

THE PENNSYLVANIA STATE UNIVERSITY  
SCHREYER HONORS COLLEGE

DEPARTMENT OF POLITICAL SCIENCE

PARTISAN PROBLEMS: HOW PARTISAN REDISTRICTING METHODS LEAD TO NON-  
COMPETITIVE ELECTIONS

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SPRING 2017

A thesis  
submitted in partial fulfillment  
of the requirements  
for baccalaureate degrees  
in Political Science and History  
with honors in Political Science

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## ABSTRACT

Competitive elections are an intrinsic good in democratic electoral systems. Over the past few decades a debate has arisen as to the level of effect that redistricting (or “gerrymandering”) has had on the level of competition in American congressional elections. Supporters of reform argue that the most-commonly used methods of redistricting suppress voter turnout and drive competition levels down. Many skeptics in the field dispute this notion and say that there is little to no evidence to suggest that the redistricting process has any sort of effect on competition levels. This study seeks to explore this debate with election data from 1972 – 2014. My evidence suggests that the partisan or nonpartisan nature of bodies responsible for redistricting affects the levels of competition in congressional districts. Evidence suggests that districts drawn by partisan bodies are in general much less competitive than districts drawn by non-partisan bodies. I examine election data from nearly all 435 House of Representatives elections each year from 1972-2014, as well as an in depth analysis of competition in congressional districts in the state of Arizona to draw this conclusion. Further, based on the evidence provided here, it seems that it is in the best interest of the country to review redistricting methods to ensure that partisan actors are not taking advantage of the redistricting process to diminish the levels of competition in American congressional elections.

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## ACKNOWLEDGEMENTS

This research would not have been possible without my thesis advisor, Dr. Suzanna Linn. Her belief in me has driven me to want to achieve more and to be more confident in myself and my scholarly potential as I pursue graduate school in the Fall. Her guidance was essential and her friendship means so much to me. She is an outstanding professor and an extraordinary asset to this university. Additionally, I would like to thank other professors who have helped me along the way. Dr. Gretchen Casper and Dr. Michael Berkman have been phenomenal and their assistance has been greatly appreciated. The love, patience and support of my friends has also been invaluable. Sierra Salyards, Marissa Rosensteel, Taylor McCready and Jenna Marquis, I love you all and I cannot thank you enough for your support. My parents, Brenda and Bret Johnsonbaugh and Keith and Kelly Carper have also provided me with the love and strength I needed in the last four years to not only finish this thesis, but to make it through my entire time at Penn State University. Thanks to the Schreyer Honors College for making this possible. Most importantly, I would like to acknowledge and thank my fiancée, Shannon Cullipher. She has been amazingly supportive of me throughout this research and has shown me time and time again just how lucky I am to be able to have her love and support for the rest of my life.

## **Chapter 1**

### **Introduction**

Every ten years in the United States of America a census is conducted by the government to determine an array of statistics about the population. At its most basic level, the census is a count of citizens. The census breaks down this count into many different levels, from census “blocks” all the way up to the federal count. The counts at the statewide level become vitally significant during a subsequent process called “redistricting,” or “gerrymandering” as it is sometimes referred to.

According to the United States constitution, the number of legislators from each state in the House of Representatives is assigned based upon the count of citizens in each state. In other words, as a state’s population increases (proportionate to the rest of the states), their representation in the House of Representatives will increase. This is where the census comes into play. The census provides the government with a count of each state’s population. The government then uses these numbers to determine whether each state’s representation in Congress should increase, decrease, or remain the same. When a state loses or gains representation, it falls upon the state to redraw its congressional district map to reflect the new changes. Further, districts are required by law to have relative population equality, meaning that each congressperson represents the same (or as close to the same as possible) number of constituents. This means that nearly all congressional districts are required to be redrawn at the beginning of each census cycle to reflect the changing population.

Each state has a different process for redrawing its congressional districts when it comes time to do so. Most states allow their state legislature to draw the map after which the governor signs off on it. Some states employ some sort of commission with partisan actors to draw the boundaries. The methods that fall into these categories will hereafter be labeled as “partisan.” These methods greatly outnumber those that I label as “non-partisan.” States that employ a non-partisan method for redrawing districts remove their legislature (and other partisan actors) from the process. In theory, this method removes the potential for political bias when drawing the congressional districts. Whereas partisan actors may have a tendency to “pack” members of the opposite party into non-competitive districts to ensure that they have greater representation, non-partisan actors theoretically should be beyond that bias.

A debate in the field of political science has ensued, however, as to the effect of these various methods of redistricting on affecting competition levels in the congressional districts. Some argue that partisan actors act within the interest of their party, while others argue that the method has no bearing on the level of competition found in the congressional districts (Carson and Crespin 2004, 456). The following research attempts to contribute to this conversation by analyzing data from nearly all elections to the House of Representatives from 1972-2014. It is my hope that this debate can eventually be settled in a manner that ensures that districts are as competitive as possible. If the analysis suggests that there is no evidence that the method of redistricting contributes to lower levels of competition, then it is time to focus attention on other potential factors. If the analysis suggests, however, that there is some sort of effect of the redistricting method on competition levels in American congressional elections, then it becomes the responsibility of government officials to enact some kind of change to ensure more



accountability for partisan actors.

