logit model is the most appropriate approach. For the 780 incumbents seeking reelection in 2002 and 2012, the dataset has been transformed into long form, expanding the decision of each incumbent to be equal to the number of districts within their state. With every entry of the incumbent on the long form data, each has a unique value for the Joint Population Overlay the Partisan Advantage variables in every possible district, satisfying the criteria for running a conditional logit model. The other predictor variables shown to be significant in the previous section (State Gain/Loss, Party Favorability of Redistricting, Term, and Position) do not vary over the individual observations; thus, each must be interacted with the two IVs that vary. The results of the conditional logit model are reported in Table 2.3 on the next page.

In Model 1 on Table 2.3, the conditional logit is run over the set of every possible district available to each of the 780 incumbents seeking reelection. With 780 incumbents in the 43 states apportioned two or more districts (sans Maine in 2002), the permutations come to make an $n$ of over 16,000. The results of Model 1 show strong significance for the role of JPO on the selection of a district, as well as for the interaction of JPO with the Partisan Advantage variable. Substantively, this provides support for H1b as it relates to the importance of an MC’s former constituency guiding her reelection decisions. Further, Model 1 provides evidence

\textsuperscript{27} Of the 10,882 elected members of the House in U.S. history (as of August 2015), only twelve have been elected from more than one state. The most recent was Rep. Edgar Foreman (R-TX 1963-1965; R-NM 1969-1971). Source: Biographical Directory of the U.S. Congress.

\textsuperscript{28} Rep. Dennis Kucinich (D-OH) publicly considered seeking reelection in 2012 in Washington’s newly-created 10th District – a decision he ultimately rejected.
Table 2.3: Conditional Logit Analysis of District Selection by Incumbents Seeking Reelection

<table>
<thead>
<tr>
<th></th>
<th>Model 1 (All Districts)</th>
<th>Model 2 (Overlay Districts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint Population Overlay</td>
<td>11.26 (1.42)***</td>
<td>8.22 (1.48)***</td>
</tr>
<tr>
<td>Partisan Advantage</td>
<td>3.94 (3.19)</td>
<td>3.58 (3.60)</td>
</tr>
<tr>
<td>JPO:State Gain/Loss</td>
<td>-19.07 (6.12)**</td>
<td>-14.99 (5.94)*</td>
</tr>
<tr>
<td>: RedistPartyFav</td>
<td>0.40 (0.79)</td>
<td>0.26 (0.82)</td>
</tr>
<tr>
<td>: Term</td>
<td>0.19 (0.16)</td>
<td>-0.17 (0.17)</td>
</tr>
<tr>
<td>: Position</td>
<td>-0.01 (0.04)</td>
<td>-0.01 (0.05)</td>
</tr>
<tr>
<td>PartisanAdv:State Gain/Loss</td>
<td>48.29 (14.48)***</td>
<td>50.31 (15.82)**</td>
</tr>
<tr>
<td>: RedistPartyFav</td>
<td>-1.81 (1.59)</td>
<td>-1.17 (1.75)</td>
</tr>
<tr>
<td>: Term</td>
<td>-0.32 (0.27)</td>
<td>-0.29 (0.24)</td>
</tr>
<tr>
<td>: Position</td>
<td>-0.06 (0.09)</td>
<td>-0.03 (0.12)</td>
</tr>
</tbody>
</table>

| Wald $X^2$  | 394.9 | 200.5 |
| P > $X^2$   | .000  | .000  |
| n           | 16,592 | 2,849 |
| Observations| 780   | 780   |

Note: Standard errors in parentheses.
*p < .05; **p < .01; ***p < .001

that the State Gain/Loss variable impacts the selection of a district when interacted with both of the IVs which vary over the set of all incumbents.

To take a step back, there is a reason to question the assumption that every MC would be open to seeking reelection in any district in her state. If we imagine a Congresswoman from Tallahassee looking to select a reelection district, we might be surprised if she chose a Miami-based district, even if this district is favorable to her in terms of many factors (partisan advantage, the absence of a strong challenger, a more favorable media market, etc.). It would be my expectation that this Congresswoman would instead select from among the panhandle-based districts: the region of the state where she has a constituent base. Accordingly, Model 2 examines only those districts which have overlapping JPO with the incumbent’s old district.\(^{29}\) This

\(^{29}\) Again refer to Appendix C for a discussion of this procedure.
truncation of the dataset reduces the n by over 80% and returns the same significance for each of the coefficients. What we can gleam from this is the unquestioned role of JPO and the changes brought about by redistricting in the district selection process.

In both iterations of the conditional logit, the interacted term of JPO and the partisan advantage of a newly-redrawn district are highly significant predictors of MC behavior. This indicates that an MC will be more likely to select a district with a high value of JPO if the district is also favorable in partisan advantage to her. At the same time, the results in Table 2.3 also show that the JPO is, by itself, a highly significant predictor of district selection. In order to visualize the different impact of these predictors, Figure 2.3 on the next page separates the predicted probabilities that MCs will select a given district based on the JPO versus the Partisan Advantage variables, holding all others fixed at their means.

What the plots in Figure 2.3 show is the differences in impact that the JPO and the partisan advantage of the newly-redrawn district has on the selections made by MCs. In the top figure, the range of JPO is the y-axis variable and the responses are grouped by quartiles according to the value of the district’s partisan advantage. What this shows is that the predicted probability of an MC selecting a district along the range of JPO is virtually indistinguishable with regard to the partisan advantage quartiles (with the exception of the lowest quartile). Compare this with the bottom plot, where the partisan advantage of a district is the y-axis variable and the responses are grouped in quartiles by JPO. In this, the separation between the categories of JPO is undeniable, whereas the distinction between low and high values of partisan advantage is non-divergent. These two plots visualize that an increase in the value of JPO in a district has a very significant impact on the decision of an MC to select this district for her reelection bid, whereas the same impact can only be seen at the margins concerning the ranges of partisan advantage among the districts and its impact on the likelihood an incumbent selects that district.
Together, the findings of this study thus far have demonstrated the importance of constituency and the impact of the geographic changes brought about by redistricting.
on the decision-making of incumbent MCs. These findings have strong implications for the role of home style in cultivating a personal vote constituency, the substance of which will be explored in the next section.

2.6 Should I Stay or Should I Go?

If incumbent MCs are continual seekers of reelection, it is important to know the extent to which the realities of redistricting impact this dynamic. Specifically, it is necessary to first explore what effects (if any) redistricting and district boundary changes have on the decision-making of incumbents about whether to seek reelection versus other options. In this section, the impact of redistricting on the decision-making calculus of incumbent MCs will be explored.

2.6.1 The Status of Reelection

To investigate the decision-making strategies of MCs following redistricting, it is important to first examine the overall picture of retirements from the House of Representatives, particularly as the decision to retire is one response expected from MCs in these situations. Taken together, the findings of the research discussed in the previous section show that MCs choose retirement for many reasons that are irrelevant to redistricting (e.g. age, availability of open seats for higher office, etc.). But research has also shown that the personal vote constituency can be a critical component of the reelection strategies for all incumbents. As the decision to retire is impacted by chances to an MC’s pathway to reelection, patterns of retirements following redistricting should have key differences from the pattern of retirements in non-redistricting years. Specifically, if the impact of redistricting and the loss of the personal vote constituency negatively impacts the reelection prospects of incumbents, we might expect to see higher levels of retirements in these years when compared to all other years. Table 2.4 on the next page reports these data.
Table 2.4: Rates of Choosing to Seek Reelection / Rates of Incumbent Reelection

<table>
<thead>
<tr>
<th></th>
<th>Sought Reelection</th>
<th>Did Not Seek Reelection</th>
<th>Rates of Reelection$^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>92.0% (392)</td>
<td>8.0% (34)</td>
<td>96%</td>
</tr>
<tr>
<td>2012</td>
<td>90.7% (388)</td>
<td>9.4% (40)</td>
<td>90%</td>
</tr>
</tbody>
</table>

Averages, 1966–2014

Redistricting Years$^a$ 91.2% 8.8%$^c$ 92.5%$^d$
Non-Redistricting Years 92.2% 7.8%$^c$ 93.3%$^d$

Note: States apportioned one Congressional district are omitted. If a state did not redraw its district boundaries on the decennial cycle (such as Maine in 2002) or if a state used a General Ticket for multi-member election (such as New Mexico in 1966 and Hawaii in 1966 and 1968), it has been excluded from the “Redistricting Years” row. If a state redrew its district boundaries off the decennial cycle (such as Texas in 2003), it has been excluded from the “Non-Redistricting Years” row.

$^a$ 1992 Removed due to the impact of the exogenous House Banking Scandal on retirement rates (Banducci and Karp 1994).
$^b$ Source: Opensecrets.org.
$^c$ Difference of Means t-test: $p$-value 0.027 (including 1992: $p$-value = 0.068)
$^d$ Difference of Means t-test: $p$-value 0.691 (including 1992: $p$-value = 0.848)

In Table 2.4, the overall picture of retirements from the House of Representatives in 2002 and 2012, as well as between 1966–2014, are shown.$^{30}$ From the table, it is clear that the rates of retirements are higher and rates of re-elections are lower in redistricting years compared to non-redistricting years. When I run a student’s t-test, the difference between rates of retirements for re-election versus non-re-election years shows significance at the 0.05 level, whereas the difference between the rates of re-election does not.

What these results suggest is that the long-term pattern of retirements for incumbent MCs vary depending on whether a state has undergone redistricting. Although small, this finding provides a compelling basis from which to examine

$^{30}$ This table presents the data starting at 1966 due to the so-called “Reapportionment Revolution” which was kicked off by the Supreme Court’s 1964 ruling in *Wesberry v. Sanders* (376 U.S. 1). Following the strict enforcement of the “one-person, one-vote” principle, a wave of state redistrictings dramatically changed the landscape of population equality in districts nationwide.
whether and how redistricting can impact the strategic decision-making process of MCs over the collapsed options of running for reelection, running for higher office, or retiring.

2.6.2 Reelection, Retirement, or Higher Office

With the exploratory findings regarding retirement rates in post-redistricting elections, it is important to step back and investigate the most fundamental decision every incumbent must make each electoral cycle: what will I do this time? At the most basic level, the options available to an incumbent every two years are to seek reelection to the House, to seek an alternate office, or to retire from elected office all together. These decisions and the likelihoods of an incumbent selecting each are contingent upon a myriad of factors, many of those which are a result of the changes brought about by redistricting. This section explores these and tests their impact on the trichotomous dependent variable of MC decisions in post-redistricting elections, the distribution of which for the 2002 and 2012 elections is shown in Table 2.5:

Table 2.5: Incumbent Decisions Of Reelection, Retirement, or Higher Office

<table>
<thead>
<tr>
<th></th>
<th>2002a</th>
<th>2012</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reelection</td>
<td>92.0% (392)</td>
<td>90.7% (388)</td>
<td>91.3% (780)</td>
</tr>
<tr>
<td>Retirement</td>
<td>4.5% (19)</td>
<td>6.1% (26)</td>
<td>5.3% (45)</td>
</tr>
<tr>
<td>Progressive Ambition</td>
<td>3.5% (15)</td>
<td>3.3% (14)</td>
<td>3.4% (29)</td>
</tr>
</tbody>
</table>

Note: States apportioned one Congressional district are omitted.

\(^a\) Maine failed to enact new district boundaries in time for the 2002 elections.

Before beginning with the analysis, it is important to discuss the timing of the MC decision-making process within the redistricting calendar. Given the realities of the permanent campaign, incumbents are, in theory, always seeking reelection to their present office (Blumenthal 1980). When an incumbent decides to seek an alternate
office or to retire, the timing of these decisions is impossible to know.\textsuperscript{31} The difficulty in determining when an incumbent has reached a decision is compounded by the complicated and ongoing nature of the redistricting processes in nearly every state. Although the formal process of redistricting most often operates on a fixed calendar, there is plenty of jockeying and forward-thinking on the part of both the redistrictors and the incumbents. This, combined with the strategic nature of the incumbents, provides a strong basis to consider the changes brought about by redistricting as ex ante to the decision-making process of MCs.

To address the question of what impacts the decision-making process of MCs to seek reelection, retire, or run for higher office, this study will analyze the impact of the theorized explanatory variables using a multinomial logistic (logit) regression model. Given that the structure of the dependent variable is categorical and ordered, with the independent (predictor) variables invariant over the dependent variable alternatives, the multinomial logit is the appropriate model. But before running this model, the presence of multicollinearity among the predictor variables is tested in order to prevent specification errors. With the variance inflation factor (VIF) calculated for a matrix of all predictor variables, what emerges is very low levels of linear dependence\textsuperscript{32} among nearly all variables except for between Age and Term, between Age and Pension, and between Term and Pension.\textsuperscript{33} If all three variables

\textsuperscript{31} Largely a result of the non-public nature of the decision-making process, the constant speculation over MC behavior, MCs violating self-imposed term limits, changes in party recruitment of candidates, and MCs maintaining a public plan to seek reelection even if there is no such intention (with media appearances, issuing public statements, keeping campaign committees open, filing FEC Form 2 – Statement of Candidacy for the upcoming election, etc.).

\textsuperscript{32} I use a cutoff of VIF $\geq 2.5$ (which corresponds to an $R^2$ value of 0.6), based on the cutoff classifications used by Paul Allison at Statistical Horizons.

\textsuperscript{33} There is also a high level of linear dependence between the factor levels of the Party Control of Redistricting variable, PartyFav, but this is of no concern as the proportion of cases in the reference category (PartyFav1 – unfavorable party redistricting) is the smallest of the three factors. PartyFav2 represents neutral redistricting and PartyFav3 is for when the party controlling the process of redistricting is favorable to the incumbent.
were included in the same model, the ability to understand how these factors impact the decision of incumbents to seek reelection would be compromised. It is also important to note that Age and Term are not different operationalizations of the same concept: one cannot replace the other as if they are equivalent. Rather, it is important to—as Theriault (1998) does—examine the impact of both Age and Term on the decision-making of incumbent MCs at this stage of the analysis. This will be accomplished with three iterations of the multinomial logit, summarized below:

Reported with 95% confidence, the multinomial logit results in Table 2.6 yield several of my key predictor variables significant. With “Reelection” as the reference category, an increase in the level of Fractionalization is associated with an increase in the log odds of retiring in every iteration of the model in amounts between 0.36 and 0.41. Substantively, this provides evidence that a greater degree of constituency preservation in redistricting has a positive impact on the likelihood an MC seeks reelection, failing to reject Hypothesis H1a. The other systematic finding in each of the iterations of the model shows that the three correlated predictor variables relating to seniority (Term, Age, and Pension) are highly significant predictors of the decision to retire over seeking reelection. Specifically, that as any of these three predictor variables increase, there is an associated increase in the log odds of retiring over seeking reelection. These findings fail to reject H4a.

Regarding the decision between seeking reelection or running for a higher office, the findings in Table 2.6 also address many of the hypotheses. First, an available open seat is a highly significant predictor, increasing the log odds an MC will run for a higher office over seeking reelection (H3). Second, as an MC gains power and influence within the chamber (“Position”), there is an associated decrease in the log odds of seeking higher office versus seeking reelection. In this instance, an incumbent who holds higher power in the House is more likely to run for reelection,
Table 2.6: Determinants of the Likelihood that Incumbent MCs will Seek Reelection

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
<th>Model 3</th>
<th></th>
</tr>
</thead>
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<tr>
<td></td>
<td>Retire</td>
<td>Higher Office</td>
<td>Retire</td>
<td>Higher Office</td>
<td>Retire</td>
<td>Higher Office</td>
</tr>
<tr>
<td>Fractionalization</td>
<td>0.39*</td>
<td>0.16</td>
<td>0.36*</td>
<td>0.18</td>
<td>0.41*</td>
<td>0.18</td>
</tr>
<tr>
<td></td>
<td>(0.18)</td>
<td>(0.21)</td>
<td>(0.18)</td>
<td>(0.21)</td>
<td>(0.18)</td>
<td>(0.21)</td>
</tr>
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<td>Old PartAdv</td>
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<td>-0.09</td>
<td>-0.33</td>
<td>-0.05</td>
<td>-0.30</td>
<td>-0.06</td>
</tr>
<tr>
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<td>(0.17)</td>
<td>(0.21)</td>
<td>(0.17)</td>
<td>(0.21)</td>
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<tr>
<td>PartAdv:Fract</td>
<td>0.17</td>
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<td>0.27</td>
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<td>0.27</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.18)</td>
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<td>(0.18)</td>
<td>(0.22)</td>
<td>(0.18)</td>
<td>(0.22)</td>
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<tr>
<td>State Gain/Loss</td>
<td>-0.28</td>
<td>0.11</td>
<td>-0.43</td>
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<td>-0.43</td>
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</tr>
<tr>
<td></td>
<td>(0.33)</td>
<td>(0.33)</td>
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<td>(0.33)</td>
<td>(0.34)</td>
<td>(0.32)</td>
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<tr>
<td>PartyFav2</td>
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<td>-0.22</td>
<td>-0.24</td>
<td>-0.24</td>
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<tr>
<td></td>
<td>(0.41)</td>
<td>(0.47)</td>
<td>(0.41)</td>
<td>(0.46)</td>
<td>(0.41)</td>
<td>(0.46)</td>
</tr>
<tr>
<td>PartyFav3</td>
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<td>-1.21*</td>
<td>-0.27</td>
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<td></td>
<td>(0.45)</td>
<td>(0.58)</td>
<td>(0.44)</td>
<td>(0.58)</td>
<td>(0.45)</td>
<td>(0.58)</td>
</tr>
<tr>
<td>SG/L:PartyFav2</td>
<td>0.38</td>
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<td>-0.15</td>
<td>0.63</td>
<td>-0.11</td>
</tr>
<tr>
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<td>(0.39)</td>
<td>(0.44)</td>
<td>(0.41)</td>
<td>(0.43)</td>
</tr>
<tr>
<td>SG/L:PartyFav3</td>
<td>-0.13</td>
<td>-0.24</td>
<td>-0.01</td>
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<td>(0.55)</td>
<td>(0.46)</td>
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<td>Majority Party</td>
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<td>0.19</td>
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<tr>
<td>Open Seat</td>
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<td>0.02</td>
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<td>0.59**</td>
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<td>(0.17)</td>
<td>(0.20)</td>
</tr>
<tr>
<td>Position</td>
<td>0.18</td>
<td>-0.60*</td>
<td>0.25</td>
<td>-0.54*</td>
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</tr>
<tr>
<td></td>
<td>(0.22)</td>
<td>(0.29)</td>
<td>(0.17)</td>
<td>(0.27)</td>
<td>(0.18)</td>
<td>(0.28)</td>
</tr>
<tr>
<td>Term</td>
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<td>(0.27)</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Position:Term *(Career Ceiling)</td>
<td>-0.06</td>
<td>-0.26</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(0.33)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Age</td>
<td></td>
<td>0.77***</td>
<td>-0.21</td>
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<td>0.85***</td>
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<td></td>
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<td>(0.21)</td>
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<td>(0.17)</td>
<td>(0.24)</td>
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<tr>
<td>Pension</td>
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<td></td>
<td>0.85***</td>
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</tr>
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<td>(0.24)</td>
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<tr>
<td>Constant</td>
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<td>n</td>
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<td>-2xLLF:</td>
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<td>-267.19</td>
<td>-264.62</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: all coefficients (except for “PartyFav”) have been standardized to assess their effect on dependency.

*p < .05; **p < 0.01; ***p < .001

34 It is important to note the interaction of the PartyFav and the the State Gain/Loss (SG/L) variables in the model. As Lyons and Galderisi (1995) find, the impact of reapportionment on individual MCs is meaningless without factoring in which party controls the process of redistricting.
finding provides support for H2bi/H2bii, showing that incumbents are more likely to seek reelection when the process of redistricting in their state is controlled by their own party.

In order to visualize the magnitude of these predictors on the selection of career alternatives, the marginal effects of each significant variable is shown in Figure 2.4. Given that none of the predictors change in sign or significance between the separate iterations of the model, the plot shows the averaged marginal effect and standard errors for each of the significant predictors. The only significant predictors which are not averaged are the three correlated variables: Age, Pension, and Term.

![Figure 2.4: Marginal Effects of Variables on the Decision of Incumbents to Seek Reelection, Retire, or Run for Higher Office](image)

In the figure above, the gray lines show the marginal effect of the predictor variables on the log odds-ratio of choosing to seek higher office to the baseline alternative (seeking reelection), while the black lines show the marginal effect of the predictor
variables on the log odds-ratio of choosing to retire versus seeking reelection. To interpret, Figure 2.4 shows that an increase in the age of an incumbent leads to an increased likelihood that she will choose to retire versus seeking reelection, whereas the change in an incumbent’s age has no similar impact on her decision regarding seeking higher office. By contrast, this figure also shows having the incumbent’s party control the redistricting process has no impact on her decision to retire, but that this does decrease the likelihood she will seek higher office versus seeking reelection.

What the results of the models reported in Table 2.6 and shown in Figure 2.4 demonstrate are that there are variables which are systematically predictive of the post-redistricting decision-making process of MCs. These results have confirmed many previous findings in the literature, particularly those concerning the impact of open seats on progressive ambition and the impact of seniority on retirement. But more importantly, these results have also confirmed my hypotheses regarding the effect that the geographic and constituency changes brought about by redistricting impact the strategic decision-making calculus of MCs. With this established, the next section will take a prospective approach to investigate how exactly these factors are influencing the decision-making process of incumbents.

2.6.3 The Full Range of Options

As a final analysis, it is important to analyze the entire model of alternatives an MC faces with each of the predictors shown to be significant in this study thus far. The final part of this final section will examine how these same variables work together to influence the total decision-making process of MCs over the full set of available career opportunities.

To begin, this study has shown the undeniable influence of two variables above all others – JPO and the Partisan Advantage of a new district – on the decision-

---

35 The distribution of the age variable shows a clear linear trend over the decision set of MCs.
making calculus of MCs. In Figure 2.5 on the next page, the relationship between these two variables is shown for all 854 incumbents included in my study. This descriptive illustration of five separate scatterplots provides a visual sense of the range of these variables and the associated decisions made by the MCs. What this figure shows is that MCs who have been drawn into districts with relatively low levels of JPO are seemingly more likely to decide to relocate, whereas those who have been drawn into districts with higher levels of JPO appear to more often choose to seek reelection where there are. In both of these plots, the partisan advantage of the district into which they are drawn appears negligible. Further, Figure 2.5 shows the seemingly uncorrelated associations between these two variables for each of the three remaining decisions: retirement, running in district without holding/establishing residency (“Outside District”), and seeking higher office.

With the overall trends shown in Figure 2.5, it is important to explore the impact of these variables, among all others, on the decision-making of MCs. Fundamentally, this task requires an analysis of what factors impact the decision of MCs to select one from among the full range of available career options. As my dependent variable is unordered over the five categories, the model will be a multinomial logit. The decision to seek reelection in the district in which the incumbent’s residence is drawn will once again be the reference category.