## **Chapter 2**

### **Literature Review**

An alarming phenomenon has been observed in American elections over the last few years. In general, elections are becoming less competitive (Abramowitz et. al. 2006, 87). This is particularly alarming for a number of reasons, some of which will be described below. Some of these have to do with electoral responsiveness, or the likelihood that representatives actually respond to the desires of their constituents. Electoral responsiveness is, of course, something that one should strive to maximize. Ideally, our representatives' votes in Congress will reflect the overall interest of the districts that they represent. Ultimately, lowering competition levels in elections may have an overall negative effect on that responsiveness. This is largely intuitive. If a representative is not concerned about his or her reelection prospects, then what is their incentive to take constituents' concerns into account.

Some scholars, who will be described later, believe that at least a portion of this drop in competition is due to the misuse of redistricting to advantage a particular party's candidates. In most states, legislatures are responsible for the process of redrawing congressional districts. Those legislatures are controlled by highly partisan actors. Those partisan actors have a vested interest in ensuring that their party remains the dominant power in the state. Therefore, those actors may in fact utilize the redistricting process to their advantage to ensure that they continuously win at the state and federal levels. While this interest certainly exists, some scholars argue that the actual effect that these partisans have on competition levels is negligible. Those scholars argue that while partisans might use the process to their advantage in drawing districts, it does not necessarily mean that partisan redistricting methods are inherently bad for competition levels. This debate in the field of political science has led us to the research question presented in this paper: "Do partisan redistricting methods affect the overall level of competition in American congressional elections?"

This is a question that should be at the forefront of the minds of all Americans. If one considers competition an important factor in the definition of democracy, as well as a factor that is important for ensuring democratic accountability, then the American public should be very concerned about any institution that may affect competition. Some work by scholars in the field of political science have argued that the evidence shows that electoral competition is hurt by the process of redistricting when it is left up to partisan bodies, and it should therefore be completed by independent commissions. If these scholars are correct, then the type of redistricting process used could be fundamentally undermining the democratic process. It could mean that certain redistricting bodies are working to weaken the power of an individual's vote in congressional elections. However, some scholars dispute this claim. They argue that there is in fact little to no evidence of an effect of redistricting type on electoral competition. If this is the case, then reforming the redistricting process should not be a priority, and those concerned about competition should direct their efforts elsewhere for solutions to the problem.

I identify scholars who study redistricting in American politics as falling into one of two categories. These categories are identified as "reformists" and "skeptics." Reformists are identified as those scholars whose studies have demonstrated the negative impacts of redistricting type and claim that, especially when conducted by partisan bodies, there is a negative impact on competition. Therefore, some kind of reform is warranted. Skeptics are those scholars who argue that once one controls for the other factors that influence competition, the arguments put forth by the reformists are largely overblown. Because of this, they attempt to discredit the reformists by arguing that their studies and models for testing their data are flawed. Ultimately, there is competing evidence, and which side is correct remains unclear. While both sides of the argument are persuasive, I will show evidence later to support the arguments of the reformists.

There appear to be leaders on each side of the debate who are often cited by other scholars in studies who analyze similar questions. On the side of the reformists, I have identified the authors Lublin and McDonald as those leaders, facing off primarily against Abramowitz as the leader of the skeptics.

This is based largely on the analysis of James Cottrill in his January 2012 article in *Polity*, where he seems to suggest the same leaders (Cottrill 2012, 33-34). Lublin and McDonald certainly, however, were not the first scholars to write about this subject matter, and they were not the first of whom I identify as reformists. They have simply put together one of the most comprehensive and specific papers representing the side of the reformists. But well before their 2006 paper was published came an article by Bruce Cain, which was published in June 1985. In his article he attempts to answer the question of whether or not redistricting affects the partisan distribution of the California congressional districts (Cain 1985, 320-323). The limited nature of this study does not bode well for the generalizability of his results, but it helps to further the debate. He does, however, discuss my research question in a general sense and concludes that redistricting can matter in certain circumstances, specifically when used to physically remove incumbents from their districts and by changing the dominant political party within the states (Cain 1985, 328). While definitely a more generalized paper than I was hoping for, this paper does indeed serve as an important starting block for the mid 2000's when this debate seemed to pick up steam again based on the number of papers published.

Two papers published in 2003 by Marc Hetherington and 2004 by Jamie Carson and Michael Crespin helped to seemingly revive the debate in the beginning of the 21<sup>st</sup> century. Both papers contribute important information that adds fuel to the side of the reformists. The Hetherington article is seeking to answer a seemingly unrelated question, but ultimately gives evidence to the debate. In his paper, Hetherington analyzes redistricting's effect on strategic decision making by candidates (Hetherington 2003, 1221-1222). This was the first time that I could find evidence that an alternative, but related, hypothesis should be explored. In addition to affecting competition, perhaps redistricting affects a candidate's decision to run in an election following the redrawing of their district (Hetherington 2003, 1223). Hetherington provides evidence that there is an effect of this nature, and that the proximity of a redistricting cycle to an election and a decision to retire made by a candidate might very well be related

(Hetherington 2003, 1231). This opens up the possibility of analyzing a new research question as to just how big of an effect that particular reality could play on the competitiveness of elections.

The Carson and Crespin article also approaches the question from a different angle. Instead of asking the question about whether or not redistricting matters, they ask, “does the method by which states draw legislative districts affect the partisan competition in the elections that are held in these districts.” (Carson and Crespin 2004, 455)? They build on the arguments of some skeptics by saying that those skeptics are failing to account for the various types of groups that are responsible for redistricting and often vary between states. They imply that the results of previous papers, which analyze the effects of redistricting when conducted by partisan bodies like legislatures, must be compared with those effects when conducted by judicial bodies as well as independent commissions (Carson and Crespin 2004, 455). They show the difference in levels of competition depending on the type of body that is responsible for redrawing the maps (Carson and Crespin 2004, 456-462). This will become important in future debates, especially when the skeptics seek to dispute this critical newer development.

Lublin and McDonald write on this in 2006. They are trying to explain why “both partisan redistricting plans and racial redistricting can reduce the overall level share of competitive state house seats” (Lublin and McDonald 2006, 154-155). What is important to note is that the unit of analysis in the Lublin and McDonald study is different from the primary research question that I am seeking to explain. Instead of American congressional districts, they are analyzing redistricting’s effects on state legislative seats. They conclude with two very important points in the debate. First and foremost, “...partisan plans reduce the proportion of marginal seats, defined as seats won by less than 20 points, in state houses” (Lublin and McDonald 2006, 155). This is making a direct claim that redistricting has a negative impact on the levels of competition in a given district. Secondly, they conclude that, “...racial redistricting can reduce the overall level share of competitive state house seats” (Lublin and McDonald 2006, 155). They note that there appears to be a relationship between the number of minorities in a district and the level of competition in that district (Lublin and McDonald 2006, 155). At first this does not seem to be directly

related to the research question, however, as will be described later, the skeptics will use facts like this to prove their point: once one controls for other factors that typically affect competition, the statistical significance of redistricting becomes essentially nonexistent.

Yashinaka and Murphy write their own supporting article for the reformists in 2011. They build upon earlier research, which is similar to that conducted by Hetherington in 2003. They also look at the strategic decision making of lawmakers and how that is affected by redistricting. They are even more direct in their attacks on certain partisan groups when they ask in their research question whether or not “...strategic actors use redistricting to foster instability and uncertainty and to affect legislators’ career choices” (Yashinaka and Murphy 2011, 455). This is essentially the same question analyzed by Hetherington, and the author comes to a similar conclusion. Page 441 of Yashinaka and Murphy’s paper displays evidence showing a relationship between redistricting and the likelihood that an elected official will resign or continue (Yashinaka and Murphy 2011, 441). The implications of this are the same as before, but it reiterates a point that seemed to have been lost in the debate since the 2003 Hetherington article. If incumbency advantage has a negative effect on competition, and redistricting is related to incumbency advantage, then by definition redistricting can affect competition.

So what if the reformers are correct in their arguments? What are the implications? John Griffin outlined the answers to those questions in his 2006 paper about electoral competition. He asks the question directly in his abstract: “Does vigorous electoral competition help to convert citizens’ preferences into government action?” (Griffin 2006, 911). The results of his analysis outline the importance of coming to a conclusion in the debate. He finds that in districts where one observes higher levels of competition, there is a similarly higher level of responsiveness of the representatives to the voters in that district (Griffin 2006, 919). If Griffin’s conclusions are accurate, then it is within the best interest of all American voters to see the highest level of competition possible within each representative district. Further, if the reformists are correct, then it is within the best interest of all American voters to see the power to redistrict taken out of the hands of those that would use the process to lower the level of

competition. However, it is important to remember that there is another side to the debate that disputes the claims of the reformists and argues that there is no real effect of redistricting type on competition. Those scholars, the skeptics, are led by the likes of Alan Abramowitz.

Just like the leaders of the reformists, however, Abramowitz was hardly the first to write in support of his side. In fact, the earliest article that I could find that was supportive of the arguments of the skeptics dated back earlier than any other article analyzed here. John Ferejohn wrote on a similar subject in his 1977 paper, “On the Decline of Competition in Congressional Elections.” Ferejohn sought to explain why electoral competition declined in the United States in the years preceding his study (Ferejohn 1977, 166). He analyzed three distinct hypotheses in his paper, the first of which is the most relevant to the research question discussed in this paper. The three possibilities are that: competition might be directly tied to who is in control of the redistricting process; competition could be related to the changing behavior of the voters; and competition could be changing as a result of the effects of institutional changes on voter behavior (a sort of combination of hypotheses one and two) (Ferejohn 1977, 166-167). In his analysis, he notes an increasing level of polarization of voters between 1956 and 1970 (Ferejohn 1977, 169). He elaborates upon this point and uses it in his overall explanation that the second hypothesis has the most support. Ferejohn writes, “By and large the view advanced by Burnham and Erikson, that a behavioral change accounts for the decline, has received the greatest support. Voters are different than they used to be...” (Ferejohn 1977, 174). This paper seems to discredit the idea that changing institutions (which would include redistricting) are responsible for lowered levels of electoral competition in the United States.

In 2006 Abramowitz et. al. published their work, “Don’t Blame Redistricting for Uncompetitive Elections.” Just as most authors on the side of the skeptics, the authors accept that electoral competition levels are falling in the United States. They make clear, however, that readers should not be blaming that decrease on the institution of redistricting (Abramowitz et. al. 2006, 87). The evidence that the authors present lays out facts about competition. At one point they write, “The 2000-2002 redistricting cycle is

often cited by critics of partisan redistricting as the best illustration of the dangers of gerrymandering because of the extensive use of sophisticated mapmaking technology in drawing district lines. However, between the 2000 and 2002 elections, the number of safe U.S. House districts only increased from 201 to 203 and the number of competitive districts only decreased from 123 to 116” (Abramowitz et. al. 2006, 87). Statistics like this one seem to demonstrate that the arguments put forth by the reformists are inconsistent with the evidence, even if they do have a level of theoretical justification. This is an important representation of a larger theme put forth by many skeptics, that the effect of redistricting on competition levels is largely overblown by reformist scholars.