Before conducting this analysis, it is important to discuss the selection of variables which I theorize are predictive of the decision-making process over the full range of options. In building on the theories developed and tested in the chapter thus far, this final analysis will examine many of the same variables in a multinomial logit model. The one exception are the variables which relate to the incumbent’s old district and her old constituency. For one, the effect of these variables on the decision-making calculus have already been tested in the analysis shown in Table 2.6. Many of these variables do not apply to the decision-making process over the
full set of options (we would not expect the partisanship of an incumbent’s old
district to impact her decision about relocating or running for reelection without
changing her residency, for example). And finally, the addition of some of these
variables into a single model, most notably the Fractionalization Index, introduces
high levels of multicollinearity with the other variables necessary to this portion of
the analysis. Thus, Table 2.7 on the next page reports the multinomial logit results
for the theorized predictor variables over my five category dependent variable.

The results from the multinomial logit over the full range of options show
that many of the variables which are influential of the decision-making process of
MCs over the constrained choice sets (the decision to seek reelection, the decision

\[ \text{Figure 2.5: Decisions Reached by Incumbent MCs Following Redistricting, Mapped by Partisan Advantage and Joint Population Overlay} \]
Table 2.7: Determinants of the Likelihood that Incumbent MCs will Seek Reelection

<table>
<thead>
<tr>
<th></th>
<th>Retire</th>
<th>Higher Office</th>
<th>Relocate</th>
<th>Outside District</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPO</td>
<td>-0.55**</td>
<td>-0.22</td>
<td>-1.80***</td>
<td>-0.30</td>
</tr>
<tr>
<td></td>
<td>(0.20)</td>
<td>(0.24)</td>
<td>(0.33)</td>
<td>(0.57)</td>
</tr>
<tr>
<td>New PartAdv</td>
<td>-0.63**</td>
<td>-0.28</td>
<td>-1.64***</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>(0.20)</td>
<td>(0.22)</td>
<td>(0.44)</td>
<td>(0.61)</td>
</tr>
<tr>
<td>PartAdv:JPO</td>
<td>0.01</td>
<td>0.39*</td>
<td>-0.35</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>(0.16)</td>
<td>(0.17)</td>
<td>(0.22)</td>
<td>(0.38)</td>
</tr>
<tr>
<td>State Gain/Loss</td>
<td>-0.11</td>
<td>0.30</td>
<td>0.69*</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>(0.35)</td>
<td>(0.34)</td>
<td>(0.33)</td>
<td>(0.63)</td>
</tr>
<tr>
<td>PartyFav2</td>
<td>-0.31</td>
<td>-0.05</td>
<td>0.45</td>
<td>-1.38</td>
</tr>
<tr>
<td></td>
<td>(0.43)</td>
<td>(0.47)</td>
<td>(0.52)</td>
<td>(0.85)</td>
</tr>
<tr>
<td>PartyFav3</td>
<td>-0.08</td>
<td>-0.93</td>
<td>0.34</td>
<td>-8.69</td>
</tr>
<tr>
<td></td>
<td>(0.46)</td>
<td>(0.58)</td>
<td>(0.66)</td>
<td>(31.99)</td>
</tr>
<tr>
<td>SG/L:PartyFav2</td>
<td>0.28</td>
<td>-0.34</td>
<td>-0.77</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>(0.43)</td>
<td>(0.44)</td>
<td>(0.41)</td>
<td>(0.76)</td>
</tr>
<tr>
<td>SG/L:PartyFav3</td>
<td>-0.09</td>
<td>0.16</td>
<td>0.47</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>(0.47)</td>
<td>(0.53)</td>
<td>(0.50)</td>
<td>(0.38)</td>
</tr>
<tr>
<td>Majority Party</td>
<td>0.09</td>
<td>0.07</td>
<td>0.04</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.18)</td>
<td>(0.21)</td>
<td>(0.24)</td>
<td>(0.58)</td>
</tr>
<tr>
<td>Open Seat</td>
<td>0.05</td>
<td>0.71***</td>
<td>0.06</td>
<td>-7.20</td>
</tr>
<tr>
<td></td>
<td>(0.18)</td>
<td>(0.21)</td>
<td>(0.26)</td>
<td>(24.99)</td>
</tr>
<tr>
<td>Position</td>
<td>0.59**</td>
<td>-0.23</td>
<td>0.19</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>(0.22)</td>
<td>(0.35)</td>
<td>(0.40)</td>
<td>(0.50)</td>
</tr>
<tr>
<td>Term</td>
<td>0.70*</td>
<td>0.19</td>
<td>-0.64</td>
<td>1.31</td>
</tr>
<tr>
<td></td>
<td>(0.34)</td>
<td>(0.33)</td>
<td>(0.44)</td>
<td>(0.98)</td>
</tr>
<tr>
<td>Position:Term (Career Ceiling)</td>
<td>-0.35</td>
<td>-0.40</td>
<td>0.07</td>
<td>-1.01</td>
</tr>
<tr>
<td></td>
<td>(0.25)</td>
<td>(0.36)</td>
<td>(0.40)</td>
<td>(0.74)</td>
</tr>
<tr>
<td>Other Incumbent</td>
<td>0.35*</td>
<td>0.39</td>
<td>0.77**</td>
<td>4.49</td>
</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(0.21)</td>
<td>(0.20)</td>
<td>(23.82)</td>
</tr>
<tr>
<td>Constant</td>
<td>-3.33***</td>
<td>-3.36***</td>
<td>-5.91***</td>
<td>-7.10***</td>
</tr>
<tr>
<td></td>
<td>(0.38)</td>
<td>(0.41)</td>
<td>(0.80)</td>
<td>(0.35)</td>
</tr>
</tbody>
</table>

\[ n = 854 \]

\[ -2xLLF: -340.96 \]

Note: all coefficients (except for “PartyFav”) have been standardized to assess their effect on dependency.

\( ^a \) “Reelection” is the base/reference level.

\*p < .05; \**p < 0.01; \***p < .001

about district selection, the choice of seeking higher office, etc.) are influential on the
decision-making process over every available option. Most notable are the influence of
two variables in particular – JPO and the partisan advantage of a new district – on the
choices made. As the JPO of the district in which the incumbent is drawn increases, there is a decrease in the log odds of an incumbent choosing to retire or relocate versus seeking reelection (H1b). And as the partisan advantage an incumbent faces in her new district increases, the log odds of her choosing to retire or relocate to a new district versus seeking reelection also decreases. When interacted, these two variables yield a positive effect on the log odds of an incumbent running for higher office over seeking reelection, most likely a result of the relatively amenable reelection prospects many MCs who choose to seek higher office face.

Further, there are many other findings from the results in Table 2.7 which reinforce existing findings of this study. I again find that as a state gains seats through reapportionment, incumbents are more likely to seek reelection (H2a), albeit by relocating to a new district. This is intuitive given the expanded set of districts made available to the incumbent through the reapportionment process, mirroring the impact shown by the conditional logit analysis presented in Table 2.4. I also find that the presence of an open seat for a higher office increases the likelihood that an incumbent would pursue progressive ambition over seeking reelection (H3). As the seniority of an incumbent increases, I again find that she should be more likely to retire from office (H4a). And finally, I again see that the presence of another incumbent in the same post-redistricting district increases the likelihood that an incumbent will choose paths other than seeking reelection in that district (reinforcing the findings from Table 2.2).

The one finding contrary to my expectations and to my previous findings regards the link between the position an incumbent holds within the chamber and her career decision. In this instance, my finding is that as an incumbent holds an increasingly more powerful position in the chamber, she is more likely to retire versus seeking reelection (H4b). This is in contrast to the finding I had of this variable in the analysis reported in Table 2.6, where an increase in the incumbent’s position was
associated with a decrease in her log odds of her choosing an alternative over seeking reelection (in this case, running for higher office). In this instance, it appears that the demonstrated effect is a result of separating out the different types of seeking reelection, in addition to examining the factors regarding the new versus the old district boundaries and constituencies.

Altogether, the findings of this full analysis show the impact of a wide range of variables on the career decisions selected by incumbents in post-redistricting elections. Given the importance of constituency and how the changes to constituency brought about by redistricting can impact the strategy of incumbents, the impact of JPO is worth exploring in greater detail. This is particularly true when incumbents are looking ahead to determine the post-redistricting distribution of their former constituents among a set of newly-redrawn districts. As such, the final piece of analysis in this chapter is a separated plot of the probabilities that MCs will select each career choice. This is shown in the plots in Figure 2.6 on the next page.

From these plots, the range in probabilities for selecting each alternative is distributed over the entire range of JPO. As these are fitted probabilities, the multinomial logit model is specified to predict the probability that an incumbent will select each of the five alternatives at given intervals of a predictor variable (in this case, JPO). The sum of the five probabilities adds to 1 over the entire range of JPO. What is immediately apparent from these plots is the differences in probability of seeking reelection in the same district versus seeing reelection and relocating. At very low level of JPO, it is highly unlikely that an incumbent would choose to seek reelection in the district in which she is drawn. Rather, it is much more likely that she will choose to seek reelection by relocating into a different district. The likelihood that she will retire from office by not seeking reelection is also apparent. Moving up the JPO interval, we can see a dramatic rise in the probability an MC will choose to seek reelection where drawn and a complete collapse in the likelihood of relocating to
Figure 2.6: Interactions between Partisan Advantage and Joint Population Overlay on the Fitted Probabilities of MC Decisions

a new district to seek reelection. We can also see the decline in the likelihood an MC would choose to retire. With this, the takeaway is clear: JPO has an undeniable and clear impact on the decisions reached by MCs over the range of alternatives. Even with the set of other factors taken into consideration, knowing the JPO of the district into which an MC is drawn is highly predictive of the career alternative choice she will ultimately make.

2.7 Discussion and Conclusion

In this study, I have set out to explore the factors which influence the decision-making process of incumbent MCs regarding their own political futures following
redistricting. Drawing on a set of incumbents in two redistricting cycles, this study has attempted to address which factors lead an incumbent to seek reelection versus the decision to step aside. Further, this study has attempted to better understand how forward-looking MCs select a district in which to launch a reelection bid. And finally, this project has attempted to understand the factors which motivate the decision to legally relocate one’s residence as a portion of a reelection strategy.

What this project has discovered is the unquestioned role of constituency in almost every post-redistricting reelection action. In the myriad of circumstances incumbents find themselves in following redistricting, one seeming constant is that MCs wish to draw on the capital they have developed in cultivating their home style over a set of constituents. Even in a time where the convergence between voting and party affiliation are very strong, the importance of seeking one’s former constituents presents itself as a reliable and often-used strategy. In the 2012 congressional elections, it was this very strategy which led Rep. Jerry McNerney to legally move his residence in order to successfully run for reelection in another district. This reaffirmation of the impact of constituency on the reelection calculus provides a strong basis from which to explore further research questions, particularly those which seek to understand the role of overlapping constituencies in the pursuit of higher office or the impact of constituency within highly populated areas.
How Different is Different Enough? An Analysis of Various Methods of Redistricting

“...it would make little sense to construe the Elections Clause to deprive the people of their legislative authority under state law to remove the redistricting power from state legislators and delegate it to an independent commission.”

-George Deukmejian, Pete Wilson, and Arnold Schwarzenegger

3.1 Introduction

In 2008, voters in California narrowly approved Proposition 11 to create a state agency, the California Citizens Redistricting Commission (CCRC), which would be charged with drawing boundary lines for state legislative districts. Two years later, voters passed Proposition 20 by a wider margin, adding the responsibility of drawing Congressional District boundaries to the CCRC’s mandate. Beginning with the 2012 elections, California’s Congressional and state legislative districts were drawn by a

committee of unelected citizens under the guidance of state auditors: no proposed maps are subject to state legislative input or vote. In adopting this system, California became the sixth state to use neither the state legislature, state legislative-appointed commissions, nor state legislative advisory commissions to draw Congressional District boundaries. As of March 2016, the number of states which use methods to redraw Congressional Districts that are not simply a matters between the chambers of the state legislature and the governor’s office stands at seventeen.

When new methods of redistricting have been proposed and adopted in states, they are often the product of ballot initiatives or legislatively-referred amendments. Efforts to move away from state legislature-drawn boundaries have generally been opposed by political leaders on both sides yet hold varying degrees of public support. Proponents of these alternative districting options contend that state legislative drawn districts tend to protect incumbents and/or give unfair advantages to one party over another, all of which come at the expense of fair districting practices and legislative accountability. In light of these claims, important questions emerge about what impact different redistricting institutions have on the drawing of Congressional District boundaries. Is it the case that institutions other than the state legislatures produce districts which facilitate increased competition and a more accurate translation of votes into seats? Or is it that most of these institutions are simply operating within the specifics of the state, unable to overcome the realities of an electoral system which inflates majorities and protects incumbents?

In this chapter, I explore the impact of redistricting institutions on several key features of representation in Congressional districts. This, admittedly, has been done. What this study does is to take advantage of the natural experiment that exists when states change the ways by which they draw their district boundaries. Drawing on thirty years of redistricting data from 1990–2010, I compare among three groupings: states in which the lines remain drawn by legislatures, states in which
the lines remain drawn by separate commissions, and states in which the method of redistricting has changed from one to the other. The many other important factors which influence the redistricting process will be controlled through the use of GIS measures and techniques. In doing so, this study attempts to better understand the operation and effects of various redistricting institutions as independently as possible.

3.2 The Methods of Redistricting

When it comes to matters of Congressional redistricting, the responsibility falls to the state.\(^2\) If a state chooses to change the way by which they redraw Congressional Districts (and state legislative districts, for that matter), it is a decision to be made by the state and the state alone. So long as a state complies with the legal standards of the districting process\(^3\) and draws districts which do not violate any federal laws and statutes, a state is free to adopt a different redistricting institution.

Most of the non-state legislative controlled redistricting processes in the U.S. have been adopted within the past few decades. And in thinking about it, the decision to leave the process of redistricting to the state legislature is rather obvious. State legislatures were elevated to a high position of importance under U.S. Constitution. These bodies were tasked with selecting the members of the U.S. Senate until 1914 (Art I, §3), are in charge of numerous aspects relating to the operation of elections (Art I, §4; Art II, §1), have a say in the process of statehood (Art IV, §3), and approve Amendments (Art. 5). But over time, the relative position of the state legislature has diminished, partially due to the elevation of other levels of government, but also due to sweeping moves to institute direct democracy starting in the Progressive Era, such as legislatively-referred amendment and ballot initiatives. A timeline showing the

\(^2\) Art. I, §4 of the Constitution states that the “Times, Places and Manner of holding Elections... shall be prescribe in each State by the Legislature thereof.”

\(^3\) Between 1842 and the 1960s, Congress and the Courts established the standards of compactness, contiguousness, communities of interest, and equal populations.
adoption of non-state legislature controlled institutions of Congressional redistricting is shown in Table 3.1:

Table 3.1: Non-State Legislative Redistricting Institutions in the U.S.

<table>
<thead>
<tr>
<th>State</th>
<th>Commission</th>
<th>Year of Adoption</th>
<th>Method of Adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vermont</td>
<td>Advisory</td>
<td>1965</td>
<td>State Legislative Act</td>
</tr>
<tr>
<td>Hawaii</td>
<td>Politician</td>
<td>1968</td>
<td>Legislatively Referred Amendment</td>
</tr>
<tr>
<td>Indiana</td>
<td>Backup</td>
<td>1969</td>
<td>State Legislative Act</td>
</tr>
<tr>
<td>Connecticut</td>
<td>Backup</td>
<td>1976</td>
<td>Legislatively Referred Amendment</td>
</tr>
<tr>
<td>Iowa</td>
<td>Advisory</td>
<td>1981</td>
<td>State Legislative Act</td>
</tr>
<tr>
<td>Washington</td>
<td>Independent</td>
<td>1982</td>
<td>Legislatively Referred Amendment</td>
</tr>
<tr>
<td>Idaho</td>
<td>Independent</td>
<td>1994</td>
<td>Legislatively Referred Amendment</td>
</tr>
<tr>
<td>Montana</td>
<td>Independent</td>
<td>1994</td>
<td>Legislatively Referred Amendment</td>
</tr>
<tr>
<td>New Jersey</td>
<td>Politician</td>
<td>1995</td>
<td>Legislatively Referred Amendment</td>
</tr>
<tr>
<td>Alaska</td>
<td>Independent</td>
<td>1998</td>
<td>Legislatively Referred Amendment</td>
</tr>
<tr>
<td>Arizona</td>
<td>Independent</td>
<td>2000</td>
<td>Ballot Initiative</td>
</tr>
<tr>
<td>California</td>
<td>Independent</td>
<td>2010</td>
<td>Ballot Initiative</td>
</tr>
<tr>
<td>Maine</td>
<td>Advisory</td>
<td>2011</td>
<td>Legislatively Referred Amendment</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>Advisory</td>
<td>2011</td>
<td>State Legislative Act</td>
</tr>
<tr>
<td>Virginia</td>
<td>Advisory</td>
<td>2011</td>
<td>Gubernatorial Executive Action</td>
</tr>
<tr>
<td>New York</td>
<td>Advisory</td>
<td>2014</td>
<td>Legislatively Referred Amendment</td>
</tr>
<tr>
<td>Ohio</td>
<td>Advisory</td>
<td>2015</td>
<td>Legislatively Referred Amendment</td>
</tr>
</tbody>
</table>

Source: Justin Levitt’s *All About Redistricting* and others compiled by the author.

For the data in Table 3.1, it is fitting that so many new redistricting institutions have been adopted by a public vote. But even though 12 of these 17 non-state legislative redistricting institutions have been voted on and approved on by the public, a far greater number of proposals have been put to a public vote and failed. The geographic display of the institutions currently used to redraw Congressional boundaries is shown in Figure 3.1 on the next page.

To discuss the differences among the types of redistricting institutions, it is critical to keep terminology consistent and definitions clear. Broadly, all types of

---

4 26 states use non-state legislature controlled redistricting institutions for legislative redistricting.

5 There have been at least 204 ballot measures between 1900-2015 relating to adopting new redistricting institutions (Source: Ballotpedia).

6 It is important to note that several of these institutions as shown on the map were not the institutions used to draw the most recent district boundaries. Refer to Table 3.1 for these states.

7 Sources: Justin Levitt’s *All About Redistricting* and McDonald (2004).
institutions can be categorized as belonging to one of three options. We can further subdivide two of these broad options into further distinctions:

1. Legislative Process (33 states): the state legislature drafts, debates, and votes to approve Congressional district boundaries. In most of these states (with the exception of FL, MD, MS, and NC), legislative plans must be signed into law by the governor. Maine has the added requirement of needing a supermajority in both chambers to approve district boundaries.

2. Legislative Commissions:
   
i. Advisory Commission (7 states): in these states, a commission of individuals, many of whom do not serve in the state legislature, draft proposed lines which are then passed along to the state legislature for consideration. The
legislatures are not bound to the advisory commission proposals. One notable example is Iowa, where lines are redrawn by the Legislative Services Agency according to a set of strict non-political metrics.

ii. Backup Commission (2 states): if the state legislature fails to enact district lines, a backup commission drafts boundaries. Connecticut requires both a supermajority in both chambers and does not permit a gubernatorial veto.

3. Non-Legislative Commissions:
   
   i. Politician Commission (2 states): officials from both parties are elected to serve on the redistricting commission. This process may be overseen by an elected state leader or judge.

   ii. Independent Commission (6 states): commission members who are neither legislators nor public officials serve for a set period of time. These members are aided by an official from the state.

With each of these different institutions, states are still subject to judicial oversight of new district boundaries. Further, the states covered under §5 of the VRA up until the 2013 case of *Shelby County v. Holder* had changes to district boundaries subject to approval from the U.S. Department of Justice.\(^8\)

3.3 Theory and Hypotheses

In order to understand the effects of different redistricting institutions, it is necessary to understand the motivations of those tasked with drawing district lines. For each of the institution types outlined in the previous section, there are groups of individuals who are seeking to use the rules of the game to advance a certain agenda. As a

\(^8\) See Section 4.2 for a full discussion of the legal history.
theoretical basis, this study is going to examine how the different motivations of each of the actors results in a variety of effects as a result of the redistricting process.

At the broadest level, the vast majority of Congressional Redistrictings which occur every ten years are drawn by state legislatures. And state legislatures are thoroughly partisan organizations. But even though the motivation of state legislators should be rather straightforwardly focused on advancing the standing of her party, the question of how exactly to go about this is more complicated (as discussed by Gronke and Wilson 1999). In order to draw districts in such a way as to help her own party in the aggregate, a legislator will likely have to place her fellow partisans into more vulnerable districts (Ostdiek 1995). By doing so, she runs the risk having many of them sweep out of office in a bad election year. Alternatively, the legislator may well want to protect a certain incumbent of her own party – not simply because she may want to help this MC, but potentially as she may try to claim that seat eventually. A state legislative seat is a likely stepping stone to running for Congress and increasingly, the most successful state legislators turned Congressional candidates are representing more strong partisan viewpoints (Thomsen 2014). Brought together, the first hypothesis tested will be:

H1a Unified party control of the state legislature will lead to higher levels of partisan gerrymandering and earned seats.

H1b Split party control of the state legislature will lead to more incumbent-protecting gerrymandering.

The next hypothesis will focus on the effects of legislative commissions. Like before, the question to ask is what the individuals in these commissions hope to achieve by doing their task. Generally speaking, these legislative commissions are focused

9 The unicameral, nonpartisan Nebraska state legislature not withstanding.
on either making strong substantive recommendations to guide state legislators in drafting new maps, or these commissions are stepping in because the legislator has failed to enact new boundaries. In either case, it is less likely that these commissions would be focused on the same aims and motivations as state legislators. My second hypothesis is:

H2 Legislative commissions will be more likely to district states more evenly to both parties.

Finally, the third hypothesis will test the various impacts of the non-legislative commissions on districts. First, politician commissions are a unique entity unto themselves. In these, partisan commissioners are working to pursue the same goal as state legislators: party protection. But unlike state legislators, the link between redistricting commissioner and the office of MC is less clear. Thus, I expect that political commissioners should be most focused on helping their party across-the-board. What’s complicating this assessment is the legal requirement that these political commissions be balanced with member(s) of the opposite party. With these two competing motivations, I would then expect:

H3a Politician commissions will be more likely to retain the status quo than other districting institutions.

The second part of the third hypothesis concerns independent commissions. These are the fastest-growing set of non-state legislative redistricting institutions and are often motivated by calls to reform a broken system. The membership on these independent commissions is truly unlike that of the other redistricting institutions, notably that independent commissioners are expected to have had no prior electoral experience and agree to forego seeking elective office for an agreed upon timeframe. As a result, the same theoretical basis for the preceding hypotheses does not apply
here. In these instances, I would expect the independent commissions to draw more geographically compact districts, focused on community cohesiveness than political gain. Stated as the hypotheses:

H3b Independent commissions will create fewer gerrymandered districting outcomes.