In 2009, Richard Forgette et. al. built upon the arguments of previous scholars by adding variables to previously used statistical regression models (Forgette et. al. 2009, 162 and 164). Like the Lublin and McDonald paper, Forgette et. al. focus on state legislative districts, but their work is still important to the overall debate, as it points to another important aspect of the skeptic argument (Forgette et. al. 2009, 151). The authors show that after adding many controls to their models, the effect of redistricting on competition becomes statistically insignificant (Forgette et. al 2009, 162 and 164). They also acknowledge, however, that their models are not perfect and that they had struggled to rule out the possibility of the reverse causality of the variables. Additionally, they come to one similar conclusion as the reformists, that there is some statistically significant effect of redistricting on incumbency (Forgette et. al. 2009, 166). This shows that, just as there are flaws in the arguments put forth by the reformists, there are flaws in the arguments put forth by the skeptics.

The year 2012 saw two works that effectively provide support for the side of the skeptics. Masket et. al. claim that the work by the reformists should largely be discredited and that their results are “unfounded” (Masket et. al. 2012, 39). They employ similar tactics utilized by the Abramowitz et. al. article, pointing to statistics to begin their criticism. They do, however, build upon the paper put forth by Abramowitz et. al. in 2006 by estimating the likelihood that a district will be competitive in a given election. Just like Forgette et. al. in 2009, the authors control for a very large number of variables and find



that when they do so, the effect of redistricting, once again, becomes not only incredibly small, but also statistically insignificant (Masket et. al. 2012, 41). The authors put forth perhaps the most definitive evidence for the side of the skeptics.

The 2012 work by Masket et. al. coincides with the work of James Cottrill in the same year. As was suggested by earlier papers in the field, he sought to analyze the research question after controlling for the type of body responsible for redistricting within a given state. Specifically, he asks: "...whether non-legislative approaches (NLA) lead to more competitive elections?" (Cottrill 2012, 34). Initially, Cottrill's data seem to suggest that redistricting does play a role, especially when conducted by legislatures (partisan bodies), in determining the competitiveness of elections. That, however, disappears when he controls for other factors that are often regarded as having an effect on electoral competition (Cottrill 2012, 49). These results supplement the works of Masket et. al. (2012) and Abramowitz et. al. (2006) and provide even further support for the arguments of the skeptics. Despite his own results, Cottrill displays a sense of caution and warns that the subject deserves more study before one conclusion can be confidently drawn (Cottrill 2012, 50).

The debate continues. Scholars in the field have yet to come to a consensus, and more questions are arising. There is perhaps the possibility of intervening variables at work, such as incumbency advantage. There is also the possibility of reverse causality. Michael Kang provides an interesting supplemental work where instead of directly asking a research question, he attempts to create a dialogue about the process of redistricting in general (Kang 2005, 443-445). He discusses whether or not we should be concerned with redistricting as a whole or just "defensive gerrymandering" (Kang 2005, 444). He argues that *offensive* gerrymandering would actually work to *foster* competition levels, because the margins of victory between districts would have to be narrower to ensure more seats for a given party (Kang 2005, 456). This provides an interesting perspective and opens the door to even more research questions.

It would be unfair to suggest that there is a simple answer to the research question explored here. The debate continues to expand, with both sides continuing to provide compelling evidence that their own side is correct. One will find that the research presented here would fall into the category of supporting the reformist side of the argument, but there are certainly many arguments to the contrary. In what follows, I will build upon the research of these and other scholars by analyzing the data from nearly all 435 House of Representative elections in each election year from 1972-2014. To the best of my knowledge, this is the most comprehensive time span for a study of this nature and should help to control for election-year specific items that may be lost in a smaller sample of years or districts. It is my hope that my research contributes to the discussion in a constructive and critical way as this debate continues to expand and develop.

## Chapter 3

### Theory and Methodology

As stated in the literature review, I have come to find the arguments put forth by the reformists as the more compelling of the two sides of this debate. That being said, the following hypothesis will be the primary focus of this study throughout the remainder of this research:

**“Districts drawn by partisan actors will be less competitive than those drawn by nonpartisan actors.”**

While this study seeks to explore the effect of partisan redistricting methods, one thing must be noted here. The argument does not seek to assert that redistricting as a practice is inherently bad for competition. In fact, as stated earlier, redistricting is a process that must occur by law. There is zero evidence to suggest that simply redrawing congressional boundaries reduces the levels of competition. Instead, I argue that partisan bodies utilize the overall process to their advantage. The effect of partisan redistricting is what this study seeks to uncover. The hypothesis stated above tests whether that utilization is inherently negative for competition levels in American congressional districts.

To conduct this study, I chose to utilize both a case study as well as a large N analysis. The large N analysis will be conducted in a similar manner to many of the scholars who have already written in this subject area. In general, I conducted difference of means tests for at-large districts versus multi-district states. It serves well to compare these two categories of districts because of the nature of at-large districts. If a state's population is only large enough to warrant a single congressional district, then redistricting at the federal level is essentially removed from the

process. Thus, if I find that there is a significant level of difference between the competition levels of at-large districts compared to the remaining districts, then there could be some evidence to suggest that redistricting is affecting the level of competition in those districts. This, however, cannot serve as the only source of evidence.

I also test whether the average levels of competition in those districts that were drawn by non-partisan bodies versus those drawn by partisan bodies is significantly different using a difference of means test. This more directly tackles the research question. If there is a significant difference in levels of competition between the districts that were drawn by partisan bodies and those that were left to independent bodies, this would provide evidence to suggest a relationship between the institutions utilized in the redistricting process and competition levels.

A more rigorous test of the effect of redistricting type on levels of competition controls for other factors that may simultaneously impact the level of competition. To address these other factors, I have estimated two separate linear regression models. The first model analyzes competition levels over time as a function of the type of institution responsible for drawing the congressional districts. If one refers to the “Data” chapter, one will find the exact coding mechanisms utilized for each variable in the model. The model also controls for incumbency, the presence of competitive third party candidates (those garnering 5% or more of the total vote share) and presidential election years. These serve as standard controls when measuring competition levels for elections. Ideally one would control for many other potentially influential factors on competition including demographic controls, but for logistical reasons they have been omitted from this study. Readers will then find a model that attempts to determine the effect of partisanship over time. That is, each race year will be included in the model, except for 1972 which will serve as the baseline for the model. If competition varies by election year, failing to

control for election to election swings in competition levels that favor one party may bias the estimated effects of redistricting type.

In addition, I conduct a case study of the state of Arizona. Arizona was selected because the method for which the districts were redrawn changed in the early 2000's (Levitt 2010, 29). I compare the state of competition in the legislative elections before and after the change occurred. If there is evidence to suggest that competition levels in Arizona have become increased over the last decade or so, it would suggest that there is an effect of the institution chosen to conduct redistricting on competition levels.

## Chapter 4

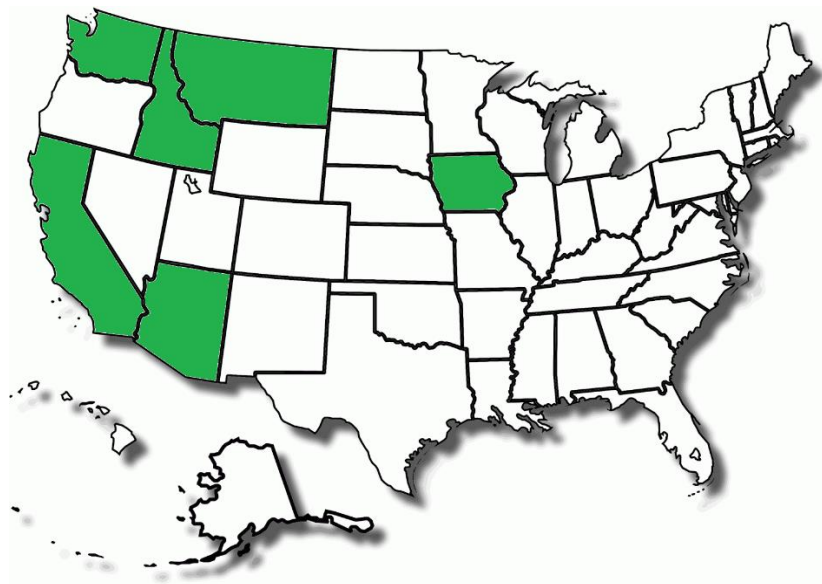
### Data

As stated above, this analysis begins in 1972, which is the first election year following the 1970 census. Choosing 1972 allows for a comprehensive analysis of over 40 years of election data. The data proceed through the 2014 election, which was the most recent election data available at the beginning of this research. The primary independent variable in this study is the type of redistricting method utilized (partisan or non-partisan), which follows the parameters laid out in the introduction. The central independent variable to this study is competition in House of Representative elections. Competition in this study is measured as the absolute value of the Republican share of the vote minus the Democratic share of the vote. The data collected in this research comes largely from the Congressional Quarterly's collection of election results. The data collected included results from every congressional election from 1972-2014. While the Congressional Quarterly has data for older elections, 1972 was determined to be a feasible starting point. The year 1972 represents a time near the end of the shift of the south from solidly Democratic to solidly Republican, which more accurately reflects the modern political landscape. A number of data points were removed from the dataset because of coding errors. Despite that, there are over 9,000 data points in the dataset.

Congressional Quarterly also provides information to identify the incumbency status of all candidates, percentages of the vote received by each candidate, the year, and the existence of third party candidates and the degree to which they were competitive. I compiled this information into a series of spreadsheets and used the existing data to code for other variables, which would be included in the analysis later. Those variables include incumbency (0=no incumbent, 1=incumbent), competition (a measure of the absolute value of the Republican share

of the vote minus the Democratic share of the vote), presidential election year (0=no, 1= yes), whether or not a competitive third party candidate was in the race (defined as one garnering 5% or more of the overall vote; 0=no, 1=yes), and another dummy variable for “at large” districts (those whose boundaries cover an entire state). These variables represent potential intervening factors that may be having an influence on the competition levels in each district that is worth controlling for. In particular, incumbents may have, for example, a heightened level of name recognition which makes it harder for their opponents to garner support. Insurgent third party candidates may have a similar effect on competition in a case where they siphon off votes from one particular candidate, thus increasing the margin of victory between the first and second place candidates. Beyond that, presidential election years might, perhaps, have an effect on competition by creating instances of higher voter turnout. All of these control variables may play a role, so including them in the models allows us to ensure that the effect of redistricting type is not over stated.

Justin Levitt’s “A Citizen’s Guide to Redistricting” was utilized to determine the method utilized by each state in redrawing their districts during each redistricting process. Immediately below is a map of the United States to help readers visualize which states currently employ which method for redistricting today. The states highlighted in green employ a non-partisan method, and the remaining states employ a partisan method.