H3c If a state adopts an independent commission, there should be a decrease in the partisan gerrymandering but an increase in the earned seats.

As the final part of the third hypothesis addresses what happens when a state chooses to adopt a new redistricting institution, it is important to know when and where this has occurred in the past thirty years. Figure 3.2 on the next page shows the changes in redistricting institutions between the 1990 and 2000 rounds (top figure) and the 2000 and 2010 rounds (bottom). Changes in the theoretically important elements – party control or institutional change – are signified by hash mark lines. All of the states are coded by which institution of redistricting was utilized in the latter cycle.

3.4 The Study

Having established the underlying theory and outlined the hypotheses, this section will discuss the overall design and approach of the study. This begins with an analysis of the existing research on various aspects of redistricting institutions. Next, data, models, and variables used to test the hypotheses will be discussed.

3.4.1 Literature Review

In the body of scholarship on the effects of redistricting institutions, many of the system-specific effects have been explored. For the broad set of redistricting commissions, many of the empirical findings have been in-line with our theoretical expectations. When a commission draws district boundaries, Carson and Crespin find an increase in the number of competitive elections, whereas state legislature drawn
Figure 3.2: Who Controlled the Process of Redistricting, State by State, in 2000 (top) and 2010 (bottom), and whether or not this marked a Change
districts tend to result in less competitive elections within the state (2004). These findings were reinforced by Lindgren and Southwell (2013), who measured candidate margin of victory and overall win rate to find that independent and backup commissions result in significantly higher levels of competitive elections. Further research by Forgette et al. finds that commissions are likely to reduce both incumbent-protecting and partisan gerrymandering in drawn districts (2008). And that it is these independent commissions – not legislative commissions – which are likely to work together to overcome a host of geographical districting issues (Winburn 2011).

When examining the impact of state legislative drawn districts, studies have found mixed results in terms of their overall effect. While some studies have found that the party which controls the process of redistricting can expect an increase in their party’s fortune post-redistricting (Abramowitz 1983; Campagna and Grofman 1990; McDonald 2004), others have found the opposite (Squire 1985; Glazer et al. 1987). Either way, studies have shown that any gains a party makes through controlling redistricting were short-lived (Basehart and Comer 1991, Neimi and Winsky 1992). That is, partisan control of redistricting may be able to result in a short-term gain of districts for the party in charge, although these effects are not robust against particularly bad election years or long-term trends. In instances where the party control of redistricting is split between the two, the effect has been shown to lead to more bipartisan plans (Cox and Katz 2002). With two players at the negotiating table during periods of split control of redistricting, each is able to ensure that they have at least one critical veto point (Krehbiel 1998).

To address these issues, research has focused on the particular role of incumbency in the midst of the redistricting process. It may well be the case that the preferences of parties and incumbents are at odds with one another in redistricting – even if the incumbent is a member of the same party. Through redistricting, parties are looking to expand their overall presence in the state’s delegation, and this is
often achieved by creating more marginal districts which are likely to support the nominee of their party. Incumbents, on the other hand, are focused on securing re-election and a more marginal district (even if still in their favor) means a tougher re-election battle (Cain 1984). But at the same time, research has shown that incumbents are remarkably skilled at campaigning and winning re-election even in the midst of changes to their districts (Squire 1995). Even if the MC loses key support in their re-election constituency due to redistricting (Desposato and Petrocik 2003), incumbents are often able to do what they do best: win re-election.

Ultimately, redistricting is a series of processes which has fundamentally transformed in the past few decades. The redistricting of today is one where parties have never been as strong and the name of the game never as aggressive (Mann and Cain 2005). This is likely due to a number of factors, including polarization, advances in geography data/analysis, concerted efforts to win state legislatures to control redistricting, and general movement of voters. Even still, the differences among the institutions of redistricting exert a tremendous influence over a number of factors relating to representation in districts, at the state-level, and in Congress.

### 3.4.2 Data, Model, and Variables

In order to test the hypotheses outlined in Section 3.3, this study draws on an original dataset which accounts for the 2000 and 2010 redistricting processes in all fifty states. As mentioned, the procedure used to analyze the questions at hand will be to compare how the institutions of redistricting have changed in a state from one cycle to the next; so, the actual span of years under study will be 1990, 2000, and 2010. The units of analysis will be states.

In Table 3.2 on the next page, the distribution of states according to the change in their redistricting institution between one cycle and the next is shown. As is seen, the vast majority of states did not change their redistricting institutions
Table 3.2: Changes to Redistricting Institutions by Type, 1990-2010

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Legislative</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Change in Party Control</td>
<td>9</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>No Change in Split Control</td>
<td>10</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Party Control Change</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Split to Party Control</td>
<td>8</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Party Control to Split</td>
<td>10</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td><strong>Legislative Commission</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advisory Commission</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Backup Commission</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Adopted Legislative Commission</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Non-Legislative Commission</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Politician Commission</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Independent Commission</td>
<td>1</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Adopt Non-Legislative Commission</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

Compiled by the author.

(only 6 of 100) – and all of these have been changes to adopt either of the two Non-Legislative Commissions. The bulk of the changes in redistricting from one cycle to other other come in the form of changes to the party control of redistricting in state legislative institutions (37). For the remaining 57 cases, neither the institution nor the party controlling the process of redistricting changed.

**The Model**

To test the hypotheses, the model best suited to this research are difference of means tests between values at $t_1$ and $t_2$. On the null hypotheses that there are no differences between the years among the selected variables, the difference of means tests will assess the alternative that there are statistically significant differences. Because the sample sizes are very small, the difference of means will use the $t$ distribution.

**The Variables**

The main independent variable will be a classification of the switch in redistricting institutions between $t_1$ and $t_2$ for the state. These are the list of institutions from
the three broad groups (Legislative, Legislative Commission, and Non-Legislative Commission) as shown in Table 3.2.

For the dependent variables, this study will examine three key variables which are indicative of the differences among sets of drawn district boundaries:

- **Vote margins**: the absolute value of the average margin of vote separation between the two candidates in each district, groped by state. Higher values correspond to a lower cumulative level of competition among the candidates.

- **Seats to Votes ratios**: the ratio of seats earned by the Republican Party to the percentage of votes the Republican Party received in the election. Higher values correspond to a higher degree of a party over-performing in the earning of seats based on their total vote.

- **Measures of Gerrymandering**: modified Polsby-Popper and Reock Measures, where higher values correspond to higher degrees of gerrymandering in a district.\(^\text{10}\)

These data are derived from running simple geostatistical analyses in ArcGIS. By overlaying multiple layers representing the demographic and political distribution of respondents,\(^\text{11}\) and setting the parameters to account for factors such as the dispersion of the population and the political leanings of certain areas, it is possible to derive a set of measures about a state’s districts at times \(t_1\) and \(t_2\) which measure the changes brought about by the redrawing of district lines.

### 3.5 Results and Findings

As an initial analysis, it is important to understand the differences among the three broad types of institutions – Legislative, Legislative Commission, and Non-

\(^{10}\) See Appendix E of a discussion of how these two measures are calculated.

\(^{11}\) See Appendix A for a discussion of these procedures.
Legislative Commissions – in translating vote share into seats. The correlation be-
tween the statewide vote share of Republican Candidates and the percentage of seats
won by Republicans in that state is shown in Figure 3.3:

Figure 3.3: Translation of Votes to Seats by Redistricting Institution Type, 1992, 2002, and 2012 Congressional Elections

What the results of Figure 3.3 show is that the differences among the three broad
categories of redistricting institutions are remarkably similar in translating statewide
two-party vote shares for House elections into seats. Were confidence bounds to be
placed around the best fit lines shown in Figure 3.3, the three would be virtually
indistinguishable from one another. This shows an undeniable positive trend between
statewide two-party vote share for the Republican candidates and the percentage of
seats the Republican candidates win. On the whole, this provides a rather positive observation from a normative standpoint. If the purpose of an electoral institution is to most equitably select the representatives in accordance with the will of the people, it appears as though all three fit the billing rather well. But there are many nuances to this below the surface which must be examined.

To more broadly understand the impact that different types of institutions have on districting outcomes, the next step of the analysis will be to: 1. divide across institution types, 2. divide along the time dimension. It is important to see how the change from the type of redistricting institution used at $t_1$ and the type of redistricting institution used at time $t_2$ changes the allocation of seats based on the statewide vote. In Figure 3.4, a scatterplot matrix is shown for eight plots: each of which shows the translation of votes into seats for states which left control of redistricting to the state legislature. In each, the change in the allocation of votes:seats is shown as a directional arrow from $t_1$ to $t_2$. As a note, there were no states included in this analysis which went from a Republican control of redistricting at $t_1$ to a Democratic control of redistricting at $t_2$.

In general, the results in Figure 3.4 show several important observations. When the Democratic Party controlled the process of redistricting at both $t_1$ and $t_2$, the clustering of votes:seat ratios are to the left of the $y = x$ line (shown as the red line in each plot). Relatedly, when the Republican Party controlled the process of redistricting at both $t_1$ and $t_2$, there is a strong clustering to the right of the $y = x$ line. When the process was and remains drawn by split party control, the clustering transcends the line.

When the control of redistricting shifted parties between $t_1$ and $t_2$ (as was only the case for Democratic-controlled systems becoming controlled by Republicans), there is a strong movement of votes:seats across the $y = x$ line. When the control shifted from partisan to split control, the results are significantly more mixed. And
finally, when control shifted from split to partisan, there is a strong rightward shift for the Republicans and a very mixed finding for the Democrats.

On the whole, the results in the plot matrix in Figure 3.4 show that Republicans have tended to take greater advantage of gaining control of the redistricting process, working to expand their overall seat share in their state’s delegation. For
when Democrats control the process or when there is split party control, the findings are much more mixed. And finally, when the partisan control of the process does not change from \( t_1 \) to \( t_2 \), the status quo is preserved. From these results, there is evidence to back up the prediction in Hypothesis H1a that unified party control of redistricting will be associated with higher levels of partisan districting plans.

To turn to the case of non-state legislative redistricting institutions, Figure 3.5 shows the same correlation as Figure 3.4 – between statewide two-party vote and share of seats won – but this time for when states either adopt non-state legislative redistricting institutions (left) or when they retain them (right).

**Figure 3.5: Translating Seats to Vote with Non-State Legislative Institutions, 1992, 2002, and 2012 Congressional Elections**

The results in Figure 3.5, on their face, do not conform to the expectations from the hypotheses. There is no noticeable or uniform trend. In both cases, there are large changes in the translation of seats:votes, just as there are smaller changes. And it does not appear as though these two plots show a clustering around the \( y = x \) line, which would be our general expectation in such instances.

82
The final analysis used in this study will run the difference of means test across each of the 11 categories of district changes between \(t_1\) and \(t_2\) (as listed in Table 3.2). New values for each of the independent variables are calculated as the absolute value of the difference between \(t_1\) and \(t_2\), meaning that each measures the statewide change in metrics for when the institution of redistricting has changed. This enables comparability across each of the institution types. Furthermore, several of the 11 options shown in Table 3.2 have been pooled together. The categories of no change in the control of redistricting for state legislatures (be it no change in party control or no change in split control) is the base reference level. The two Legislative Commissions (AC and BC) have been pooled as well as the two Non-Legislative Commissions (IC and PC). Thus, there are seven redistricting institution options.

Table 3.3: Mean Assessment of Independent Variables Divided among Changes to Redistricting Institutions, State Legislative

<table>
<thead>
<tr>
<th>State Legislatures</th>
<th>No Change</th>
<th>Party Change</th>
<th>Split to Party</th>
<th>Party to Split</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vote Margins</td>
<td>0.10</td>
<td>0.07</td>
<td>0.10</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>(-0.03)</td>
<td>(0.00)</td>
<td>(0.06)</td>
<td></td>
</tr>
<tr>
<td>Seats:Votes Ratio</td>
<td>0.39</td>
<td>0.17</td>
<td>0.34</td>
<td>0.44</td>
</tr>
<tr>
<td></td>
<td>(-0.12)</td>
<td>(-0.05)</td>
<td>(0.05)</td>
<td></td>
</tr>
<tr>
<td>Polsby-Popper</td>
<td>16.02</td>
<td>9.78</td>
<td>25.88</td>
<td>14.51</td>
</tr>
<tr>
<td></td>
<td>(-7.24)</td>
<td>(9.86)*</td>
<td>(-1.51)</td>
<td></td>
</tr>
<tr>
<td>Reock</td>
<td>8.08</td>
<td>7.69</td>
<td>4.85</td>
<td>5.76</td>
</tr>
<tr>
<td></td>
<td>(-0.39)</td>
<td>(-3.23)</td>
<td>(-2.32)</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05; **p < 0.01; ***p < 0.001

In Tables 3.3 and 3.4, the difference of means between for each of the three types of state legislative redistricting in which control changed (Table 3.3) and the three types of non-state legislative redistricting (Table 3.4) show exactly one of the variables is significantly different than the base level of no change in state legislative redistricting.
Table 3.4: Mean Assessment of Independent Variables Divided among Changes to Redistricting Institutions, Non-State Legislative

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No Change</td>
<td>AC &amp; BC</td>
<td>IC &amp; PC</td>
</tr>
<tr>
<td>Vote Margins</td>
<td>0.10</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(-0.05)</td>
</tr>
<tr>
<td>Seats:Votes Ratio</td>
<td>0.39</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td>(-0.20)</td>
</tr>
<tr>
<td>Polsby-Popper</td>
<td>16.02</td>
<td>15.79</td>
</tr>
<tr>
<td></td>
<td>(-0.23)</td>
<td>(-11.62)</td>
</tr>
<tr>
<td>Reock</td>
<td>8.08</td>
<td>10.42</td>
</tr>
<tr>
<td></td>
<td>(2.34)</td>
<td>(-1.32)</td>
</tr>
</tbody>
</table>

*p < 0.05; **p < 0.01; ***p < 0.001

That is, as the control of redistricting in a state legislature goes from a split to partisan control, there is a significantly higher degree of gerrymandering according to the Polsby-Popper measure. But with each of the other hypotheses, the results of Tables 3.3 and 3.4 do not yield any significance. We therefore cannot reject the null hypotheses.

With these results, it is important to extend a note of caution. As is shown in Table 3.2, the sample size for the number of districts is very low. Even when running differences of means tests which account for low sample sizes, the vast majority of the coefficients in Tables 3.3 and 3.4 were insignificant. To improve upon these, it would be natural to expand the study and go further back in time to take account of a greater number of redistricting cycles.

3.6 Conclusion

The process of redrawing Congressional District lines is yet another area where there is wide variation among the states. In this study, I have attempted to separate out the effects of these various institutions by looking at the set of districts drawn at two
points in time. By doing so, this study has shown differences in the types of districts drawn by state legislatures when the reigns of power are held by different parties. But for the other effects for the numerous commissions, not to mention the effects of when a state chooses to adopt a new commission over an older system, this study did not produce meaningful findings.

Nonetheless, the importance of this as a topic for study is present. For one, there are expanded calls for a greater number of non-state legislative redistricting institutions. As is shown in Table 3.1, the states of New York and Ohio have adopted new methods of redrawing Congressional district boundaries which were not utilized in the most recent round of redistricting. Further, there are currently active proposals to put initiatives and referenda relating to the creation of Redistricting commissions on ballots in Colorado, Illinois, North Carolina, and South Dakota for the November 2016 elections. Voters in Hawaii will vote in this election to require that members on the state’s redistricting commission be apportioned from at least four of the Hawaiian islands. It is likely that there will be greater numbers of states using non-state legislative institutions to redraw Congressional District boundaries and it is important to understand what impact these changes will have on the produced districts. No matter how much the parties in power try to resist these changes, it does not appear as though non-state legislative redistricting institutions are going anywhere soon: “The people of Arizona turned to the initiative to curb the practice of gerrymandering and, thereby, to ensure that Members of Congress would have ’an habitual recollection of their dependence on the people.”’

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Majority-Minority Districting and the Politics of Representation in the South

“...the success of a minority candidate in a particular election does not necessarily prove that the district did not experience polarized voting in that election; special circumstances... may explain minority electoral success in a polarized contest.”

-Justice William J. Brennan, Jr.¹

4.1 Introduction

Following the U.S. Supreme Court’s 1986 ruling in *Thornburg v. Gingles*, the creation of a wave of majority-minority districts beginning with the 1990 Census ushered in the highest levels of African-Americans elected to Congress from the South since the end of Reconstruction. Twenty-five years later, the percentage of Southern districts with elected black Representatives is higher still – and together with all other majority nonwhite districts, nearly one in three Southern districts are majority nonwhite.

It is from these Southern majority-minority districts that 40% of all black members and nearly one-third of all minority members of the 114th Congress are elected. The deliberate expansion in the number of majority-minority districts in the South is unquestionably responsible for these statistics. And, on their face, it appears as though the numerous Congressional and Court mandates regarding these districts have fulfilled the intended objective of providing representation to minority communities in the South. But below the surface, many questions still remain about how the broad class of majority-minority districts achieve the goals of effective representation for minority communities across the South.

It is imperative that policy regarding the creation of majority-minority districts focus on what provides for effective representation for minority communities. To their credit, the majority of these debates have focused on these and similar issues. Among these is the central question of how well majority-minority districts satisfy the goals of effective representation. Is it the case that the creation of these districts has led to more effective representation for minority communities or can the same goal be achieved through different districting schemes? How do the factors and formulae used to create these districts operate in fulfilling the needs for representation? And how does the increasing racial pluralism within many of these districts impact the overall picture of representation for minority communities?

In this chapter, the broad question of representation in majority-minority districts is explored. Drawing on thirty years of ANES time series surveys, this chapter seeks to understand the impact that majority-minority districting has on attitudes relating to satisfaction with representation, political efficacy, and trust in government. Broadly, this chapter will proceed in five parts. The first section will provide an overview of the legal status and case history relating to the institutionalization of majority-minority districts. The second section will derive a set of testable hypotheses and outline the relevant theoretical and applied scholarship. The third section will
explore the broad types of districts that fall under the majority-minority label and
devise the methodological approach for this study. The fourth section will explore
the broad differences in representation for minorities among the classes of majority-
minority versus majority white districts. And finally, the fifth section will explore
the impact that institutional mandates regarding the creation of majority-minority
districts has had on minority participation and efficacy.

4.2 The Long and Winding Road

Before discussing the effects of majority-minority districting on representation, it is
important to first discuss the history whereby the American system instituted “one
person, one vote” in matters of apportionment and how the actions of government
applied this principle to matters of representation.

From the first Census roster of 1790, the population of the U.S. has become
increasingly urban in each and every decennial count. As this population trend
continued, the disproportionate representation of rural areas within state legislatures
and the Congress grew in turn. This was due to a myriad of factors, including the
use of bounded geographic subdivisions (i.e. counties, townships, etc.) to allocate
seats, the creation of multimember districts and at-large constituencies, a reliance
upon inaccurate population counts from tax administration records, and, most of
all, a lack of political will among those tasked with redistricting to change the status
quo. The result of all of these forces was that the degree of malapportionment in
Congressional Districts by the 1960s was such that the most represented counties
had 35 times as much representation as the least: a nine-fold increase in just fifty
years (Ansolabehere and Snyder 2008). Malapportionment in the U.S. House was a
growing threat to equal representation, yet one largely accepted as a political reality.

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2 U.S. Census Bureau Population and Housing Unit Counts, 1790-2010.
Within the South,³ the many restrictions to civic engagement placed upon blacks made for an even more pronounced picture of malapportionment. Blacks accounted for one in five Southerners in the 1960 Census, yet fewer than 10% were registered to vote in states like Mississippi. Even if blacks were able to have their names added to voter rolls, a host of legal prohibitions to electoral participation (such as literacy tests, poll taxes, and white primaries) ensured that the electorate was nearly entirely white. And further still, de facto codes and regulations ensured that black electoral participation was virtually nonexistent. Even in Southern Congressional Districts which were home to a majority nonwhite population, there was no chance for these residents to select a Representative of their own choosing.⁴ Together, these factors placed an insurmountably high limitation on the ability of minority communities to gain representation in the South.

Ultimately, it took a series of monumental judicial rulings and legislative actions to address the chronic pattern of racially-focused malapportionment. After decades of either ruling against federal interference in matters of redistricting⁵ or failing to grant certiorari to redistricting cases, the U.S. Supreme Court addressed issues of malapportionment head-on with a set of cases in the early 1960s. In Baker v. Carr,⁶ a fiercely divided Court found that matters of apportionment are subject to federal jurisdiction under the Equal Protection Clause. In Wesberry v. Sanders,⁷ the Court ruled that the U.S. Constitution guarantees equality of representation in the

³ For this study, the South is categorized by eleven states (AL, AR, FL, GA, LA, MS, NC, SC, TN, TX, and VA), not including the border states of KY, MD, MO, or often-included OK. This classification is used because it omits states where blacks account for less than 10% of the total population: a threshold far too low to plausibly create any non-majority white districts.

⁴ Following the 1960 Census, there were six black majority-minority districts in the U.S. (Districts in Chicago, Detroit, Los Angeles, the Mississippi Delta, New York City, and Philadelphia). The only one which did not elect a nonwhite candidate was Mississippi’s 2nd District.

⁵ Most notably Colegrove v. Green, 328 U.S. 549 (1946), in which the Court ruled that the federal government had no jurisdiction over matters of state apportionment.

⁶ 369 U.S. 186 (1962)

⁷ 376 U.S. 1 (1964)
U.S. House to every citizen in every state. And a few months later, the Court ruled in *Reynolds v. Sims*\(^8\) that equality in representation extends to the state legislative-level. The effect of these sweeping cases was to set into motion not only the ability of the federal government and courts to intervene in matters of redistricting, but also set off the so-called “Reapportionment Revolution” during which a wave of states—many for the first time in decades—redrew district boundaries to meet the new standards of population equality in representation. In many Southern states, drawing districts home to a majority black population was now impossible to avoid.

While these Supreme Court decisions focused on the broad requirements for dispersing population in accordance with the principle of one person, one vote, there still lacked the opportunity for minority communities in the South to elect candidates of their choice. Civil Rights activism, spurring Congressional and Presidential action, sought to further codify many protections granted to minority populations within the text of the Voting Rights Act (VRA) of 1965. Specifically, §2 of the VRA puts forth that government or private citizens can challenge voting practices which “shall be imposed or applied by any State or political subdivision to deny or abridge the right of any citizen of the United States to vote on account of race or color.”\(^9\) This took weight with the Supreme Court’s 1973 ruling in *White v. Regester*\(^10\) in which multimember districts in Texas were ruled unconstitutional in accordance with §2 on the grounds that they systematically diluted minority voting strength. Seven years later, the Court in *Mobile v. Bolden*\(^11\) ruled that instances of vote dilution can be established “only if there is purposeful discrimination,” setting a high bar for legitimate claims to be brought forth under §2.