Further, it is worth noting that examples of partisan redistricting greatly outweigh observations of non-partisan redistricting. In the entire data set there are 8,775 elections in districts that were drawn by partisan actors, and only 504 that were not. This, however, represents ample data to conduct the analysis. Levitt goes into greater detail regarding the various methods than is necessary for the scope of this study, however. I am only interested in the difference between partisan and non-partisan methods. Consequently, a dummy variable was created to control for this as well in the research.

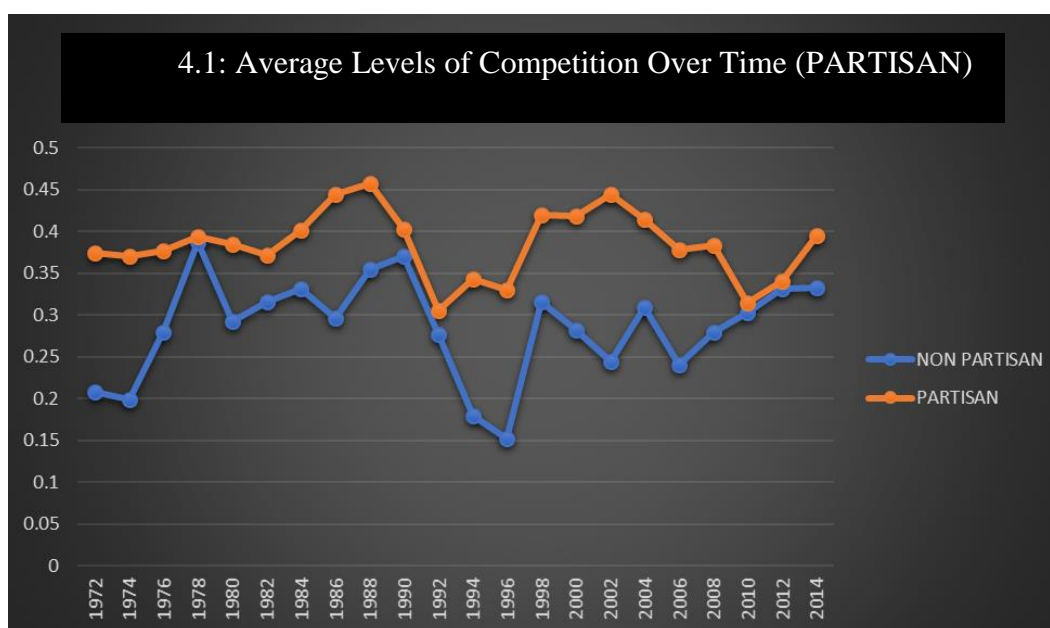
The summary statistics for the data include the following pieces of information:

Minimum	1 <sup>st</sup> Quartile	Median	Mean	3 <sup>rd</sup> Quartile	Maximum
0.0000171	0.1757	0.326	0.3784	0.4932	1.000

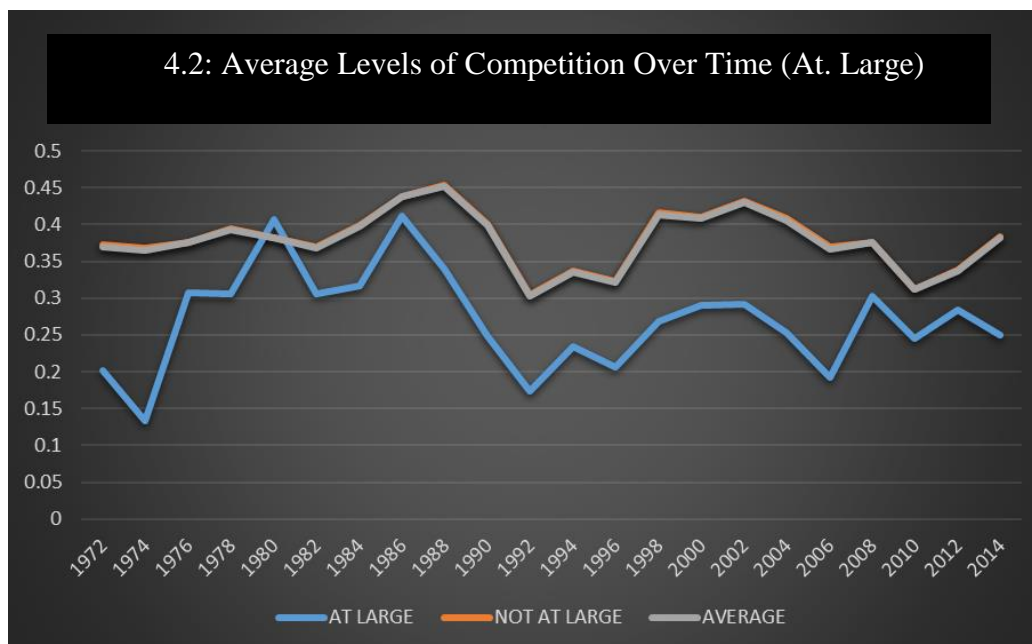
These data represent the average levels of competition in the entire data set from 1972-2014. The minimum category tells readers that no elections were tied at any point during the timeframe. Further, the maximum tells readers that at least one election was perfectly non-



competitive. This means that only one candidate received every counted vote. This was in fact much more common than one might think. There are many examples of elections with only one candidate on the ballot, which are coded in this data as perfectly non-competitive. The mean of .3784 tells readers that across the entire time frame, the average margin of victory in elections to the House of Representatives was 37.84%. The following graphs show readers the variation in average competition levels over time when controlling for two factors: Partisan vs. Non Partisan and At-Large vs. Districts from Multi-District States.<sup>1</sup>