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\(^8\) 377 U.S. 533 (1964)

\(^9\) Subsequently expanded to include factors beyond race and color. 42 U.S.C. §1973

\(^10\) 412 U.S. 755 (1973)

\(^11\) 446 U.S. 55 (1980)
In response to this new standard, Congress added an amendment to its 1982 reauthorization of the VRA which held that §2 is violated if a court rules a voting practice has the effect of discriminating against minority voters. This amendment overturned the Mobile ruling, setting the stage for individuals to bring suit against states even if there did not exist the intent to discriminate. Soon after this modification, the Supreme Court accepted the case of Thornburg v. Gingles,\textsuperscript{12} in which black residents of North Carolina claimed that districts drawn in the 1982 redistricting had the effect of diluting minority voting power. In a unanimous decision, the Court agreed with the claims of the plaintiffs and established a three-prong test to determine if a vote dilution under §2 has occurred:

1. “the minority group must be able to demonstrate that it is sufficiently large and geographically compact to constitute a majority in a single-member district.”

2. “the minority group must be able to show that it is politically cohesive.”

3. “the minority must be able to demonstrate that the white majority votes sufficiently as a bloc... usually to defeat the minority’s preferred candidate.”

In instances where these three conditions are met, the Court’s ruling has had the effect of requiring state legislatures to draw districts in which minority communities are able to influence the selection of their representatives to be in compliance with the amended §2 of the VRA. This criteria was subsequently written in to the text of §5’s preclearance requirements by the Justice Department and has been used by the federal government as a means by which to advance minority representation (Gay 2001b).\textsuperscript{13} But in spite of the advances made by Thornburg in creating majority-

\textsuperscript{12} 478 U.S. 30 (1986)

\textsuperscript{13} When the ruling of Thornburg was applied to the round of redistricting following the 1990 Census, the number of non-majority white districts in the South doubled. It is important to note that the Republican Party, by chief counsel Ben Ginsberg’s strategy, used the amended VRA to their advantage by packing minority voters into a handful of districts (Clayton 2000).
minority districts, the Court’s inability to establish a standard by which racial bloc voting is defined set the stage for subsequent challenges over how to determine the presence of racial polarization in districting (Kosterlitz 1987).

This lack of action led to several important cases which focused on the definition and use of racial blocs in voting. In Shaw v. Reno, the Court held that the standard of strict scrutiny must be applied if a state draws district boundaries for the purpose of dividing residents based on race. Writing for the majority in Shaw, Justice O’Connor held that if district lines are “so bizarre on its face that it is ‘unexplainable on grounds other than race’,” plaintiffs are able to bring suit on equal protection grounds. In Voinovich v. Quilter, the Court ruled that packing minority voters into a small number of districts was permissible under §2 as it does not deny protected classes the equal opportunity to elect candidates of their choice. And in Georgia v. Ashcroft, the Court alternatively ruled that states under §5 may disperse minority populations among multiple districts and still afford the opportunity for these populations to select candidates of their own choosing. By doing so, the Court set a standard were minority populations could merely influence the selection of a candidate and still meet the strict scrutiny requirements under the VRA. In response to this new standard, Congress changed the language of §5 in its 2006 reauthorization to explicitly state that its purpose was “to protect the ability of such citizens to elect their preferred candidates of choice.”

The questions left were how (if at all) the protections of the VRA applied in situations where a covered jurisdiction is required to draw a district in which

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14 509 U.S. 630 (1993)
15 The Court later used this standard to rule that plans in which "race was the predominant factor motivating the drawing of district lines" were impermissible in the 1996 case Bush v. Vera (517 U.S. 952).
16 507 U.S. 146 (1993)
18 52 U.S.C. §10304(d).
a single minority population comprises a majority. Are jurisdictions required to draw districts in cases where a minority population may be joined by another to constitute a majority of a district? Do such coalition districts (majority nonwhite districts in which no single minority group comprises a majority of the population) give the ability for minority populations to elect the candidates of their choice? And is there a place for VRA protections to grant a minority population the opportunity to influence the selection of a candidate? The Court addressed these questions in Bartlett v. Strickland, ruling that a minority group must account for at least 50% of the population in an area in order for §2’s requirement for the creation of a majority-minority district to take effect. Although jurisdictions covered by the VRA were still required to draw districts which neither divided nor packed populations to the effect of diluting minority group voting strength, the Court abstained from ruling on whether minority groups in coalition districts are eligible to bring forth claims.

The most significant legal challenge to provisions of the VRA came with the Court’s 2013 decision in the landmark case Shelby County v. Holder. As one of the covered jurisdictions under VRA, Shelby County, Alabama, alleged that both the coverage formula (§4b) and the selection of preclearance jurisdictions (§5) placed an undue burden on its sovereignty. Although the Court upheld §5 as a constitutional exercise of Congress’s power under the Fifteenth Amendment, it invalidated the coverage formula as antiquated and unfairly applied to selected jurisdictions. This ruling on §4b, in effect, made §5 unenforceable.

As of March 2016, the future of §5’s application to matters of redistricting is uncertain at best. Without any further action by Congress to enact a new coverage formula to replace the invalidated §4b, redistricting plans in jurisdictions covered by

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19 556 U.S. 1 (2009)
20 570 U.S. _ (2013)
the VRA can be implemented without requiring proof that the change “has neither a discriminatory purpose nor will have a discriminatory effect.” The changes brought about by Shelby County will not only apply to the 2022 round of redistricting, but potentially sooner as motions are currently pending in Georgia, Louisiana, and North Carolina to retroactively apply the ruling to the 2012 district lines. Thus, the period of time between the implementation of the Court’s ruling in Thornburg and the legal challenges following Shelby County offers a bounded period of time (1992-2013) to study how the institution of majority-minority districts impacts minority representation in the South. For the purposes of this study, majority-minority districts will be analyzed in the South by examining whites, blacks, and Latinos only.

4.3 The Assurance of Representation

Fundamentally, citizen representation is a function of the institutional arrangements of representative government (Weissberg 1978). Thus, in order to understand successes and failures of majority-minority districting in providing effective representation for minority communities, it is important to understand how the design of these districts comport with the principles and practices of representation. This section will outline the broad theoretical foundations of these subject areas, derive a list of testable hypotheses for this study, and discuss how relevant scholarship has analyzed areas relating to majority-minority districting, representation, and public opinion.

4.3.1 Theoretical Underpinnings and Hypotheses

Before exploring how citizens evaluate representation, it is important to first address how representatives view their constituents and understand their role. Among the earliest models of representation was Edmund Burke’s delegate versus trustee model,

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22 United States Department of Justice, Civil Rights Division. Statement on Redistricting.
23 Justin Levitt, All About Redistricting.
who argued that elected representatives should use their knowledge and skills to act in the national interest (the trustee model) rather than serve as a mouthpiece for the preferences of their constituents. Although this model provided an effective way to understand the actions of representatives, more complex constituent-legislator dynamics demanded an expanded framework. This came with Wahlke et al.’s classic model of the role of legislators, who argued that legislators are able to focus on as many as five “role-segments” in their leadership (1962).24 In varying the degree to which legislators focus on these role-segments, the legislator is able to cultivate individualized styles of representation to serve not only the needs of their constituents but also potentially the needs of larger groups. For minority MCs, this need for cultivated representation is even more pressing. Given the shared experiences and goals which unite minority communities, Johnson and Secret (1996) argue that minority legislators – unlike all others – will focus on both their local constituency and the broader national group via group consciousness. These MCs are delegates of the national group and collectively represent the shared interests (Weissberg 1978), yet must also exhibit sufficient levels of dyadic representation in order to secure reelection (Mayhew 1974). And when it comes to representing their own constituents, we know that legislators do not view their constituency as a uniform voting bloc, yet rather subdivide and target each differently (Fenno 1978). Generally speaking: representatives are responsive to their constituents, divide and view constituent groups differently, and understand the importance of representing broader communities with whom they share high levels of consciousness.

Within the scope of minority representation, it is important to address how the needs of constituents are best served by their elected representatives. In her ground-

24 These five role-segments: the “representational” role, where legislators choose to represent either their constituent or national interests; the “areal” role, where legislators focus their work narrowly or more broadly; the “purposive” role, how the legislator views her job; the “partisan” role, how the legislators operate under their party leadership; and the “pressure group” role, how the legislator interacts within various groups.
breaking work on the theory of representation, Hanna Pitkin offers four integrated views of representation, two of which – descriptive and substantive\(^{25}\) – have been the subject of significant scholarly attention over the past fifty years (Pitkin 1967). One conclusion from this scholarship is that there exists a trade-off between the two. That is to say: the pursuit of descriptive representation for minority communities actually may hinder the advancement of substantive representation. Some scholars have that there is no trade-off between the two, arguing that non-white representatives can adequately represent the needs of minority communities and that minority candidates can win in majority white districts by emphasizing a wide range of important issues, race included (Swain 1993). Others have raised alarm, arguing that the pursuit of higher levels of descriptive representation for minority communities actually hurts their substantive representation in the broader chamber. As minority voters are packed into fewer districts to ensure the election of more minority representatives, the “whitening” of all other districts lowers the incentive for these MCs to represent smaller groups of nonwhite constituents (Thernstrom 1987). Further, such concentrated gerrymanders can lead to theorized perverse effects, such as the depression of minority turnout in packed districts where the election of minority representatives is all but assured (Cain 1984). Although minority candidates are still likely to be elected from such a district, the aggregated state-wide effects resulting from lowered turnout can be used as a means to achieve political gain. Thus, the ways by which greater levels of descriptive representation are pursued hurts the substantive representation of these same communities in the long-run.

In response to these arguments, other scholars have countered that there many positives of descriptive representation which cannot be denied. After centuries

\(^{25}\) Descriptive representation refers to when an elected representative “stands for” a specific group as he/she is a member of that group. Substantive representation refers to when an elected representative “acts for” a particular group by representing their interests. The other two views of representation are Formalistic (the institutional arrangements of representation) and Symbolic (the public actions and pronouncements made by a representative.).
of withheld representation, the purposive creation of districts in which minority candidates are elected is an essential step to advance the representation of minority communities (Gay 2001b). Having this descriptive representation enhances the trust minority citizens have in government, furthers a sense of political efficacy, and encourages expanded participation in elections and public affairs (Gurin et al. 1989). This is the basis of “empowerment theory,” where minority voters connect their participation in electoral and civic processes with positive outcome such as having minority candidates elected to office. Empowering minority voters through descriptive representation is important not only to spur on higher levels of minority engagement (Bobo and Gilliam 1990), but also to affect substantive change within Congress (Tate 2003). Brought together, the first hypothesis is:

H1: Minority citizens (of any race) who live in majority nonwhite districts will have higher levels of political efficacy and trust in government than minority citizens who live in majority white districts.

As the basis for policy under the stipulations of the Civil Rights Act and Court interpretations, the purposive creation of majority-minority districts is a means by which minority MCs are elected. Having an elected MC who is the same race as a minority respondent is “a signal that speaks louder than words” for black constituents (Bianco 1994, pg. 153). In these instances, minority voters will be more likely to participate in elections as they view their participation as playing an essential role in selecting the candidate which better represents their interests (Converse 1966). And this expanded turnout and participation is essential for the substantive representation of minority interests as it is those who vote who exert influence on elected officials to enact policies and carryout essential actions (Miller and Stokes 1963).

26 It is important to note that this is largely tempered by the need for representation of minority communities on factors beyond race (such as having alignment with an MC on partisan and ideological grounds).
Although majority-minority districts are often established for the purpose of ensuring the election of minority-backed candidates, this is not to say that majority white districts can’t offer the same. From the perspective of threshold theory, minority communities hold little-to-no influence on the selection of their MC until they reach a certain threshold of the district’s population. From this point, further raising the nonwhite population percentage in a district increases the likelihood that an MC who represents the minority populations (be it descriptively, substantively, or both) is elected.\footnote{The threshold theory is one of many concerning the relation between the percentage of minority voters in a district and the representation of minority interests. For a broad discussion of the alternate theories, see the analysis associated with Figure 1 in Cameron et al. (1996).} The framework for the threshold theory is rather straightforward. MCs are focused on securing reelection by targeting different constituent subgroups in different ways (Fenno 1978). As a minority population constitutes a greater share of an MC’s geographic constituency, their impact on the reelection prospects of the MC – and, as can be argued, their overall influence (Lublin 1997) – increases in turn. If, however, the minority population constitutes a share of the geographic constituency which can be ignored without political consequence (in light of the political leanings and electoral history of the district), the incentive for the MC to represent this group disappears. At what point does the minority population of a district constitute a size significant enough to hold influence? This is the subject of the second hypothesis:

H2a: Nonwhite populations in a majority white district will have higher levels of efficacy and trust in government when their composition is of a sufficient level to influence the politics of that district.

H2b: Nonwhite populations in influence districts will have lower levels of efficacy and trust in government than nonwhite populations in majority-minority districts.

In testing whether influence districts result in the election of minority candidates to office and spur on higher levels of minority engagement and participation, I expect
via Guinier’s theory of black electoral success (1991) that certain majority white districts with thresholds of minority population should be successful in advancing multiple objectives. Despite claims that these so-called influence districts constitute a racial gerrymander, these districts are, by design, not racially packed in ways which are detrimental to the racial group in all districts across the state (Engstrom 1995). It is essential that these districts and their classification be clear and reliable. But when these districts are analyzed in the hierarchy of minority districting types, it is my expectation that they should advance effective representation for minority communities.

As the U.S. has grown increasingly ethnically and racially diverse, an emerging redistricting consideration has to do with the drawing of majority nonwhite districts in areas with sizable black and Latino populations. Like black communities, Latinos have experienced institutionally denied representation and have developed similar components of group consciousness. With the further development of this group consciousness, many Latinos within the broader community view their economic and political situations linked with their social status. In turn, they will perceive their fate as linked with that of other institutionally disadvantaged racial groups (Dawson 1994). And even in situations where the group consciousness of both communities does not lead to linked fate, the institutions of the federal government act as a mediator to intergroup relations (Hero and Preuhs (2013)). MCs hold a prominent level of office and operate within an institution that relies upon a strong party system. When these MCs (be they white or nonwhite) represent the issues of their nonwhite constituents, they are advancing the needs of the broader black and

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28 See section 4.4.2 for a discussion on the different types of districts and their methodological classifications.

29 This is particularly true in the South, where (unlike Northern cities and the Southwest) the growth of Latino populations is almost entirely a recent occurrence (McClain et al. 2006).

30 Which, unlike among black communities, have higher levels of in-group variation Stokes (2003).
Latino communities. Accordingly, the third hypothesis explores multiethnic coalition districts. Part one posits:

H3a: Minority respondents in minority coalition districts will exhibit higher levels of political efficacy and trust in government than those in majority white and influence districts.

MCs are focused on representing their constituents in ways which enable their own goals and objectives to be met. When districts have an increasing size of non-white voters, the MC should focus more on representing the interests and policies favored by the minority communities in their district – the logic consistent with the threshold theory. If the district is mostly black, this should be the policies favored by black communities (and vise versa for mostly Latino districts). But if the district is populated highly by both blacks and Latinos, the MC should remain focused on the issues and policies which are important to both groups.

Given the unique history of discrimination born by black communities and the greater ability for Latinos to cross the color line in the U.S. (Sears and Savalei 2006), there still exist barriers between the groups. As these two communities are increasingly coming into contact with one another, scholars have argued that there will be an increase in the formation of negative attitudes (Bobo and Hutchings 1996), despite the presence of linked fate. A significant cause for concern is the competition over scarce resources – such as elected representation – between black and Latino communities. This competition (or perception thereof) creates division and acts as an obstacle to block positive attitude formation between the groups (McClain 1993). This is the basis of “conflict theory” and poses significant problems for multi-ethnic districting plans to satisfy the goals of effective representation. Part two holds:

H3b: Minority respondents in coalition districts will have higher levels of political efficacy and trust in government when they are in dominant minority group.
Although there are many issues and policies which are important to both black and Latino communities, this is not to say that the importance of dominant status and having an MC of the same race are not important for minority residents of multi-ethnic districts. For the reasons outlined above, holding status as the dominant minority group in a coalition district is an important indicator of the positive effects of electoral participation leading towards empowerment. Thus, I expect that dominant party status matters for minority respondents in coalition districts.

With each of these hypotheses, there are many similar terms and similarly worded tests which need to be kept clear. As a way to visually display the expectations in the alternatives hypotheses from H1-H3, Table 1 offers a break-down of each alternative when compared against the nulls of no difference between the district type and MWDs, ranked from lowest (4th) to highest (1st) expected value:\(^3\)

Table 4.1: Expected Impact of District Type on Minority Satisfaction with Representation, Delineated by Dominant Group Status (Hypotheses H1-H3)

<table>
<thead>
<tr>
<th></th>
<th>MWD</th>
<th>MMD</th>
<th>MCD</th>
<th>MID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominant</td>
<td>4th</td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
</tr>
<tr>
<td>Not Dominant</td>
<td>4th</td>
<td>2nd</td>
<td>1st</td>
<td>3rd</td>
</tr>
</tbody>
</table>

As a final piece of analysis, this study will conclude by examining the turning point offered by the 1992 post-\cite{Thornburg} round of redistricting. As stated earlier, \cite{Thornburg} ushered in a wave of requirements regarding the creation of majority-minority districts across §5 covered jurisdictions. The purpose for doing so was to bring the legal requirements into reality, granting minority communities the ability to select candidates of their choice where this was not previously the case. If it is the case that \cite{Thornburg} had its intended effects, I should expect that post-1992 should account

\(^3\) Although each of the hypotheses only tests for a single district type against the base, the relative differences between the MWDs and each of the other district types can be empirically assessed in the ordinal logit model by comparing the log-odds of each coefficient. See section 4.5.2.
for a notable increase in respondent efficacy/trust among the non-MWDs. To test this, the final hypothesis is:

H4: The wave of majority-minority districts created around the time of the 1992 redistricting raised levels of political efficacy and trust in government for minority populations.

In order to fully test this alternative hypothesis against the null that the pre- and post-cuts are not significantly different, three dividing years (1988, 1992, and 1996) will be utilized. The purpose of these multiple years is to account for when the actual effect of these changes impacted respondent assessments. Further explanation is offered in section 4.5.3.

4.3.2 The Study of Minority Representation

Before beginning the study, it is important to analyze the hypotheses in light of directed scholarship on majority-minority districts and representation.

When it comes to the overall impact of MMDs, scholarship has supported the theories which point to their importance in increasing descriptive representation and empowering minority communities. Quite simply, MMDs are necessary for the election of minority-backed candidates to office (Epstein and O’Halloran 1999). Although minority candidates and minority-backed candidates can win election in MWDs, Epstein and O’Halloran find that the creation of MMDs minimizes the difficulty that these candidates have in both gaining and retaining office, as well as and having long-term impacts on policies important to minority communities. In an expanded study, Gay (2001a) uses ecological inference to conclude there exists an increase in electoral and civic participation for minorities living in MMDs. And when minorities are living in districts which are represented by a representative of their own race, Bianco (1994) finds that this offers a powerful signal to constituents
regarding a shared commonality on policies. For blacks in black dominant districts, Fraga finds a positive effect on voter turnout, whereas the same effect is negative for Latinos in Latino dominant districts (2016). Descriptive representation has been shown to increase assessment of government, increase levels of citizens contacting government, and leads to increased electoral participation across the board (Banducci et al. 2004). As succinctly put by Melissa Williams: “In a representative democracy where perceptions of legitimacy are crucial to stem stability, the ‘spiral of trust’ set into motion by descriptive representation may have real implications for political life” (Williams 1998, pg. 172, quoted by Gay 2002).

For districts which are home to significant numbers of both blacks and Latinos, a research note by Grofman and Handley find that a combined a black-Latino coalition which comprises a majority of a district’s population provides a strong certainty that a minority-backed candidate will be elected (1989). In these instances, Gay finds that black constituents are able to feel equally well represented by MCs who are members of other racial groups so long as they share the policy preferences of their group (2002). And in the instances where there are coalition districts, research has shown that the overwhelming pro-Democratic Party tilt of the district is such that the winner of the primary – who is more likely to be black/Latino – is almost assured to win the general election (Lublin 1999). Thus, there exists evidence in the body of scholarship that coalition districts are highly likely to advance minority representation. This also speaks to the need to parse out the dominant versus non-dominant racial group in these (and all other) districts.

And finally for influence districts, research has addressed many important questions about what role these districts hold, if any, on the representation of minority communities. In a 2004 study on the legislative behaviors of MCs, Hutchings et al. find that Southern Democratic MCs are very responsive to their black constituents and represent their issues in Congress when these populations constitute a population
size sufficient enough to exert electoral pressure. For this, it is theoretically crucial to have a clear and well-defined assessment of what an influence district actually means. It’s essential that district-specific factors to minority voting – not just a percentage cutoff – be used to classify these districts Grofman and Handley 1989). Short of factoring in other important considerations – such as party, region (Whitby 1997), and the ability for minority populations to form an important voting bloc (Brace et al. 1988) – the creation of non-majority-minority districts purported to enhance minority representation may have the opposite effect (Engstrom 2012). Understanding this is critically important as the dispersion of minority populations over many districts can dilute their collective influence and eliminate the ability for minority populations to select their preferred representatives (McClain and Stewart (1995). And further still, failing to take into account Latino populations in deciding what constitute influence districts will lead to estimates which understate the proportion of blacks needed to provide influence over the electoral process (Lublin 1999).

Another important focus of scholarship has been the impact that the 1992 round of redistricting has had on multiple aspects of race and representation. The creation of a wave of MMDs in the 1992 redistricting led to the election of blacks, but also led to the defeat of Southern white Democrats in other districts who otherwise could/would have represented black interests (Hill 1995). Yet the creation of these districts was no more than an indirect cause of the 1994 Republican swing (Petrocik and Desposato 1998). Where mandates to create MMDs exist, a model developed by Shotts (2001) found that the overall effect has been to reduce the number of Republicans elected to Congress, offering expanded representation for black and Latino communities. And further still, both Gay (2001a) and Barreto et al. (2004) find that all types of majority-minority districts have a depressing effect on white voter participation in these districts, offering minority communities an increased probably of influencing the selection of representatives in their district.
4.4 Project Design

In this section, the data and methods, classification of district types, and overall design of the project are discussed.

4.4.1 Project Scope, Data, and Measures

The overall purpose of this study is to assess the effectiveness of various forms of majority-minority districts on respondent assessment of their representation. As discussed above, many existing studies have focused on the substantive representation of minority populations as well as the changes in levels of descriptive representation that result from these districting plans. This study is entirely focused on understanding the attitudinal assessments of minority populations in the South regarding their own views of representation.

In order to test the hypotheses outlined in Section 4.3.1, this study will draw on nine rounds of quadrennial ANES time series surveys (with Restricted Data Access, RDA) from 1980 to 2012. The range of surveys includes years prior to the Thornburg ruling and its implementation (1980, 1984, and 1988), as well as years after (1992-2012). These data represent a total of 21,365 respondents, each of whom was asked a wide range of questions on subjects relating to opinion, knowledge, representation, and political efficacy. RDA was requested in order to locate respondents as precisely as possible within the smallest geographic area.\footnote{See Appendix F for a discussion of complications in this procedure.} This is necessary in order to derive a unique set of geographic variables which control for the confounding effects of place.

As this study is focused with the institution of majority-minority districts in the South, the bulk of the analysis will run on the 5,884 respondents who live in the South. And given the population history and demographic trends of the South, as
well as the consideration of race in the creation of the types of districts under study, the racial dimension has been condensed to three: blacks, Latinos, and whites.³³

**Dependent Variables**

The dependent variables used in this study are constructed indices from ANES survey responses. In order to have comparability across the nine surveys and to ensure accuracy in pooling data, the variables used are asked in each of the nine surveys in sufficiently similar manners (with the same general question wording, response options, and variable choices). These dependent variables – External Political Efficacy and Trust in Government – are two measures developed by political scientists and widely used over decades of scholarship. As defined:

1. **External Political Efficacy**³⁴ Index: measures how much respondents view government as responsive to the needs of citizens. This is an ordinal variable with five categories which range from 0 to 1. Measures of internal efficacy – how much citizens know and whether they participate – are included as control variables (see Niemi et al. 1991 for a discussion of this distinction).

2. **Trust in Government**³⁵ Index: measures how much respondents view government as likely to do what is correct, in the public interest, and cost-effective. This is an ordinal variable with seventeen categories which range from 0 to 1.

³³ The white category can be more accurately described as non-black and whites not of Hispanic/Latino origin. Other racial and ethnic groups, such as Asian/Pacific Islanders, Native Americans, and Native Alaskans are grouped into the category of whites. Of the 3,635 Southern respondents classified as white, 233 (or 6.4%) self-identify as belonging to one or more other racial group.

³⁴ Constructed of two variables: “People like me don’t have any say about what the government does,” and “I don’t think public officials care much what people like me think.”

³⁵ Constructed of three variables: “How much of the time do you think you can trust the government in Washington to do what is right,” “Would you say the government is pretty much run by a few big interests looking out for themselves or that it is run for the benefit of all the people?,” and “Do you think that people in the government waste a lot of money we pay in taxes, waste some of it, or don’t waste very much of it?”
As the structure of these indices are ordinal and carried out over a range of binary, continuous, and factor variables, this study will utilize an ordinal logit model.

**Independent Variables**

The first set of independent variables included this study will consist of geographically-derived variables constructed using a range of geographic layers overlaid into GIS. As this study is focused on evaluating the impact of different Congressional District types on attitudes and behavior, it is important to capture the numerous geographic identities individuals may have. As a 2007 study by Segura and Woods finds, effective political representation for minorities is the product of many factors which are endogenous to the physical location and environments of individuals. One, for example, is the neighborhood in which one resides, which Marschall and Stolle (2004) found to be a highly important influence on civic and political attitudes. Thus, it is critical that this – and other levels of location – are controlled for in the model. The following four geographic boundaries are designed to accomplish that. These data come from data collected and housed by Duke University, the National Historical Geographic Information System (NHGIS) Project at the University of Minnesota’s Center for the Study of Population, Zillow’s Neighborhood Boundary Project, and the U.S. Census Bureau.

1. Congressional Districts (CD).

2. Metropolitan Statistical Areas (MSA): regions with a high population density urban core, close economic ties throughout the region, and a common identity.

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36 For a discussion of the Overlay analysis tools of GIS, refer to Appendix A.

37 A variable on respondent Media Markets (MMs) was also collected and considered for analysis in this study. This variable was removed from consideration due to its high level of multicollinearity with other geographic layers, particularly with MSAs. MSAs and MMs were separately included in this analysis as a robustness check with no substantively different effects.
3. School Districts (SD): school district zones which operate at all levels, most often used as a basis for geographic and housing characteristics.

4. Neighborhood/Places (NP): merged layer of Census Designated Places and the boundaries of neighborhoods in the largest U.S. cities (according to the proprietary data from real estate database company Zillow).

In addition to these geographic measures, variables which account for the demographic and social characteristics of the respondents are utilized in this study. This includes the key measure of group consciousness: a multifaceted measure of how much respondents recognize intergroup inequities and feel that governmental action is necessary in order to overcome these imbalances. While previous studies have conceptualized group consciousness as the mention of race as a political issue in open-ended questions (Verba and Nie 1972), this is problematic for the data given the constrained nature of these particular questions in the ANES. Without knowing the actual sentiments behind the listing of race as an important political issue, it is difficult to ascribe to respondents varying degrees of group consciousness. For this study, I have chosen to adopt a more comprehensive construction of group consciousness which is based upon multiple components. As advanced by Miller et al. (1981), group consciousness is based on “polar affect” (a preference for one’s own group and a dislike for the other) and “individual versus system blame” (that the position of a group is due to their own individual failings or if they are the result of structural inequalities). The respective ANES variables used to capture each of these are feeling thermometer evaluations for racial groups and a question on the

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38 In the nine ANES surveys included in this study, identifying group consciousness based upon the mention of “race” (and similar search strings which allow for misspellings, related words, etc.) in the few open-ended response questions resulted in a group consciousness hit rate of less than 1%. Complications resulted from the fact that some ANES years allowed respondents to select from a list of pre-defined categories while others did not – and worse still, some ANES years only offered respondents the option to list one important political issue while others allowed respondents to list as many as four.
role of the government in solving issues of racial inequities. Brought together, group consciousness for minority respondents is coded as the average value for assessments of their own racial group on each of the two measures. For whites, it is the difference between their own evaluations of whites and the averaged evaluation of blacks and Latinos.

The final set of data are respondent demographic characteristics and further measures of efficacy/trust taken directly from the ANES.

4.4.2 The Classification of Districts

In the broadest terms of districting, it is easy to differentiate between districts in which a majority of the population is a member of the same racial group and districts in which no single group comprises a majority of the population. But as previously discussed, other types of districts exist and have been made the subject of judicial rulings, government actions, and scholarly focus. Assessing these differences in the broad class of Congressional Districts is critically important to understand the links between descriptive representation and political engagement (Gay 2001a). Unfortunately, the categorizations of and definitions for each vary considerably. The lack of consistent thresholds and uniform terminology in defining districts presents a problem to the study. Thus, this study will make use of the following district types and methods for classification:

1. Majority-Minority District (MMD): districts in which a majority of the population is nonwhite and where one nonwhite racial/ethnic group comprises a majority.

2. Minority Coalition District (MCD): districts in which a majority of the population is nonwhite and where no single racial/ethnic group comprises a majority.

3. Minority Influence District (MID): districts in which minority voters cast enough votes (or can be expected to) for their choice of candidate to constitute at least
half of the margin of votes by which the candidate wins – in other words, to be pivotal. Where Court cases and previous studies have used percentage thresholds for classifying Influence Districts, such a cut-and-dried method leaves little room to factor in the wide range of factors which enable or prevent minority voters to hold influence. As Richard Engstrom points out, district-specific factors which account for the racial polarization of voting must be used to classify these districts (Engstrom 2011). As such, the method he prescribes is used in this study.

4. Majority white districts (MWD): districts which are majority white and are not previously classified as MID (as some MIDs are, by definition, majority white).

Within the categories of MMD, MCD, and MID, it is important to know which minority group comprises largest share. For a majority-minority district which is 80% black, I would expect this to mean different things to a black resident of the district versus a Latino resident. Districts drawn with significant minority populations offer these communities an increase in the likelihood that their preferred candidate is selected. Knowing which minority group stands to benefit from the way the district is drawn is an important component of how districts are classified (Lublin 1999). Thus, the districts of MMD, MCD, and MID will be split into two categories for whether the dominant minority group is either black or Latino, bringing the total number of district types to seven. A visualization of all district types based on the component populations is shown in Figure 4.1 on the next page.

By knowing the black and Latino Voting Age Populations as a percentage of a district, the chart in Figure 4.1 offers a guide for how the district should be classified.

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39 For example, a 38.37% threshold was used by experts in the 2008 case *Pender City. v. Bartlett* (361 N.C. 491) as it had been found to be the minimum percentage which provides minority voters the opportunity to elect candidates of their own choosing.

40 Out of the 2,610 districts between 1962-2012, a total of 15 districts with a white population of 40% (or less) had a difference between the black and Latino populations of less than 5%. 9 of these were in the South. At a difference of 2%, the numbers dropped to 7 and 5, respectively.
Figure 4.1: District Types Based on the Racial Composition of Districts

classified. As shown in the legend, the breakdown of districts drawn in the 2012 round of redistricting shows significant numbers of each.

The ambiguous distinction in Figure 4.1 between which districts are MIDs versus those which are simply MWD is signified by the dotted line (which is drawn in accordance with David Lublin’s (1997) assertion that minority populations of 40% exert a strong influence on the representational style of an MC). As some MWDs offer the opportunity for minority communities to influence the selection of representatives, it is important to explore where these possibilities exist. As Engstrom argues, there needs to be an approach to classify MIDs which takes account of the actual abilities for minority communities to select the candidates of their choice (2011). And as the most theoretically sound way by which MIDs are classified is on the ability of minority communities influencing the selection of candidates, it is prudent to explore
this relationship. In Figure 4.2, each of the 435 MCs elected in the 1992, 2002, and 2012 elections is plotted as a function of the racial composition of their districts.

![Figure 4.2: Distribution of MCs elected in 1992, 2002, and 2012 by MC Race and the Racial Composition of Districts](image)

As seen in Figure 4.2, there are black and Latino MCs (signified by the letters “B” and “L”) who have been elected from districts which are overwhelmingly white. But what is most evident from this plot is the strong clustering of black MCs selected from mostly black districts and Latino MCs selected from mostly Latino districts. Higher percentages of black populations in a district are associated with a higher likelihood a black MC is elected, just as is the case for Latinos (and whites). Although the overlaid lines corresponding to the expectations plotted in Figure 4.1 adequately divide groupings of MCs, it is not immediately clear that the line between MIDs and
MWD is as successful. To further explore this, Figure 4.3 shows the result of running a clustering procedure run over MCs grouped by race:

Figure 4.3: Clustering of MCs elected in 1992, 2002, and 2012 by MC Race and the Racial Composition of Districts

In this figure, the clustering of elected MCs is contoured by race and held within a 95% confidence interval. What is immediately clear from Figure 4.3 is that the 40% cut-off for district composition holds remarkably well in demarcating the clusters of elected representatives based on district population. Although there is no scholarly consensus on where the line of influence should be drawn, it appears as though the use of 40% for the threshold is a reliable first cut. Using this line as a way to identify districts which are potentially influence districts, the procedure argued by Engstrom (2011) will then be used to definitely classify districts as being MID or not. With this,
I have reason to believe that threshold theory holds for understanding the influence of minority populations in instances where they do not comprise a majority of the population.

In Table 4.2 on the next page, the distribution of all 435 Congressional Districts 1962-present is shown across all seven types of districts. Although the vast majority of redistricting occurs on the 10 year cycle, there have been numerous instances over these past sixty years when states have redrawn district boundaries off-cycle (particularly during the “Reapportionment Revolution” in the mid-1960s). In the interest of presenting this information as completely and succinctly as possible, Table 4.2 aggregates the breakdown of all district types for the South and Non-South. The range of dates are grouped together as the periods of time in which no off-cycle Congressional redistrictings occurred within any of the state.

The data reported in Table 4.2 show several trends worth noting. Most immediately, the dramatic increase in the prevalence of all non-MWDs is clear. In 1962, fewer than one in twenty districts was majority nonwhite. Today, that figure stands at over one in three. Similarly, the number of MCDs has steadily increased over this fifty year period, going from being virtually nonexistent in 1962 to accounting for one in nine districts in 2012. And finally, there are a set of important statistics associated with the 1992 round of redistricting (the first to occur following the Thornburg decision). For one, the 1992 redistricting saw the creation of a total of 58 non-MWDs in both the South and Non-South. Among these, just under half (28) were created in §5 covered jurisdictions (which covers areas in both the South and Non-South). Within the South, this statistic means that the number of non-MWDs doubled in this redistricting cycle alone.
Table 4.2: Distribution of Districts by Type and Year, South and Non-South

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Data compiled by author. Sources: Congressional District Data Books (and supplements) and the U.S. Census via American Fact Finder.

a The 2005 off-cycle redistricting in Georgia redrew the MMD 4th District to be MCD.
b The 2003 off-cycle redistricting in Texas redrew the MMD 20th and 23rd Districts to be MID; the MID 32nd to be MCD. The 2004 off-cycle redistricting in Maine changed neither of the state's two MWD districts.
c 1974 off-cycle redistricting in California and New York.
d Between 1964-1970 (the years of the “Reapportionment Revolution”), 52 off-cycle redistrictings occurred within the 45 states apportioned more than one seat, resulting in two added MMDs, one added MCD, and four fewer MIDs in the North; two added MCDs and six added MIDs in the South.
To illustrate the location of these non-MWDs prior to and following *Thornburg*, Figure 4.4 on the next page shows the location of these districts in the South as drawn after the 1980 and 1990 Censuses. In these figures, the boundaries of the covered jurisdictions according to §5 are shown as the thick black line on the maps. These covered areas included 9 of the Southern states: the entirety of 7 states (Alabama, Georgia, Louisiana, Mississippi, South Carolina, Texas, and Virginia) and selected counties in two more (Florida and North Carolina). With few exceptions, the non-MWDs created during the 1992 redistricting in the South almost entirely fall within the bounds of the preclearance jurisdictions. It is the case that many of these states experienced rapid population growth during this time period, particularly with increasingly populations of minority voters, and it is often that these population growth patterns result in the creation of non-MWDs. But even among other states with minimal or nonexistent population changes, such as Alabama and Louisiana, 1992 saw the creation of MMDs where none had existed in the past. The visual presentation of these districts created in the 1992 redistricting, along with the data regarding the creation of MMDs from Table 4.2, shows the undeniable impact of the amended VRA and the Court’s decision in *Thornburg* in creating long overdue minority districts, particularly in the South.

As a final overview of the dataset, Table 4.3 shows the breakdown of ANES respondents 1980-2012 according to the seven district type classifications. These data not only show how the number of respondents in non-MWDs has increased in more recent years, but also that the ANES has contacted higher percentages of minority respondents to be included in their data.

---

41 The population growth rate of states like Florida, Georgia, Texas, and the Carolinas was as much as 20% between 1980 and 1990.
Figure 4.4: Geographic Distribution of Non-MWD Districts in the South following the 1982 (top) and 1992 (bottom) Redistrictings
## Table 4.3: Distributions of ANES Respondents by District Type

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</tr>
</tbody>
</table>

### South: 1980-1992:

<table>
<thead>
<tr>
<th></th>
<th>MWD</th>
<th>MMD-B</th>
<th>MMD-L</th>
<th>MCD-B</th>
<th>MCD-L</th>
<th>MID-B</th>
<th>MID-L</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whites</td>
<td>1,482</td>
<td>12</td>
<td>85</td>
<td>30</td>
<td>7</td>
<td>53</td>
<td>0</td>
<td>1,669</td>
</tr>
<tr>
<td></td>
<td>(88.8%)</td>
<td>(0.7%)</td>
<td>(5.1%)</td>
<td>(1.8%)</td>
<td>(0.4%)</td>
<td>(3.2%)</td>
<td>(0.0%)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>442</td>
<td>22</td>
<td>4</td>
<td>28</td>
<td>5</td>
<td>48</td>
<td>0</td>
<td>549</td>
</tr>
<tr>
<td></td>
<td>(80.5%)</td>
<td>(2.0%)</td>
<td>(0.7%)</td>
<td>(5.1%)</td>
<td>(0.9%)</td>
<td>(8.7%)</td>
<td>(0.0%)</td>
<td></td>
</tr>
<tr>
<td>Latinos</td>
<td>136</td>
<td>3</td>
<td>84</td>
<td>4</td>
<td>4</td>
<td>11</td>
<td>0</td>
<td>242</td>
</tr>
<tr>
<td></td>
<td>(56.2%)</td>
<td>(1.2%)</td>
<td>(34.7%)</td>
<td>(1.7%)</td>
<td>(1.7%)</td>
<td>(4.5%)</td>
<td>(0.0%)</td>
<td></td>
</tr>
<tr>
<td>All Others</td>
<td>83</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>(92.2%)</td>
<td>(0.0%)</td>
<td>(7.8%)</td>
<td>(0.0%)</td>
<td>(0.0%)</td>
<td>(0.0%)</td>
<td>(0.0%)</td>
<td></td>
</tr>
</tbody>
</table>

### South: 1996-2012:

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<th>MWD</th>
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<th>MMD-L</th>
<th>MCD-B</th>
<th>MCD-L</th>
<th>MID-B</th>
<th>MID-L</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whites</td>
<td>1,422</td>
<td>87</td>
<td>66</td>
<td>46</td>
<td>17</td>
<td>48</td>
<td>47</td>
<td>1,733</td>
</tr>
<tr>
<td></td>
<td>(82.1%)</td>
<td>(5.0%)</td>
<td>(3.8%)</td>
<td>(2.7%)</td>
<td>(1.0%)</td>
<td>(27.7%)</td>
<td>(2.7%)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>527</td>
<td>243</td>
<td>37</td>
<td>96</td>
<td>2</td>
<td>32</td>
<td>8</td>
<td>545</td>
</tr>
<tr>
<td></td>
<td>(55.8%)</td>
<td>(25.7%)</td>
<td>(3.9%)</td>
<td>(10.2%)</td>
<td>(0.2%)</td>
<td>(3.4%)</td>
<td>(0.8%)</td>
<td></td>
</tr>
<tr>
<td>Latinos</td>
<td>141</td>
<td>1</td>
<td>278</td>
<td>8</td>
<td>21</td>
<td>6</td>
<td>58</td>
<td>513</td>
</tr>
<tr>
<td></td>
<td>(27.5%)</td>
<td>(0.2%)</td>
<td>(54.2%)</td>
<td>(1.6%)</td>
<td>(4.1%)</td>
<td>(1.2%)</td>
<td>(11.3%)</td>
<td></td>
</tr>
<tr>
<td>All Others</td>
<td>92</td>
<td>14</td>
<td>13</td>
<td>10</td>
<td>0</td>
<td>3</td>
<td>11</td>
<td>143</td>
</tr>
<tr>
<td></td>
<td>(64.3%)</td>
<td>(9.8%)</td>
<td>(9.1%)</td>
<td>(7.0%)</td>
<td>(0.0%)</td>
<td>(2.1%)</td>
<td>(7.7%)</td>
<td></td>
</tr>
</tbody>
</table>

4.5 Results and Findings

4.5.1 South vs. Non-South; Blacks vs. Latinos

Before beginning the statistical testing of the hypotheses, it is worth examining the patterns of respondent attitudes on issues relating to efficacy and trust in government between the South and Non-South as well as between blacks and Latinos. As mentioned, the focus of analysis for this study is intended to be minority respondents in the South. Knowing what systematic differences exist (if any) between these broad groups is a necessary first step to understanding differences within racial groups across the multiple district types.

First, it is important to compare the set of minority ANES respondents in the South versus those in the Non-South. As shown in Table 4.3, roughly two-thirds of all respondents live outside of the South. If there are no broad differences between these respondents based on region, pooling together and testing for the effects of these district types on minority attitudes regardless of region is a reasonable approach (and would provide an increase in statistical confidence due to the larger sample size). But if, however, patterns of attitudes for these minority respondents are different by region, focusing this study on attitudes of minority respondents only in the South is a valid proposal. To test this, Figure 4.5 shows the average attitudes for black and Latino respondents in the South (black line) versus the Non-South (gray line) on component measures which constitute the dependent variables of interest as well as measures of internal efficacy. The percentage of respondents who agree with the stated question is shown around which a 95% confidence interval is mapped.

Most immediately, the data in Figure 4.5 shows that there are many measures on which minority respondent evaluations differ between the South and Non-South. While the component measures of the External Efficacy Index show no significant separation based on region, two of the three measures comprising the Trust in Gov-
ernment Index show significant separation. That is to say: minority respondents in the South have statistically higher evaluations in these two measures than their counterparts in the Non-Souther. Further, Figure 4.5 shows that minority respondents in the South have statistically higher evaluations of Congressional Approval, yet significantly lower likelihoods of reported voting. Given that these results show broad differences among minority respondents for measures of trust and internal efficacy, there is reason to truncate this study to only minority respondents in the South.

Next, given that the focus of this study will center on the evaluations of black and Latino residents in the South, it is important to examine the similarities and
differences between each. In Table 4.4, the mean assessments on the same items from Figure 4.5 are shown for blacks and Latinos in Southern states, split over the seven district types. Based on a similar comparative analysis conducted by Banducci et al. (2004), Table 4.4 presents the mean assessments on the same measures of trust and efficacy presented in Figure 4.5, disaggregated among the seven district types. The second line of each survey item is a figure for the difference between the average value for MWD as the base level and the average value for the other district type (shown in parentheses) with difference of means significance values added.

What the results in Table 4.4 show is that black respondents have higher assessments of many measures of trust and efficacy when they reside in black dominant versus majority white districts. Blacks in MMD-B districts are more likely to participate in elections and have higher levels of trust in government on two measures than blacks in MWDs. Blacks in MCD-B districts have higher levels of self-reported voting and approval of their MC. And finally, blacks in MID-B districts are more likely to have a higher approval of their MC than those who reside in MWDs. For each of the eight measures, blacks who reside in any of the Latino dominant districts do not have statistically different evaluations than those who reside in MWDs.