<sup>1</sup> Graphs in this document were formatted using Microsoft Excel



The data demonstrate that there is a large amount of variation over time. Noting that the vast majority of districts fall into the “Not At Large” and “Partisan” categories, the averages make sense. In both graphs, those two categories nearly overlap the “Average” line. Further, the graphs are consistent with the hypothesis that in nearly all years, average levels of competition are higher in states that employ a partisan method of redistricting. Graph 3.1 demonstrates that there was never an election year during this time frame where districts drawn by partisan actors were more competitive than those drawn by non-partisan actors. Similarly, at large districts were only less competitive during one election year from 1972-2014, 1980.

A critically important thing to understand about graph 3.1 and subsequent graphs like it is that they are counterintuitive. Because of the nature of the specific measure of competition, higher levels denote a less competitive election. A competition value of 1.0 indicates a perfectly non-competitive election. 0, on the other hand, would indicate an election where the Republican and Democrat received the exact same number of votes.

## Chapter 5

### Large N Results

I begin my analysis by comparing levels of competition in states with at large districts versus districts in states with multiple congressional districts. A Welch two sample t-test<sup>2</sup> reveals some interesting information about the data when controlling for “at-large” districts. I have found that the average competition level for at large districts is **0.2695**, while non at-large districts had an average level of competition of **0.3801**. Further, the assigned p-value is **3.413e-12**. This indicates with relative certainty that there is an actual difference of means between the two samples. The 95% confidence interval tells readers that given the parameters described, we can be about 95% certain that the actual difference falls somewhere between **0.0816 and 0.1394**.

These results clearly demonstrate that there is a substantial difference in the level of competition over the entire time-span between the districts which qualify as “at large” and those that do not. This means that we are able to reject the null hypothesis (that there is no difference in the means of those two categories of districts) in this case. This provides at least some level of evidence to suggest that there may be an effect of redistricting in general on competition levels in the United States. The means level of competition shows us that this effect is negative in nature, meaning that those states that were at-large (where redistricting does not take place) were much more competitive over time than those that are districts from multi-district states. This alone does not tell the reader much, however. As there are numerous other explanations possible for how this might be true. Therefore, more explanation and analysis is required.

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<sup>2</sup> This t-test and the remaining analysis was conducted using R Studio

More telling is the results of the same Welch two sample t-test when comparing “partisan” versus “nonpartisan” districts. It should be noted that there is significantly more data on partisan districts, as even today only six states employ what can be categorized as a non-partisan redistricting process. Further, not all of these states were non-partisan throughout the entirety of the time span studied here. That being said, there is plenty of evidence to draw conclusions from.

The mean level of competition for districts drawn by partisan actors is **0.3851**, while for non-partisan actors the mean is **0.2990**. This difference (**0.0861**), demonstrates a great deal of statistical significance again when one evaluates the p-value assigned. Typically, a p-value of less than .05 indicates significance, and the value for this data is **<2.2e-16**. Once again we can say with a great deal of confidence that the null hypothesis can be rejected. This provides further evidence that there is a significant difference in competition levels between districts drawn by partisan actors and those that were not.

The results of the first of the two linear regression models are immediately below.

Table 5.1: Regression 1				
Formula: $\ln(\text{forumula}) = \text{Comp} \sim \text{incstatus} + \text{pres.year} + \text{comp.third} + \text{PARTISAN}$				
Coefficients:				
	Estimate	Standard Error	T Value	Pr(> t )
Intercept	0.166	0.013	12.125	<2e-16***
Incumbency	0.142	0.008	16.989	<2e-16***
Presidential year	-0.008	0.005	-1.464	0.143
Third party	0.243	0.018	13.040	<2e-16***
Partisan	0.094	0.012	8.040	1.01e-15***
Residual standard error: 0.2641 on 9273 degrees of freedom Multiple R-Squared: 0.0517, Adjusted R-squared: 0.05129 F-statistic: 126.4 on 4 and 9273 DF, p-value: <2e-16***				

These results demonstrate that there are multiple factors that affect competition levels in elections to the House of Representatives. The presence of an incumbent in the race matters. On average elections in which an incumbent ran were about 14 percentage points less competitive. Whether the election is held during a presidential election year does not seem to make a difference. The estimate is near 0 and estimated imprecisely. A competitive third party candidate has the strongest effect on competition, seeming to drive competition down by about 24 percentage points. This could be explained by the siphoning of votes from one particular candidate which makes another win decisively. That being said, it is not the subject matter here and would need much more research to fully explain. The “PARTISAN” category is the most interesting in regards to this research question. When districts are drawn by partisan actors, we should expect elections held within that district to be about 9.38% less competitive than if they were drawn by non-partisan or independent actors. This is perhaps the most compelling evidence provided so far to indicate that the type of institutions matters when it comes to redistricting.

The overall explanatory power of the model is very low, however. In fact, at only about .051, we can conclude that the model does not do a good job at all explaining every factor of competition. Surely there are other things at work in determining competition including things like racial makeup of districts or median income of the districts. These were originally going to be controlled for, but the availability of data like those was extraordinarily difficult to come by for the entire time span presented here. That being said, I was not necessarily interested in explaining all of what drives levels of competition. In contrast, I was solely looking at explaining what level of effect redistricting institutions have on that level.