For Latino residents, the results of Table 4.4 present many of the same patterns. Latinos who reside in black dominant districts do not have any statistically different evaluations on any of the eight measures. Those who reside in MMD-L districts have higher approval of their MC, higher evaluations on one of the efficacy measure, and higher evaluations on two of the trust measures than those who reside in MWDs. Latinos in MID-L districts have higher evaluations on two of the measures of trust in government. But Table 4.4 also shows that Latinos in MCD-L districts have a lower self-reported voting rate than those in MWDs and Latinos in MID-L districts have a lower approval of Congress, a lower self-reported voting rate, and a lower evaluation of the third measure of trust than Latinos in MWDs.
Table 4.4: Mean Assessment of Minority Empowerment by Blacks and Latinos in the South, 1980-2012

<table>
<thead>
<tr>
<th></th>
<th>Blacks</th>
<th>Latinos</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MWD</td>
<td>MMD-B</td>
<td>MMD-L</td>
</tr>
<tr>
<td>Approve of MC</td>
<td>0.73</td>
<td>0.77</td>
<td>0.65</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(-0.08)</td>
<td>(0.17)**</td>
</tr>
<tr>
<td>Approve of Congress</td>
<td>0.50</td>
<td>0.49</td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td>(-0.01)</td>
<td>(-0.02)</td>
<td>(-0.04)</td>
</tr>
<tr>
<td>Voted Last Election</td>
<td>0.59</td>
<td>0.67</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>(0.08)*</td>
<td>(0.04)</td>
<td>(0.11)*</td>
</tr>
<tr>
<td>Efficacy: People Like Me Matter</td>
<td>0.69</td>
<td>0.72</td>
<td>0.67</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(-0.02)</td>
<td>(0.13)*</td>
</tr>
<tr>
<td>Efficacy: Officials Care</td>
<td>0.64</td>
<td>0.68</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(-0.05)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Trust: Gov. Run For Us</td>
<td>0.40</td>
<td>0.48</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td>(0.08)*</td>
<td>(0.13)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Trust: Gov. Spends Money Well</td>
<td>0.33</td>
<td>0.39</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td>(0.06)*</td>
<td>(0.07)</td>
<td>(-0.06)</td>
</tr>
<tr>
<td>Trust: Gov. Uses Time Well</td>
<td>0.46</td>
<td>0.44</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>(-0.02)</td>
<td>(-0.16)</td>
<td>(0.03)</td>
</tr>
</tbody>
</table>

*p < 0.05; **p < 0.01; ***p < 0.001
Taken together, the results of Table 4.4 show that blacks who reside in black dominant districts are significantly more likely to have higher evaluations on measures of efficacy and trust, as well as higher levels of voter participation and approval of their MC than those who reside in MWDs. For Latinos, the results offer a more mixed lot. While there are some Latino dominant districts which are associated with higher evaluations of the key measures, there are others which are associated with lower evaluations. Broadly, this study is centered on understanding how minority respondent efficacy and trust in government are impacted by majority-minority districting. With the results presented in this analysis, my expectation going into the main analysis of this study have expanded to see differences of assessment based upon a respondent’s racial group membership.

4.5.2 The Effects of District Type on Assessment

Having found patterns of difference among blacks and Latinos in assessing various measures of efficacy and trust, the next step is to conduct the statistical analysis of these differences. Before doing so, it is important to get a better sense of how the key dependent variables – the External Efficacy Index and the Trust in Government Index – play out over the range of the categorical district types. In Figure 4.6, the distribution of respondents on the Efficacy (top) and Trust (bottom) indices are shown over the full range of district composition. The x-axis is constructed to measure the percentage of a district’s population which is the same as the respondent’s racial group identification. The entire set of respondents have been divided into racial groups, which are visualized by shade, each of which is surrounded by a 95% confidence interval.

What Figure 4.6 shows is that respondent evaluation on the External Efficacy Index is remarkably stable over the range of district composition. When comparing whites and Latinos who live in districts which are mostly members of the other
Figure 4.6: Distribution of Respondents by District Composition, External Efficacy Index (top), and Trust in Government Index (bottom)

Racial groups, their evaluation of efficacy is not much lower than if they were to live in districts with high percentages of their own group. For blacks, however, there
is a significant increase around the 30% line. Although this eventually tapers off, this shows that there exists a point where black respondents evaluate their external efficacy higher when the district in which they reside is home to a significant percent of black residents.

For the Trust index, Figure 4.6 more clearly shows differences among the respondents. For whites, there is once again very little change over the entire range of district compositions. Thus, a white respondent living in a very nonwhite district is likely to have the same evaluation of trust in government compared to whites who live in overwhelmingly white districts. These differences are more clearly pronounced, however, for black and Latino residents. Once again, the 30% line represents a break in the data such that there is a significantly higher level of Trust among blacks – but unlike with Efficacy, this effect does not diminish as the district becomes more black. For Latinos, the increase is even more pronounced, where the point at which the district is roughly half Latino represents a significant increase in Latino respondents stating higher Trust values. This effect does diminish as the district becomes increasingly Latino.

Figure 4.6 has shown important trends in the two key dependent variables given the range of district compositions. For whites, I have no reason to suspect that the district type in which they are drawn has much of an effect on their evaluations of External Efficacy and Trust in Government. For blacks and Latinos, however, these trends are consistent with my expectations. With these conclusions in mind, it is time to delve into the statistical analysis over the full model.

As the two key dependent variables are categorical variables with ordered breaks in the scale, it is appropriate to run an ordinal logistic (logit) regression. Higher values of these variables will correspond to higher measures of External Efficacy and Trust in Government, respectively. Given the structure of the data, it is possible to statistically test Hypotheses H1-H3 through two iterations of the model.
for External Efficacy as the dependent variable and two iterations for Trust in Government as the dependent variable.

There are important considerations regarding the key independent variable: district type. This variable is an unordered, seven option categorical measure. In order to correctly estimate the effects of these district types on respondent evaluations, each of the categories is recoded as a dummy variable against the baseline of the most common item (which is MWD). Thus, six dummies are coded for each of the non-MWDs. And as my hypotheses test for the effect of district type for both blacks and Latinos, the model interacts a dummy variable for each group (black or Latino) with every district type dummy variable. Due to the nature of the data, it was not possible to run an entire model to encompass estimates for both blacks and Latinos, so the ordinal logit model was run twice for each of the dependent variables. The coefficients, standard errors, and significance are presented in Table 4.5.

Immediately, the effect of many of the independent variables is evident. Measures of internal efficacy, such as approval of Congress and voter participation, are associated with higher levels of Efficacy and Trust for members of all racial groups. Similarly, as the level of one’s group consciousness increases, this is associated with significantly higher evaluations of Efficacy and Trust across the board. And as I would expect given the findings of Zaller (1992), one’s level of education is highly indicative of how individuals will consider a wide range of factors in their assessment of representation. Taken together, these findings are consistent with the theories of minority empowerment used as a basis for the hypotheses.

When it comes to the district type variables, many of the results here are striking. For black respondents, residing in black dominant districts is associated with higher evaluations of Efficacy and Trust in Government. Blacks in MMDs and MCDs are significantly more likely to evaluate their own level of Efficacy higher than those who reside in MWDs, and blacks in MIDs are significantly more likely to have
Table 4.5: Ordinal Logit of Respondent Efficacy and Trust Assessments in the South, 1980-2012

<table>
<thead>
<tr>
<th>Demographic/Identities</th>
<th>Efficacy</th>
<th>Trust</th>
<th>Efficacy</th>
<th>Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Blacks</td>
<td>Latinos</td>
<td>Blacks</td>
<td>Latinos</td>
</tr>
<tr>
<td>Age</td>
<td>-0.01 (0.00)**</td>
<td>-0.01 (0.00)**</td>
<td>-0.00 (0.00)</td>
<td>-0.00 (0.00)</td>
</tr>
<tr>
<td>Income</td>
<td>0.00 (0.01)</td>
<td>0.00 (0.01)</td>
<td>-0.01 (0.01)**</td>
<td>-0.02 (0.01)**</td>
</tr>
<tr>
<td>Education</td>
<td>0.05 (0.01)***</td>
<td>0.06 (0.01)***</td>
<td>0.03 (0.01)*</td>
<td>0.03 (0.01)*</td>
</tr>
<tr>
<td>PID Republican</td>
<td>0.24 (0.11)*</td>
<td>0.24 (0.10)*</td>
<td>0.17 (0.12)</td>
<td>0.15 (0.12)</td>
</tr>
<tr>
<td>PID Independent</td>
<td>0.18 (0.12)</td>
<td>0.18 (0.12)</td>
<td>0.10 (0.14)</td>
<td>0.10 (0.12)</td>
</tr>
<tr>
<td>Black / Latino</td>
<td>-0.50 (0.18)**</td>
<td>0.57 (0.21)**</td>
<td>-0.04 (0.21)</td>
<td>0.10 (0.24)</td>
</tr>
<tr>
<td>Geographies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSA</td>
<td>0.62 (0.42)</td>
<td>0.78 (0.38)*</td>
<td>-1.26 (0.45)**</td>
<td>-1.08 (0.40)**</td>
</tr>
<tr>
<td>School District</td>
<td>0.08 (0.41)</td>
<td>0.53 (0.44)</td>
<td>0.63 (0.33)*</td>
<td>0.45 (0.42)</td>
</tr>
<tr>
<td>Neighborhood/Place</td>
<td>0.43 (0.21)*</td>
<td>0.15 (0.28)</td>
<td>0.17 (0.23)</td>
<td>0.15 (0.28)</td>
</tr>
<tr>
<td>Dominant Group</td>
<td>-0.20 (0.16)</td>
<td>0.30 (0.15)*</td>
<td>0.11 (0.18)</td>
<td>0.11 (0.16)</td>
</tr>
<tr>
<td>Participation/Representation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voted</td>
<td>0.26 (0.09)**</td>
<td>0.26 (0.10)**</td>
<td>0.01 (0.10)</td>
<td>-0.00 (0.10)</td>
</tr>
<tr>
<td>MC Same Party</td>
<td>-0.07 (0.10)</td>
<td>-0.06 (0.10)</td>
<td>0.06 (0.12)</td>
<td>0.07 (0.12)</td>
</tr>
<tr>
<td>MC Same Race</td>
<td>0.21 (0.16)</td>
<td>-0.24 (0.15)</td>
<td>-0.08 (0.17)</td>
<td>-0.13 (0.17)</td>
</tr>
<tr>
<td>Approve of Congress</td>
<td>0.30 (0.08)***</td>
<td>0.30 (0.08)***</td>
<td>0.74 (0.08)***</td>
<td>0.73 (0.08)***</td>
</tr>
<tr>
<td>Group Consciousness</td>
<td>0.98 (0.27)***</td>
<td>1.02 (0.27)***</td>
<td>0.90 (0.29)**</td>
<td>0.92 (0.29)***</td>
</tr>
<tr>
<td>District Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMD Black</td>
<td>-0.66 (0.31)*</td>
<td>-0.16 (0.15)</td>
<td>0.69 (0.33)*</td>
<td>0.44 (0.17)**</td>
</tr>
<tr>
<td>MMD Latino</td>
<td>-0.10 (0.15)</td>
<td>0.48 (0.23)*</td>
<td>0.36 (0.17)*</td>
<td>0.32 (0.26)</td>
</tr>
<tr>
<td>MCD Black</td>
<td>-0.84 (0.36)**</td>
<td>-0.32 (0.22)</td>
<td>0.14 (0.36)</td>
<td>0.14 (0.23)</td>
</tr>
<tr>
<td>MCD Latino</td>
<td>-1.04 (0.58)*</td>
<td>0.08 (0.55)</td>
<td>-0.65 (0.56)</td>
<td>-1.14 (0.57)*</td>
</tr>
<tr>
<td>MID Black</td>
<td>-0.74 (0.34)*</td>
<td>-0.51 (0.28)*</td>
<td>-0.12 (0.35)</td>
<td>-0.86 (0.28)**</td>
</tr>
<tr>
<td>MID Latino</td>
<td>0.19 (0.25)</td>
<td>0.13 (0.34)</td>
<td>0.41 (0.33)</td>
<td>0.16 (0.39)</td>
</tr>
<tr>
<td>Race:District Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMD Black</td>
<td>0.97 (0.47)*</td>
<td>-0.52 (1.01)</td>
<td>-0.37 (0.51)</td>
<td>1.57 (1.01)</td>
</tr>
<tr>
<td>MMD Latino</td>
<td>0.44 (0.49)</td>
<td>-1.14 (0.38)***</td>
<td>-0.16 (0.60)</td>
<td>-0.03 (0.42)</td>
</tr>
<tr>
<td>MCD Black</td>
<td>1.05 (0.54)*</td>
<td>0.85 (1.13)</td>
<td>-0.12 (0.58)</td>
<td>-0.91 (1.50)</td>
</tr>
<tr>
<td>MCD Latino</td>
<td>1.41 (1.17)</td>
<td>-1.43 (0.16)***</td>
<td>-1.24 (0.45)***</td>
<td>-0.11 (1.05)</td>
</tr>
<tr>
<td>MID Black</td>
<td>0.71 (0.63)</td>
<td>1.09 (0.79)</td>
<td>1.06 (0.64)*</td>
<td>0.49 (0.78)</td>
</tr>
<tr>
<td>MID Latino</td>
<td>-0.13 (0.36)</td>
<td>-0.07 (0.53)</td>
<td>0.06 (1.15)</td>
<td>0.59 (0.66)</td>
</tr>
</tbody>
</table>

Data compiled by author. Standard errors in parentheses.
*p < 0.05; **p < 0.01; ***p < 0.001

a higher level of Trust in the Government than those who reside in MWDs. This provides support for several of the hypotheses: blacks in non-MWDs have higher levels of efficacy and trust than those in MWDs (H1), blacks in influence districts
have higher levels of trust than those in MWDs (part of H2a), and blacks in coalition districts have higher levels of efficacy than those in MWDs (part of H3a; H3b). To assess H3a completely, it is necessary to compare the proportional log-odds ratios for blacks in MMDs and blacks in MCDs. Brought together, the results of the hypotheses testing for blacks are displayed in Table 4.6.

Table 4.6: Findings of Hypotheses H1-H3: Impact of District Type on Black Satisfaction with Efficacy and Trust

<table>
<thead>
<tr>
<th></th>
<th>MWD</th>
<th>MMD</th>
<th>MCD</th>
<th>MID</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Efficacy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominant</td>
<td>3rd</td>
<td>2nd</td>
<td>1st</td>
<td>-</td>
</tr>
<tr>
<td>Not Dominant</td>
<td>1st</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Trust</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominant</td>
<td>1st</td>
<td>-</td>
<td>-</td>
<td>higher</td>
</tr>
<tr>
<td>Not Dominant</td>
<td>1st</td>
<td>2nd</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: Dashes represent a rejection of the alternative hypotheses.
*Represents an even stronger rejection.

Thus for black respondents, the hypotheses hold almost entirely as expected. By comparing the log-odds of blacks in MMDs vs MCDs, I find that black respondents in MCDs actually have a slightly higher level of efficacy (2.87) than those in MMDs (2.83), partially going against the expectation from H3a. For the other variables in Table 4.6, the data do not refute the null hypothesis regarding the different events.

For Latino respondents, however, the results are not as expected. Latinos in MMD-L and MCD-L districts have significantly lower values of Efficacy than those in MWDs, going against many of the same hypotheses supported by the findings from black respondents. This means a very strong rejection of the alternative hypotheses.

For the rest of the district types on respondent evaluations, particularly for the Trust

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42 The interpretation is that blacks in MCDs have higher odds of being in the highest category of Efficacy when compared to blacks in MMDs, all other variables held constant.
variables, I cannot support the alternative hypotheses. As before, the full results of
the hypotheses testing for Latino Efficacy are shown in Table 4.7:

Table 4.7: Findings of Hypotheses H1-H3: Impact of District Type on Latino Satis-
faction with Efficacy

<table>
<thead>
<tr>
<th>Efficacy</th>
<th>MWD</th>
<th>MMD</th>
<th>MCD</th>
<th>MID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominant</td>
<td>1st</td>
<td>2nd *</td>
<td>2nd *</td>
<td>-</td>
</tr>
<tr>
<td>Not Dominant</td>
<td>1st</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: Dashes represent a rejection of the alternative hypotheses.
*Represents an even stronger rejection.

What the results of these models in Table 4.5 show is that district type is a highly
significant influence on minority elevations of Efficacy and Trust. For blacks, being
a member of the dominant racial group in all types of non-MWDs is associated with
higher levels of Efficacy and Trust. For Latinos, no conclusions can be drawn that
there is a difference for assessments based upon district types. These findings speak
to the fundamental difference in issues of representation for black and Latino commu-
nities, particularly in the South. The purposive creation of minority districts home
to a significant black population is an essential means by which the representational
interests of black communities is advanced.

The findings based on the External Efficacy and Trust in Government indices
are designed to understand the impact that different types of minority districts has
on many aspects of representation. Within the ANES, other variables have been
periodically asked which more pointedly ask respondents about these and similar
issues. Specifically, questions from the CSES modules included in the 2004, 2008, and
2012 ANES time series studies ask important questions on respondent satisfaction
with government and American democracy. Although the sample size of these three
surveys is insufficient to run the same sort of large-scale statistical analysis like that
carried out in Table 4.5, these questions offer important insight into respondent evaluations and are worthy of analysis. Taken as a difference of means across the seven district types (in both the South and Non-South), the results of these three CSES variables are reported in Table 4.8.

Table 4.8: Mean Assessments of Efficacy and Democracy Satisfaction by Blacks and Latinos, 2004-2012 CSES Surveys

<table>
<thead>
<tr>
<th></th>
<th>MWD</th>
<th>MMD-B</th>
<th>MMD-L</th>
<th>MCD-B</th>
<th>MCD-L</th>
<th>MID-B</th>
<th>MID-L</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Important who</td>
<td>0.20</td>
<td>0.26</td>
<td>0.23</td>
<td>0.15</td>
<td>0.32</td>
<td>0.62</td>
<td>0.28</td>
<td>1,156</td>
</tr>
<tr>
<td>is in power</td>
<td>(0.06)*</td>
<td>(0.03)</td>
<td>(-0.05)</td>
<td>(0.12)</td>
<td>(0.42)**</td>
<td>(0.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who one votes</td>
<td>0.08</td>
<td>0.08</td>
<td>0.17</td>
<td>0.09</td>
<td>0.13</td>
<td>0.13</td>
<td>0.00</td>
<td>1,160</td>
</tr>
<tr>
<td>for is important</td>
<td>(0.00)</td>
<td>(0.09)</td>
<td>(0.01)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(-0.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfied with</td>
<td>0.81</td>
<td>0.94</td>
<td>0.94</td>
<td>0.82</td>
<td>0.71</td>
<td>0.79</td>
<td>0.82</td>
<td>1,135</td>
</tr>
<tr>
<td>Am. democracy</td>
<td>(0.13)*</td>
<td>(0.13)*</td>
<td>(0.01)</td>
<td>(-0.10)</td>
<td>(-0.02)</td>
<td>(0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latinos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Important who</td>
<td>0.27</td>
<td>0.29</td>
<td>0.26</td>
<td>0.18</td>
<td>0.13</td>
<td>0.00</td>
<td>0.26</td>
<td>884</td>
</tr>
<tr>
<td>is in power</td>
<td>(0.02)</td>
<td>(-0.01)</td>
<td>(-0.09)</td>
<td>(-0.14)*</td>
<td>(-0.27)</td>
<td>(-0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who one votes</td>
<td>0.14</td>
<td>0.17</td>
<td>0.12</td>
<td>0.21</td>
<td>0.70</td>
<td>0.00</td>
<td>0.17</td>
<td>886</td>
</tr>
<tr>
<td>for is important</td>
<td>(0.03)</td>
<td>(-0.02)</td>
<td>(0.07)</td>
<td>(-0.07)**</td>
<td>(-0.14)</td>
<td>(0.03)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfied with</td>
<td>0.86</td>
<td>1.00</td>
<td>0.78</td>
<td>0.79</td>
<td>0.79</td>
<td>1.00</td>
<td>0.85</td>
<td>865</td>
</tr>
<tr>
<td>Am. democracy</td>
<td>(0.14)</td>
<td>(-0.08)*</td>
<td>(0.07)</td>
<td>(-0.07)**</td>
<td>(0.14)</td>
<td>(-0.01)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: 2004-2012 CSES Modules on ANES Time Series Surveys, face-to-face interviews only. Compiled by author.
*p < 0.05; **p < 0.01; ***p < 0.001

What is immediately clear from these results is that many of the same conclusions derived from the ordinal logit analysis of the Efficacy and Trust measures are found here. Blacks in MMD-B districts are more likely to agree with statements that it matters which elected leader is in power and that they are satisfied with the way that democracy works in the U.S. (blacks in MID-B districts are also more likely to agree with the former). For Latinos in MCD-L districts, I see lower levels of agreement with the same two statements as well as a statement that it matters for whom they vote (Latinos in MMD-L districts are less likely to say they are satisfied with the way that democracy works in the U.S.). These results in Table 4.8 provide a nice confirmation of the general findings regarding respondent satisfaction with their representation given the type of Congressional District in which they reside.
4.5.3 The Effect of Thornburg

Having found a number of effects of district type on respondent evaluations of Efficacy and Trust, the final part of this study will examine what role the decision in *Thornburg* and the subsequent implementation of the new requirements has had on respondent assessment. Before beginning the analysis, it is important to get an overview of how respondent assessments have adjusted over time. In Figure 4.7, the mean values of Efficacy and Trust for respondents is shown by year, broken into the three racial groups of the respondents. These values are the predicted values derived from the ordinal logit models based on all of the variables in the model. 95% confidence intervals are fitted around each of the lines.

From the patterns of Efficacy and Trust shown, there are unmistakable trends. For Efficacy, there is a general downward trend from the first year to the most recent. Therein, there are significant declines in Efficacy in the 1988 and 2012 surveys, while the other years have significantly more gradual level slopes. In each of these years, white assessments are the highest and black assessments are the lowest. For Trust, the patterns are more constant in their upward slope and relatively free from single year peaks or troughs. The relative positions of blacks and Latinos are the highest, with white assessment being consistently the lowest of the three. And among both the Efficacy and Trust trends, it is not immediately evident that any particularly year is associated with a significant sustained change in group assessments.

Given these observations about the measures over time, it is important that the year-by-year changes (as well as the overall trends) be accounted for before examining pooled data before/after a cut-point year. By setting the data to the overall trends and adjusting each of the years to fit, it is possible to examine the effects of year changes while minimizing the effect of single-year spikes.\[\text{43}\] This is

\[\text{43}\] An alternative method to examine the change of an association over time would be to run a fixed effects regression. To do so, the key dependent variables of interest would need to be collapsed
Figure 4.7: Distribution of Respondents by District Composition, External Efficacy Index (top), and Trust in Government Index (bottom)

into binary variables and a year measure would be added to the logits. Given the loss of variation in the Efficacy and Trust measures, not to mention overfitting the year variable to the model, the
achieved by detrending the time series data anchored by the cut-point year. As a segmented regression approach, linear trends are fitted for the pooled set of years before the cut and the pooled set of years after. For each of the years therein, a constant is calculated which, when applied to each respondent in the year, adjusts the aggregate data to fit the linear trends.

For the selection of the cut-point years, this is centered around the time of the Court’s 1986 decision in *Thornburg*. This would put 1988 as the first post-*Thornburg* ANES year. Yet the effects of the ruling did not take force until the 1990 round of redistricting, which would put 1992 as cut-point year. And finally, an argument can be made that 1996 is the year to be used as this would be the first ANES survey in which respondents are being interviewed living in the many newly-created minority districts with minority representatives. As a result, three different cut-point years will be separately considered in the analysis: before/after 1984/1988, 1988/1992, and 1992/1996. The results of the differences of means for Efficacy and Trust are presented in Figure 4.8, fitted with the 95% confidence intervals.

For whites, there is a clear separation in both Efficacy and Trust at the earliest divide, where assessments of each are significantly higher in 1980 and 1984 and lower after. In the two subsequent cut-points, the separation closes for Efficacy; for Trust, separation closes in the 1988/1992 cut and reopens in the 1992/1996 cut where the “After” values are greater. For Latinos, there is no significant separation in any of the cut-point years. For blacks, however, there are separations which emerges in the later cut-points which are statistically significant. For black respondent Efficacy, the post-1992 grouping was higher than the years before, and the post-1996 grouping was higher still. For black respondent Trust, the post-1992 grouping is significantly higher than it is for the before grouping. In this, the creation of the wave of majority-minority districts following the *Thornburg* decision has led to a significant increase in minority representation.

Adoption of a fixed effects model is not the best approach.
among blacks in the assessment Efficacy and Trust in Government. While the initial ruling itself did not change black assessments for the pre/post 1988 ANES, the effects
were present in the grouping when the first election year was the cut point (1992) and when respondents had lived in many newly-drawn districts for the first time (1996) as a result of *Thornburg*. This provides support for Hypothesis H4.

### 4.6 Analysis and Conclusion

In this study, I have explored the impact of majority-minority districts on issues of representation for minority populations in the South. Drawing on nine cycles of public opinion data, this study has disaggregated the broad set of majority-minority districts and assessed the effect that these different districts have had on respondent efficacy and trust in government. Further, by assessing the impact of these new districting schema as a result of the Supreme Court’s 1986 decision in *Thornburg v. Gingles*, this study has assessed the impact of an important institutional mandate in changing public attitudes and opinions among Southern minority communities.

At the broadest level, this study has found support for the institution of majority-minority districts providing higher levels of efficacy and trust for Southern blacks. Districts which are purposefully drawn to ensure a sufficient population of blacks are associated with higher levels of assessment on key measures of representation. Even if these districts are not home to an outright majority of black voters, they nonetheless provide opportunities for black communities to have meaningful participation. For Latino respondents, however, I have not found the same conclusions. Higher levels of Latino populations drawn into districts are very unlikely to have higher levels of respondent satisfaction. And given these two different findings, the overall impact of the *Thornburg* decision has led to higher levels of efficacy and trust for all Southern blacks, while no similar impact can be found for Southern Latinos. Further research into the areas of Latino efficacy and trust in government in majority-minority districts is needed in order to understand the impact of these districts on Latino satisfaction with representation.
What is truly interesting about these findings concerns the growing number of multiracial districts in the South which are home to sizable populations of both blacks and Latinos. Although the creation of these minority coalition districts does not fulfill any specific legal requirement or institutional mandate, they are an unavoidable reality, especially in the rapidly growing multi-racial population areas of the South. In general, I have found that black respondents have higher assessments of their representation when they are drawn into these coalition districts, indicating that conflict theory may not accurately describe black outlooks and viewpoints in multi-racial districts. For Latinos, I have once again found a strong rejection of the alternative hypothesis. Future research should explore the state of black/Latino attitudes and behaviors in these multi-racial coalition districts, seeking to better understand how competition over a finite number of Congressional representatives plays out when these communities are increasingly coming to live and work together in these same areas.

In spite of the many positives which result from majority-minority districting plans, relying on the creation of these districts as a panacea for the problems of minority representation ignores the need for broad-based participatory transformations and a fundamental transfer of power within the current political system (Guinier 1992). Nonetheless, these majority-minority districts offer the potential to increase levels of minority engagement and participation, leading to the election of more minority-backed candidates. As the states once covered by the VRA’s pre-clearance formula begin to redraw their Congressional district boundaries, it will be important to assess whether the progress made in advancing black descriptive representation and elevating levels of satisfaction for Southern blacks will remain.
Fundamentally, Congressional Redistricting is a process which is about ensuring the guarantees of the Constitution. Although the 229 year history of the United States highlights the many shortcomings in realizing this goal, the number of challenges and reforms to this system speaks to the positives. We have collectively emphasized the importance of the legislator-constituent relationship and have established a system which encourages the further development of these dynamics. We have permitted states to determine for themselves whether or not the current system for drawing district lines fulfills the intended system of representation – and if not, permit states to pursue alternate methods for redrawing district boundaries. And we have deemed the purposive creation of districts which grant minority communities the ability to select the candidate of their choice to be a necessary feature of democracy.

5.1 One Person, One Vote and Redistricting

This dissertation has sought to understand how various aspects relating to Congressional Redistricting in the United States impact the principle of one person, one vote. As was discussed in Chapter One, the process whereby the U.S. has reformed
its institutions and worked to bring about the most fundamental principles of equality in representation has been anything but a straight line. Intertwined with these broad transformations, three important questions emerged which were addressed in this dissertation.

In the second chapter, the question of how the changes brought about by redistricting impact the strategic decision-making process of incumbent MCs was explored. Fundamentally, single-member districts are designed to provide individualized representation to a group of constituents. As the MC cultivates this relationship with her constituents, both parties stand to benefit. For the MC, she can expect to count on higher levels of electoral security in her reelection contests. For the constituents, they can expect to find an MC who is more responsive to their interests and focused on the policies they prefer. But when the set of constituents represented by each MC changes in the process of redistricting, the entire dynamic is threatened. In this chapter, I found that MCs do indeed rely upon the support of their constituents following a round of redistricting, going so far as to assume additional costs and burdens in the pursuit of reelection to maintain a connection with these constituents. Quite simply, the connection an MC has with her district is the most important factor in her reelection calculus. This speaks to the importance of Congressional Redistricting in sustaining a system wherein the legislator is responsible to her constituents, placing greater influence on representational equality.

In the third chapter, the question of how the set of institutions which are responsible for drawing district boundaries impacts the produced districts is explored. Taking advantage of the natural experiment which exists when states change the methods by which they draw district boundaries, this chapter sought to explore what systematic differences (if any) are a product of the different institutions of redistricting. Broadly, this chapter has found that party control of the process matters more for tangible effects than the institutions themselves. With an expanded study
that encompasses further measures and additional years, a more thorough analysis of the methods of redistricting can be conducted, directly testing for the same observed effects as the present chapter.

And in the fourth chapter, the institution of majority-minority districts is explored to assess the impact that specific districting schema have on the representation of minority communities. By disaggregating among the broad types of majority-minority districts, this study has found that the specific composition of the districts and the relative dominant versus non-dominant status of a minority group are impactful on their overall sense of representational efficacy and trust in government. In general, the creation of all types of majority-minority districts in which blacks comprise the dominant minority group are essential for the increase of black efficacy. By contrast, the same districting plans in districts where Latinos are the dominant minority group had the opposite effect. These findings highlight the importance that the institution of majority-minority districts has as a way to address long overdue systems of denied representation for black communities in the South.

All together, the findings in these chapters have addressed different areas concerning the nature of representation in the American system by exploring how each comports with the principle of one person, one vote. Each of these studies was carried out with the use of GIS data and data analysis techniques.\footnote{See Section 5.2 for a fuller discussion.} Future research should address many of the questions which have been raised by this dissertation. Research should more deeply explore how incumbent MCs make appeals to their constituents following a round of redistricting, examining whether the courting of old constituencies is truly an active process on the part of the MC or simply a matter of logistical convenience. On areas relating to the institutions of redistricting, future research should more closely examine how different redistricting institutions produce a wide range of district proposals, comparing early proposals to those which
ultimately pass into law. And finally, research which seeks to better understand the institution of majority-minority districts in the U.S. should look more deeply into the state of Latino representation, seeking to understand whether these districting scheme actually harm the substantive representation of Latino communities.

5.2 The Use of GIS

Throughout this dissertation, the application of GIS has been used to code many of the variables, control for the effects of place, and better understand how politics and geography are linked via spatial statistics. The suite of processes enabled by GIS are nothing short of remarkable: extremely large and highly precise datasets can be computed and analyzed to produce meaningful and accurate measures. In short, GIS has opened an entire world of analysis which would otherwise be off-limits to social scientists. But in spite of the unquestioned benefits that GIS can provide to community of social scientists, there still exist many obstacles to its widespread use and acceptance.

There has been a long-standing debate among academic geographers about the role that GIS has to play in academia. Most notably, there is the widespread belief that GIS applications are the tools of problem-solving and not of science (Wright et al. 1997). From this perspective, the value of GIS comes from the ability to illustrate information alongside the work of science. Part of the reason for this has to do with the pervasive use of GIS in industry, where the processes are seen more as application and description (Pickles 1997). But academic geographers have been spending the past twenty years fighting back against these stigmas. This effort, combined with the remarkable advancements in the processing capabilities of GIS, a more accessible supply of high quality geospatial data, and expanded capabilities for scientists to gather and analyze data in the field has enabled the suite of applications known as GIS to rise to the levels of scientific scholarship in many fields,
particularly in anthropology, archeology, earth and oceanic sciences, environmental sciences, geology, and paleontology (Goodchild 2010).

Although the discipline of political science can count many early pioneers of the fields of spatial statistics and geography among our ranks, the incorporation of GIS into our craft has been at a slower pace than in many other scientific disciplines (Cho and Gimpel 2012). Without listing any by name, recent studies in prominent journals have opted to use unreliable and approximate measures of geography in place of GIS-computed measurements. Further still, few studies have used the suite of GIS applications for other scientific processes such as theory development, statistical analysis, and hypothesis testing. While this is not to discredit the approach, design, or findings of these studies, it does call into question why these approaches were opted for over those of GIS. It is understandable: GIS is an expensive program which presents a learning curve to new users and requires data that may only exist in an ideal world. But the world around us – our scientific peers and many of the institutions we study (redistricting, for example) – use GIS. It’s time that we step up to the plate.

This dissertation has attempted to do just that. It is my hope that social scientists will continue to develop and further use GIS as part of their scientific work of theory building, hypothesis testing, and statistical analyses. We stand to make our science stronger and our scholarship better.
Appendix A

Geospatial Overlay

For this dissertation, no geoprocessing operations of GIS are as important as the tools used for spatial overlay. The calculation of population segments and the determination of MC residencies within districts in Chapter 2, the shifts of population under various redistricting methods in Chapter 3, and the locations of ANES respondents in Chapter 4 are all data extracted from by overlay operations. This Appendix discusses the processes by which these geospatial data are derived in GIS using multiple data sources subject to the same fundamental operations.

At the most basic level, spatial overlay superimposes two or more geographic datasets (“layers”) in a map environment using a common coordinate system. Spatial overlay uses the computational power of GIS to derive new measures about geographic data from multiple large-N spatial datasets. For example, imagine we wanted the number of times Hank Snow visited each media market in the contiguous U.S. in his 1962 adapted cover of *I’ve Been Everywhere*.\(^1\) One way to accomplish this task would be to take a list of the 206 media markets in the lower 48 states and merge

\(^1\) Omitting Alaska and the non-U.S. locations. The location of El Dorado remains unknown due in large part to the efforts of King James in halting the progress made by Sir Walter Raleigh.
this with a list of the locations of the 74 visits. But as most of these visit locations are not named the same as the media market locations (i.e. the Los Angeles media market and visit location of Pasadena), the task becomes tedious. But by overlaying a layer of the locations from the song and a layer of the media markets in GIS, both projected on the same coordinate system, we can much more easily create, visualize, and record a count of how many times he visited each market:

![Map of Visit Locations and Media Markets](image)

(a) Visit Locations  (b) Media Markets

**Figure A.1**: Locations from *I've Been Everywhere* and U.S. Media Markets
In order to derive the type of data in the example above, there are several concepts and fundamental operations of spatial overlay that need discussing.

*Feature Classes*

By definition, a feature class refers to a collection of homogeneous elements which share a spatial relation and at least one attribute (nonspatial, descriptive data). These elements are projected onto the same geographic space and are represented as a set of either points, lines, or polygons. All of the elements in each feature class will collectively represent one layer used in the process of spatial overlay.

It is important to discuss the types of feature classes used in overlay analysis in order to understand how geospatial data is derived. The main distinction between feature classes is how they are geometrically expressed: features which either occupy area within the Euclidean space (polygons) or features which do not (points and lines). Depending on the types of feature classes used in overlay, the process of extracting geospatial data will either be straightforward or considerably more complicated. With the example above, this task is easy. The visit location features are expressed as points and the media market features are expressed as polygons. Overlaying these feature classes, it is possible to determine a count as each and every visit location point is fully contained within one of the media market polygons.²

When multiple feature classes of elements that occupy space are overlaid (i.e. multiple layers of polygons), the task becomes considerably more difficult. In these instances, data management tools that transform the spatial representations of feature classes must be employed in order to derive this same geospatial data.

² Using basic metric measurements on a cartesian coordinate system, it is entirely possible to have points or a line which lies precisely at the intersection or boundary of two planes (polygons). In these cases, determining which plane contains these features is not possible. But with geospatially referenced data, the coordinate system is far more precisely defined and the location data are continuous measures. Points or lines which appear to be exactly on the boundary between polygons are, nearly every time, fully contained within one polygon or the other. Further, GIS allows for the use of buffer procedures (discussed in this Appendix) which enable the determination of location information in the rare set of instances where data appears to be overlapping.
Feature To Point and the Problem of Mixed Pixels

In instances where multiple feature classes that occupy space are overlaid, it may not be possible to extract all of the data needed. Imagine we wanted a count of the number of National Parks in each state, where no Park is counted more than once. For most of the Parks, this is no problem. But some Parks span state boundaries (Yellowstone, for example), so the question becomes about how these should be counted. The obvious answer would be to count Yellowstone in Wyoming as the majority of the Park is within that state. Rather than make a case-by-case determination for every park which is not fully contained within a single state, it would be helpful to have an automated process to account for overlapping polygons. The most effective way to transform a polygon feature class into non-space occupying features is to use the data management tool known as “feature to point” (FTP).

FTP takes the surface area of a polygon and calculates its center of mass: the point at which the polygon would balance if it were placed on the tip of a needle.\(^3\) Functionally, FTP condenses the geometric information of a feature down to a single point that has no area, taking account of both the spread and irregularity of nonsymmetric features. A benefit of FTP is that it does not reduce the amount of information we have about the geographic distribution of attributes. Within the area of a polygon, there does not exist any further information detailing the location of the individual cases (e.g. if we know that a polygon is home to 500 people, we do not know where within the polygon they reside). Thus, the process of transforming the polygon into a point does not change our ability to analyze or understand the data. For these reasons, FTP is a useful tool in geoprocessing for deriving geospatial statistics. Figure A.2 on the next page shows the calculated FTPs for Census Block Group polygons around Long Beach, California, from the 2010 Census.

\(^3\) In GIS terminology, this is called the “centroid.”
The most important reason FTP transformations are used for this dissertation concerns the need to classify what are know as *mixed pixels* in geospatial overlay. When one feature is completely nested within another during spatial overlay, we refer to this as a pure pixel. For example, if we overlay a map of the United States onto a map of North America, the United States would be a pure pixel. By contrast, a mixed pixel would be when a single feature is divided among two or more overlapping features in geospatial overlay (i.e. Russia would be a mixed pixel when overlapped by either Asia or Europe). By transforming polygons into points by FTP, the problem of mixed pixels is alleviated.

As an illustration, Figure A.3 on the top of the next page shows Census Block Groups (BGs, shown as bounded areas) from the 2010 Census overlapped by Congressional District Boundaries (shown as shaded areas) around Orangeburg, South Carolina, for the 113th Congress. The FTP Centroids for every BG are shown as the points. In the figure, all but five of the BGs are completely contained within
one of the two district boundaries. These are pure pixels and would be counted as belonging to either the 2\textsuperscript{nd} District or the 6\textsuperscript{th} District. The five remaining pixels (the mixed pixels, illustrated with a hashed shading) belong to both districts. With the FTP Centroids, four of the five mixed pixels would be grouped into the 2\textsuperscript{nd} District, whereas the last would belong to the 6\textsuperscript{th} District.

\textit{Union, Splitting, Clipping}

Having detailed the processes whereby feature classes are transformed for use in overlay, this Appendix will provide a discussion of how data are extracted by the analysis tools of unions, splits, and clips as a three-step procedure. The purpose of this suite of operators is to compute data about a geographically bounded area from overlapping features using the logic and conditions of set theory and Boolean operators. In order to understand these three operators, this discussion will use the case of North Carolina’s redrawn Congressional Districts in 2002.
After overlaying the desired feature classes within the GIS environment, the first task is to take the \textit{union} of the geographic area we are interested in (A) with the overlapping objects from the other feature class (B). In Figure A.4, the top figure shows the overlap of North Carolina’s old 4\textsuperscript{th} District (A) with the newly redrawn district boundaries. If B represents the new districts that the old 4\textsuperscript{th} is divided among, then the bottom figure shows the extracted union of A\cup B.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure_a4.png}
\caption{Taking the Union of North Carolina’s 4\textsuperscript{th} Congressional District with the New Districts following the 2002 Redistricting}
\end{figure}
From the union tool, the old 4th District is shown to overlap with three newly redrawn districts: the 2nd, 4th, and 13th. To proceed with the analysis, the next step is to isolate or split the three new districts in B from one another. When doing so, it is important that the overlapping feature from A is joined with B prior to splitting. The end result of this process is shown in Figure A.5:

![Districts](image)

**Figure A.5: Splitting Union Districts by New District Boundaries**

With the split analysis, isolation of each overlap between A and the elements of B is more apparent. In the conduct of overlay analysis, each of these three elements would be saved as a new feature class within the GIS environment, enabling the extraction of the data to proceed.

---

4 Although Figure A.5 shows separation between each of the elements, this is purely for illustrative purposes. Every element remains connected as they projected onto the same coordinate system.
The final of these three operators is the *clip* tool: taking the intersected area of two (or more) elements, one from each of the feature classes. In the running example, the Old 4\textsuperscript{th} \cap New 2\textsuperscript{nd}, Old 4\textsuperscript{th} \cap New 4\textsuperscript{th}, and Old 4\textsuperscript{th} \cap New 13\textsuperscript{th} are the three separate intersections of A with elements of B. Clipping essentially operates like a cookie cutter, isolating a series of intersected overlapping elements while removing all of the areas not shared by both. The process of clipping the districts in this example is shown below in Figure A.6:

**Figure A.6:** Clipping the Intersections of the Old District and the New Districts

Having taken the union of the features, splitting them apart, and finally clipping out only the intersected areas, the end result is a series of newly created features that capture desired geographic areas. With these, the process of geospatial overlay continues. Layers of feature classes which contain elements of further interest will be overlaid on to our newly created features, allowing for the extraction of an endless array of geographic data. For an applied discussion of this process, Appendices B and C will discuss how two key measures used in this dissertation are derived via the procedures and techniques of geospatial overlay.
Symmetrical Difference

Where the geoprocessing tools of Union, Splitting, and Clipping are focused on finding areas of common overlap for data extraction purposes, a related overlay analysis technique is that of finding the Symmetrical Difference. Quite simply, what this process does is find every feature of two (or more) layers which do not overlap with one another. Returning to the example of the old 4th District of North Carolina and the newly-redrawn districts created in the 2002 redistricting, Figure A.7 shows the symmetrical difference ($A \oplus B$, in set notation) of these:

![Figure A.7: Taking the Symmetrical Difference of North Carolina’s 4th Congressional District with the New Districts following the 2002 Redistricting](image)

What results from this procedure is a mapping of every area in North Carolina that was not in the old 4th District (the grey area), every area in the old 4th District which was not in North Carolina (which, in this example, is undefined), and the overlapping area (the white area) which is omitted. The process of extracting data with symmetrical difference is used in Chapter 4 to determine the geographically-defined areas which are not coded to census tracts.

---

5 This is the Exclusive Disjunction / Exclusive Or boolean operator.
Appendix B

District Fractionalization

The District Fractionalization variable is a widely-used measure within studies of political geography, most often based on the “fragmentation index” developed by Douglas Rae (1967). In his research on the variations among electoral systems, Rae wanted to capture levels of electoral fragmentation within geographically-bounded areas, taking account of both the extent of division and the dispersion of the population. For the purposes of this paper, the measure is modified to capture the division of old districts rather than the composition of the new. It is as follows:

\[
\text{Frac}_j = 1 - \sum_{i=1}^{n} s_{i,j}^2
\]

where \(\text{Frac}_j\) is the fractionalization of the old district, \(j\), and

- \(s_{i,j}\) is the population of the old district, \(j\), in the new districts, \(i\), and
- \(n\) is the size of the state’s delegation in the new Congress.

Theoretically, the purpose of this index is to capture the level to which an MC’s district has been dismantled and divided as a result of redistricting. The Fractional-
Fractionalization Index is a continuous measure ranging 0 to 1 where higher values correspond to a greater degree of fractionalization. In order to illustrate the operation of the fractionalization index, the case of the 2002 redistricting in Oklahoma will be used:

Figure B.1: 2002 Redistricting in Oklahoma

Oklahoma was apportioned five Congressional Districts (CDs) in the 2000 Census, one district fewer than the apportionment from the 1990 Census. Due to this loss, the state’s redistricting for the 2002 elections had to consolidate six districts into five, resulting in a significant shift in district boundaries. In Figure B.1 above, the six districts used between 1992-2002 are shown as the numbered areas bounded by the lines. The five redrawn district boundaries for the 2002 elections (those in use beginning with the 108th Congress) are shown as the shaded areas.

In order to calculate these fractionalizations, the geospatial overlay processes discussed in Appendix A are utilized. Fundamentally, this variable is seeking to quantify the intersection of each of the six old CDs with every one of the five new CDs following redistricting. To show this process, the calculation of the Old 5th District’s fractionalization is illustrated. Step 1, shown in Figure B.2 on the next page, is to take the union of the old 5th District with the new district boundaries.
What Figure B.2 shows is that the old 5th District has been divided among each of the new CDs in Oklahoma with the exception of the new 2nd District. Thus, the value of fractionalization for the old 5th District will be calculated as a product of four population measures.

The next steps are to split apart the four unions and clip the overlapping features. With these completed, the four clipped sections will be overlaid with population data from the 2000 Census. As the U.S. Census Bureau does not make available more detailed geographic information about population below the level of Block Groups (BGs), this will be the unit of analysis used. And as discussed in Appendix A, these data have been transformed from polygons into points (by FTP) in order to resolve any and all issues with mixed pixels. Figure B.3 on the top of the next page shows the four clipped areas overlaid with a feature class of Centroid points representing the population data.
By repeating this process for each of the six old CDs in Oklahoma, a population matrix for every clipped area between the old and new districts can be created. This matrix, presented in Table B.1 on the top of the next page, provides the basis for calculating the district fractionalization measures. The process behind these calculations is worth discussing:

- The entire population of the old First District (Tulsa) has been retained within the new First District. Thus, the fractionalization for the old First is 0.

- The population of the old Second District (Northeast Oklahoma and Tulsa exurbs) and the population of the old Sixth District (Western Oklahoma and Ok-
Table B.1: 2002 Oklahoma Redistricting District Fractionalization

<table>
<thead>
<tr>
<th>Old Districts</th>
<th>CD1</th>
<th>CD2</th>
<th>CD3</th>
<th>CD4</th>
<th>CD5</th>
<th>Fractionalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD1</td>
<td>587,238</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00</td>
</tr>
<tr>
<td>CD2</td>
<td>52,487</td>
<td>449,647</td>
<td>98,110</td>
<td>-</td>
<td>-</td>
<td>0.40</td>
</tr>
<tr>
<td>CD3</td>
<td>-</td>
<td>245,276</td>
<td>114,511</td>
<td>116,990</td>
<td>90,415</td>
<td>0.70</td>
</tr>
<tr>
<td>CD4</td>
<td>-</td>
<td>-</td>
<td>28,439</td>
<td>545,122</td>
<td>-</td>
<td>0.09</td>
</tr>
<tr>
<td>CD5</td>
<td>48,996</td>
<td>-</td>
<td>138,764</td>
<td>11,412</td>
<td>390,106</td>
<td>0.50</td>
</tr>
<tr>
<td>CD6</td>
<td>-</td>
<td>-</td>
<td>305,403</td>
<td>17,585</td>
<td>211,741</td>
<td>0.52</td>
</tr>
</tbody>
</table>

| Total         | 688,721 | 694,923 | 685,227 | 691,109 | 692,262 |

Oklahoma City) have each been divided among three new districts. For the old Sixth District, there has been a more equal dispersion of the population among the new districts when compared to the old Second. Thus, the fractionalization value for the old Sixth is higher than that of the old Second.

- The old Third District (Southeast Oklahoma, Oklahoma City exurbs, and Stillwater) saw the most even dispersion of population of any district in the state. As such, the fractionalization value is highest at 0.70.

This index provides a straightforward and precise way to measure the degree and extent of population shifts produced by redistricting. Although this measure is most often used to understand the component populations of new districts, it can easily be modified to understand post hoc district divisions, such as was employed by Yoshinaka and Murphy (2009) in their study on how the various methods of redistricting either break or preserve the constituencies of incumbents.
Appendix C

Joint Population Overlay

Determining the Joint Population Overlay (JPO) for each newly redrawn Congressional District is a process that employs the same techniques as those used to calculate district fractionalization. But rather than taking account of the extent to which a district has been dismantled and divided in redistricting (as fractionalization does), the purpose of JPO is to measure the amount of an MC’s former constituency a newly redrawn district contains. The JPO measure employed in this dissertation is based upon a measure proposed by Crespin (2005). Quite simply:

\[
JPO_i = \frac{p_{i,j}}{p_i}
\]  

(C.1)

where JPO\(_i\) is the Joint Population Overlay of the new district, \(i\), and

\(p_{i,j}\) is the population of the old district, \(j\), in the new districts, \(i\), and

\(p_i\) is the total population of the new district, \(i\).

JPO is a continuous variable ranging from 0 to 1, measuring the degree of population continuity within new districts following redistricting. Higher values of JPO
correspond to a greater degree of an incumbent’s old constituency residing within a
the boundaries of a newly redrawn district. Due to its high level of precision and
relative ease by which the data is computed, Crespin’s measure provides a significant
advantage over existing measures which sought to capture the same concept.  

To illustrate the operation of JPO, the case of Missouri’s new 3rd District
following the 2012 redistricting cycle will be used:

![Map of Missouri showing districts](image)

**Figure C.1**: Union Analysis of Missouri’s Redrawn 3rd Congressional District in
2012 and the Old District Boundaries

As shown in Figure C.1, the new 3rd District is composed of portions of four old
districts: the 2nd, 3rd, 4th, and 9th. This was determined by overlaying the old and
new district boundaries and taking the union of our district of interest with the old
districts. All of the non-overlapping districts have been removed.

---

1 As Crespin summarizes, existing measures either took a dichotomous classification of whether
district boundaries changed (Cox and Katz 2002), relied upon classifications made by sources such
as *Congressional Quarterly* (Jacobson and Dimock 1994), or employed a piecemeal estimation of
redistricting changes mapped over county lines (Carson et al. 2007b).
As discussed in Appendix A, the next steps in the process are to split apart the districts and take the intersection of our district of interest and the overlapping districts. Next, the feature class of population data (the Block Groups from the 2010 Census, transformed into Centroids by the FTP analysis) are overlaid onto the clipped district intersections. The result of these operations is shown in Figure C.2:

![Figure C.2: Intersection Analysis of Missouri’s Redrawn 3rd Congressional District in 2012 and the Overlapping Old Districts](image)

With these analyses run, the final step is to calculate the sum of the population data in each of the four clipped sections (what will be the numerators in the JPO measure). As these four clipped areas cover the entirety of the new 3rd District, the sum of these will be the District’s total population (the denominator).\(^2\) These values and the calculations of the JPO for each clipped section are presented in Table C.1 on the top of the next page.

\(^2\) Given that the procedure employed to calculate population totals uses Census Block Groups clipped by Congressional District Boundaries, there will be deviations from the actual population totals of districts. Among all of the 16,592 clips made for this dissertation, the average deviation in population between the Census Bureau figures and these calculations was 0.06% (for the 2,840 district clips which overlapped, the average deviation was 0.33%).

159
Table C.1: JPO for Missouri’s 3rd Congressional District in the 2012 Redistricting

<table>
<thead>
<tr>
<th>New 3 ∩ Old 1</th>
<th>CD3 Total Population</th>
<th>JPO</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>747,258</td>
<td>0.00</td>
</tr>
<tr>
<td>New 3 ∩ Old 2</td>
<td>249,043</td>
<td>0.33</td>
</tr>
<tr>
<td>New 3 ∩ Old 3</td>
<td>114,295</td>
<td>0.15</td>
</tr>
<tr>
<td>New 3 ∩ Old 4</td>
<td>97,710</td>
<td>0.13</td>
</tr>
<tr>
<td>New 3 ∩ Old 5</td>
<td>-</td>
<td>0.00</td>
</tr>
<tr>
<td>New 3 ∩ Old 6</td>
<td>-</td>
<td>0.00</td>
</tr>
<tr>
<td>New 3 ∩ Old 7</td>
<td>-</td>
<td>0.00</td>
</tr>
<tr>
<td>New 3 ∩ Old 8</td>
<td>-</td>
<td>0.00</td>
</tr>
<tr>
<td>New 3 ∩ Old 9</td>
<td>286,210</td>
<td>0.38</td>
</tr>
</tbody>
</table>

The results in Table C.1 show the range in JPO values for each of the clipped overlaps with the old districts. For most of the classifications, there is no overlap between the new 3rd District and the old district boundaries (as is the case for the old 1st, 5th, 6th, 7th, and 8th Districts); thus, the JPO is equal to zero. And this is true for a majority of the 16,592 JPO calculations for this dissertation. But for the remaining 2,849 clips in which the new variable of interest overlaps with the boundaries old districts, JPO provides an accurate, reliable, and uniform method of classification.
Appendix D

Residency

Determining the residential information for each incumbent MC is a three-step process: obtain information, geolocate addresses, derive data. This Appendix walks through these steps, discussing how the residential information for each of the 854 incumbents under study in this dissertation were determined.

Obtain Information

The first step in the process is to determine the residential addresses and histories for each incumbent. For most of the MCs included in this study, the process is relatively straightforward: multiple sources of detailed data can be easily obtained and crosschecked. But for the others, the process can be considerably more complicated.\(^1\) In all cases, the task at hand is to gather as much data as possible for each MC, including data about the property itself (location address, property type, etc.) and data that pieces together a timeline of ownership/dwelling.

\(^1\) Difficulties in obtaining data arise due to discrepancies in the recording and reporting of municipal/county data between jurisdictions, legal privacy protections, MCs buying and selling multiple properties, ownership records listed under a spouse’s name, and most frustrating of all, the few MCs with no property ownership and who chose to rent.
These data come from five primary sources:


2. Federal data: FEC data (candidate filings and individual contribution data), Congressional Financial Disclosures, legal forms (legal counsel reports, court records), and miscellaneous federal reports (USDA subsidy reports).

3. Electoral records: certified candidate lists, voting records and registration rolls, and state Blue Books.

4. Third party real estate transaction sites: Zillow.com, Blockshopper.com, etc.


By aggregating these data, a complete picture of the residential location and histories of each of the 854 MCs was collected.

*Gelocate Addresses*

With the residential addresses and histories collected, the next step is to convert every street address location data into geospatial data. To do so, all that is needed are the geodetic coordinates of each location, all of which are easily obtainable through multiple online geospatial sources. For this project, NASA’s Latitude/Longitude Finder tool was used to geolocate every address.

In geolocating each address, the precise geodetic coordinates of the property structure were used. As streets are often the boundaries used to separate districts, it is important that the location of the address take account of considerations such as on which side of the street the property lies. Furthermore, as properties situated on
large tracts may span the boundaries of multiple districts, having the exact location of the residential unit is important. Without recording a precise measure of the geodetic coordinate location of the residence, the ability to classify each and every residence as belonging to a single Congressional District may be compromised.

Derive Data

The final step in the process is to determine in which district each residence is located. For this, a database of every residence’s geodetic coordinates is merged into the GIS map environment, overlaid by two feature classes representing the old and the new Congressional District boundaries. From here, a simple clip analysis is used to determine three locations for every MC: the MC’s old district, new district, and run district (those who retire/seek higher office do not have a run district).

In order to illustrate the process, the example of Bay Area Rep. Jerry McNerney (CA-11) is shown in Figure D.1 on the next page. Elected to the House in 2006, McNerney’s 11th District spread over portions of Alameda, Contra Costa, San Joaquin, and Santa Clara Counties, and contained his home of 20 years in Pleasanton (in Alameda County, shown as the black dot on the map). Following the 2012 redistricting, the districts in the East Bay Area were made considerably more compact. McNerney’s home of Pleasanton was drawn into the new Alameda County-based 15th District, which contained very little of his old territory. In turn, McNerney selected the new San Joaquin County-centered 9th District as the place he would seek reelection. As part of this process, McNerney and his wife purchase a home in Stockton (shown on the map as a triangle) and legally relocated to this address. By classification, McNerney’s old district is the 11th, his new district is the 15th, and his run district is the 9th. Of the five choices coded in this project (reelection, relocation, retirement, progressive ambition, and seeking reelection in a different district), McNerney’s decision is coded as relocation.
Figure D.1: Residency History for Rep. Jerry McNerney (D-CA), mapped onto New District Boundaries following the 2012 Redistricting

When MCs have multiple residences prior to redistricting, all of these are taken into consideration (so long as they meet the qualifications for what counts as a residence and the timeline of residency/ownership matches). In these instances, an incumbent’s new district could potentially be several districts. Whichever district an incumbent selects would count as both their run district and their new district, so long as one of those residency options is located within the district in question.

---

2 Of all the 854 incumbents included in this study, 47 had multiple residences prior to the redistricting cycle in the respective years - fewer than half of whom had residences in multiple districts.
In Chapter 3, simulations are run in GIS which calculate various measures of district change according to a set of demographic and political parameters. These derived measures are the data by which the variations among different institutions of redistricting are statistically compared. This Appendix discusses and illustrates how the measure of gerrymandering used in Chapter 3 are determined.

Fundamentally, geographic measures of gerrymandering are a function of two elements: the area of a district and its perimeter. Gerrymanders – be they partisan or incumbent-protecting – must use precise lines to carve districts in precise ways. Thus, if a district has a relatively high perimeter to area ratio, it is logical to consider this a gerrymandered district. One measure of this was devised by Jr. (1961), who drew a circle around a district and had this shape touch as many points of the district as possible. This was the smallest possible circle which would encompass the entire area of a Congressional district. Another measure of this ratio was devised by Polsby and Popper (1991), who proposed using the area of a district and the area of a circle.
which has a circumference equal to the perimeter of the district.\(^1\) The circle drawn by Polsby-Popper tended to be significantly larger than the ones drawn by Reock.

Although there have been numerous other proposals to measure gerrymandering, these two options – the Reock and the Polsby-Popper models – offer both simplicity in their execution and reliability in their use. Yet there are important differences between the two. Most notably, the Roeck measure tends to much better encompass the overall dispersion of a district. It smooths over many of the fine details of district boundaries (the wrinkles, if you will), instead focusing on where the bulk of the population resides. By contrast, the Polsby-Popper method embraces the wrinkliness of districts and treats this statistic as very important. After all, a purpose of drawing complicated districts with many wrinkles on the border is to shift populations in a precise and planned way. As such, Polsby-Popper’s measure offers a good way to take these considerations into account.

But just as there are positives for each of the two measures, there are also drawbacks. Most notably, the Polsby-Popper method, in its embrace of the wrinkliness, takes into account the geographic contours of state boundaries and coastlines. The Polsby-Popper method runs the risk of over-inflating the true length of the perimeter, leading to errors in estimation and classification.\(^2\)

In Figure E.1, the Reock and Polsby-Popper methods are shown for two districts in Maryland. In the top figure, the two methods are applied to the 8\(^{th}\) District and in the bottom figure, the two are applied to the 3\(^{rd}\) District. The solid lines represent the Reock Measure, while the dashed lines represent the Polsby-Popper Measure. In the top figure, the similarity between the two circles is evident. As such, the overall level of compactness for Maryland’s 8\(^{th}\) is very high, meaning that

\(^{1}\) The Polsby-Popper measure is mathematically equivalent to a measure developed by Schwartzberg (1965).

\(^{2}\) A way to correct for this is to smooth state borders and coastlines, which was the procedure implemented in this study.
Figure E.1: Reock and Polsby-Popper Measures of District Compactness, Maryland’s 8th (top) and 3rd (bottom) Congressional Districts, 2002-2012

this district is not much affected by gerrymandering. In the bottom figure, however, there is a vast difference between the two. The separation and sheer size difference
between the two circles points to the fact that the 3rd as low levels of compactness and would be considered a heavily gerrymandered district.

A fundamental question to ask is which of these two methods best categorized the state of gerrymandering among the Districts. Both the 3rd and 8th Districts are roughly equivalent in area, meaning that the Reock method would assign relatively similar values for the degree to which these two districts are gerrymandered. The Polsby-Popper method, however, would not. In many ways, the Polsby-Popper method is a stronger reflection of the true state the districting. Yes, it is the case that this method may over-estimate the overall level to which a district is gerrymandered, even after for smoothing over the state border/coastline wrinkles. But it much more accurately reflects the true state of districting, particularly when you consider how many districts drawn in dense population centers are likely to be classified as compact by Reock.

As a final visual display of these two methods, Figure E.2 on the next page shows the entire classification schema for the Reock (top) and Polsby-Popper (bottom) measures for all eight Congressional Districts in Maryland. As is perhaps unsurprising, there are many notable differences. For the Reock measures, the two most gerrymandered districts are the Western-most and the Southwestern-most districts in the state, whereas the Polsby-Popper measure classifies the Southwestern-most and one of the Baltimore-based districts as the most gerrymandered. In both instances, we do see that the 8th District is the least gerrymandered.

For the analysis in Chapter 3, the Polsby-Popper measure of gerrymandering is the one to be used.
Levels of Compactness

![Levels of Compactness](image)

**Figure E.2**: Reock (top) and Polsby-Popper (bottom) Measures of District Compactness, Maryland’s Congressional Districts, 111th Congress

169
Appendix F

Respondent Location

To conduct the analysis in Chapter 4, Restricted Data Access (RDA) about ANES respondents is used to determine the residential locations of all respondents as precisely as possible. From here, GIS procedures are employed to code a series of descriptive variables which capture the type of district in which each respondent resides. After these procedures are carried out and the new variables are coded, all RDA requested data are deleted from the dataset. The derived variables contain no identifying information for any of the respondents. This Appendix discusses the procedures used to determine these data for each of the 21,332 respondents who participated in ANES times series surveys from 1980-2012 using data from six U.S. Censuses (1960-2010) and four cycles of both Congressional and state legislative redistricting (1982-2012).

Obtain Information

In order to gather the needed restricted data, an RDA request was submitted to the ANES to obtain the Census Tracts, Census Enumerated Districts (EDs), Counties, and Zip Codes for all respondents. The use of this data fully complied with the standards and practices of the ANES to ensure respondent privacy and the specific
procedure used to analyze and house the data was approved by the Institutional Review Board of Duke University. Once obtained, these RDA data were merged with three additional sets of geocoded data in ArcMap:

1. Geocoded Census Tracts from the University of Minnesota's Map & Geography Online Resources (1960-1980) and the U.S. Census Bureau (1990-2010).

2. Geographic and urban boundary files (county, cities, media markets, etc.).

3. Geocoded district data from the “United States Congressional District Shapefiles” (Jeffrey B. Lewis, Brandon DeVine, Lincoln Pritcher, Kenneth C. Martis), drawing on the National Historical Geographic Information System (NHGIS) project.

Geospatial Overlay

With the files uploaded, the first step is to project the sets on a common coordinate system\(^1\) and merge all files into a national layer. Next, the Feature To Point (FTP) analysis is used to determine the centroid of each tract, each of which is defined by Latitude/Longitude in DMS format. And finally, the RDA data are joined with the geospatial data based the identifying attributes of tract/ED/zip codes, county codes, and state codes. The result of these procedures are that each of the respondents is coded to the smallest geographic area possible. This is important as many of the key measures in this project - most notably the district boundaries - often divide larger geographic areas, making classification significantly more difficult.

Missing Tract Data

For 89.4% of the 21,332 respondents included in this study, determining their location within a specific Census tract and deriving the geographic coordinates of that tract is

\(^1\) For this project, the NAD 1983 geographic projection was used.
possible. But for some of the respondents in the earlier ANES surveys included in this study, the limited availability of geocoded tract data makes it so this process cannot be carried out. In these instances, the best way to locate respondents as precisely as possible is to go to the next smallest geographically-bounded area that is geocoded and derive the geographic coordinates. This means classifying respondents based upon their county of residence (a variable included in our RDA request).

Among the set of unclassified respondents, a majority (87.8%) live within counties that were not divided by district boundaries over multiple redistricting cycles. As such, we take the geographic coordinates of that county’s centroid as the location identification for the respondent. But for the remaining 12.2% of these unclassified respondents, their county of residence is divided among two (or more) districts - and, as such, relying only on the county of residence could misclassify respondents. For these cases, a further classification procedure is necessary. The full breakdown of these data are reported in Table F.1:

Table F.1: RDA Classifications, 1980-2012 ANES Time Series Studies

<table>
<thead>
<tr>
<th></th>
<th>Tracts</th>
<th>County Only</th>
<th>County and District</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>1300 (80.5%)</td>
<td>301 (18.6%)</td>
<td>13 (0.8%)</td>
<td>1614</td>
</tr>
<tr>
<td>1984</td>
<td>1722 (76.3%)</td>
<td>470 (20.8%)</td>
<td>65 (2.9%)</td>
<td>2257</td>
</tr>
<tr>
<td>1988</td>
<td>1533 (75.1%)</td>
<td>470 (23.0%)</td>
<td>37 (1.8%)</td>
<td>2040</td>
</tr>
<tr>
<td>1992</td>
<td>1934 (77.8%)</td>
<td>460 (18.5%)</td>
<td>91 (3.7%)</td>
<td>2485</td>
</tr>
<tr>
<td>1996</td>
<td>1361 (79.4%)</td>
<td>285 (16.6%)</td>
<td>68 (4.0%)</td>
<td>1714</td>
</tr>
<tr>
<td>2000a</td>
<td>1801 (99.7%)</td>
<td>-</td>
<td>6 (0.3%)</td>
<td>1807</td>
</tr>
<tr>
<td>2004</td>
<td>1212 (100%)</td>
<td>-</td>
<td>-</td>
<td>1212</td>
</tr>
<tr>
<td>2008</td>
<td>2322 (100%)</td>
<td>-</td>
<td>-</td>
<td>2322</td>
</tr>
<tr>
<td>2012</td>
<td>5914 (100%)</td>
<td>-</td>
<td>-</td>
<td>5914</td>
</tr>
<tr>
<td>Total</td>
<td>19,089 (89.3%)</td>
<td>1986 (9.3%)</td>
<td>280 (1.3%)</td>
<td>21,365</td>
</tr>
</tbody>
</table>

*aSix respondents in the 2000 ANES had geographic data from the RDA coded as missing.*
To illustrate this problem, Figure F.1 shows the situation of a hypothetical ANES respondent who we know lives in Hampden County, Massachusetts. The county is divided between two Congressional Districts in the 103rd Congress.

![Geographic Areas](image)

**Figure F.1:** Location of Respondent in Hampden County, MA, Mapped by District Boundaries in the 93rd Congress

By simply taking the centroid of Hampden County (shown as the dot in Figure F.1), our procedure would classify the respondent as residing within the 1st Congressional District. In the absence of any further location information about the respondent, classifying location in this manner is logical. Centroids, after all, minimize the distance to all parts of the county and represent the statistically average position of all points in the shape. But if we merge in the full ANES dataset and discover that the respondent is a resident of the 2nd District, the procedure has misclassified the respondent’s location. In cases where county boundaries are bisected by districts and no geocoded tract information is available, separate shapes should be made of the overlapped areas and new centroids should be computed.

In Figure F.2 on the next page, the area of Hampden County is isolated and overlaid by both districts. Two new layers are extracted using the Clip tool: one
which represents the intersected area of Hampden County and the 1st District (shown in dark grey) and the other which represents the intersected area of Hampden County and the 2nd District (shown in light grey). As we know the respondent lives in the latter of these two layers, the FTP tool is used to locate the centroid of this clipped piece (shown as the triangle in the figure). Although the distance from the centroid of the county to the new centroid is seemingly insignificant, it nonetheless represents a much more accurate reflection of the likely location of the respondent’s residence.

By carrying out these procedures with attention paid to potential misclassification errors, we can more successfully assign respondent to types of districts. This is important because 1.3% of all respondents included in this study have no geocoded tract information and live in counties which are divided by district boundaries (as reported in Table F.1). Ensuring that such a significant portion of the total respondent pool is accurately classified represents an important increase in our certainty of measuring public opinion as it relates to political efficacy and representation.
Bibliography


176


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Biography

Mark Richard Dudley was born July 15, 1987, in St. Louis, Missouri. He earned an A.B. (cum laude) in Political Science from Washington University in St. Louis in 2010 and an A.M. in Political Science from Duke University in 2012.