Table 5.2: Regression 2

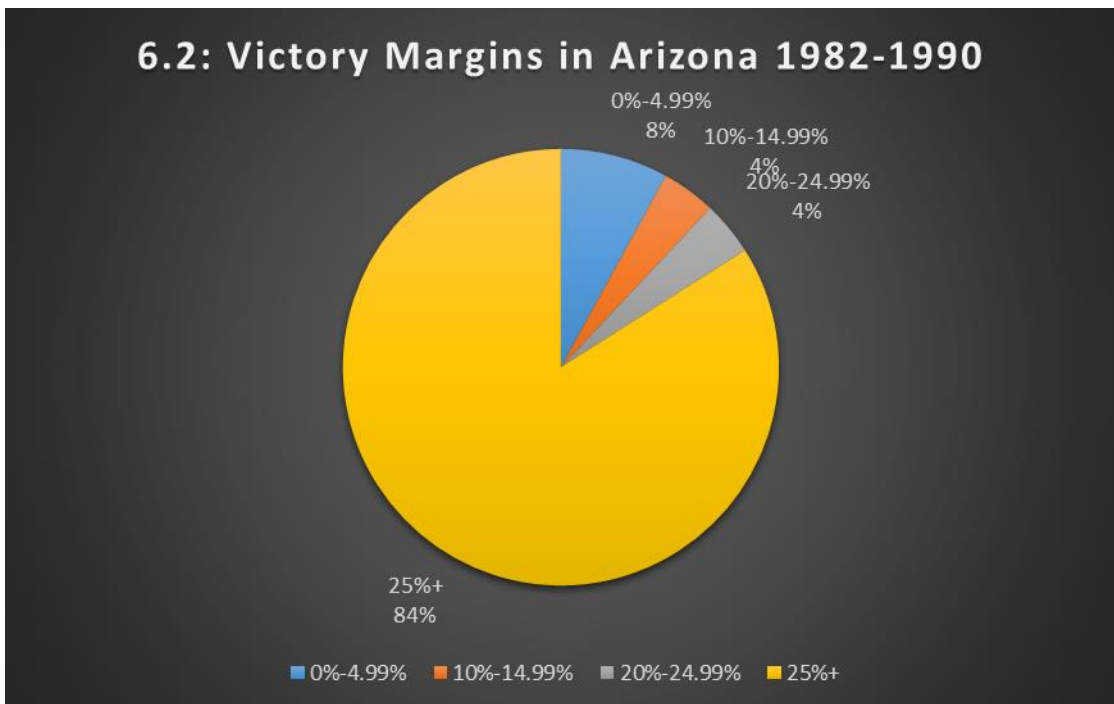
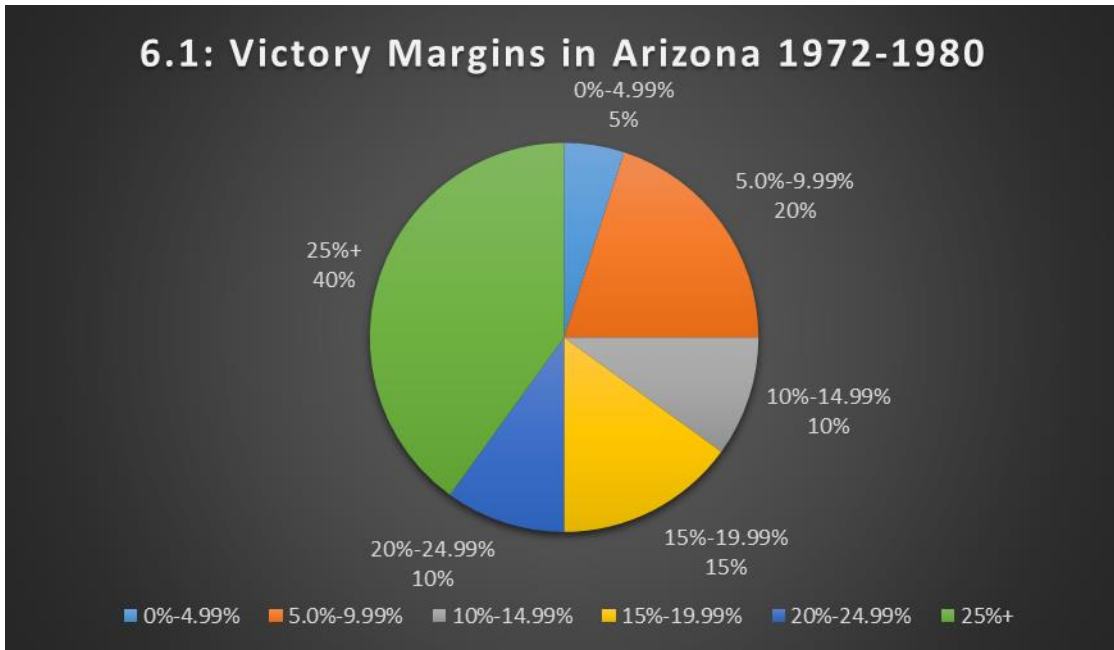
Table 5.2: Regression 2				
Formula: $\text{lm}(\text{formula} = \text{Comp} \sim \text{pres.year} + \text{comp.third} + \text{PARTISAN} + \text{incstatus} + \text{yr.1974} + \text{yr.1976} + \text{yr.1978} + \text{yr.1980} + \text{yr.1982} + \text{yr.1984} + \text{yr.1986} + \text{yr.1988} + \text{yr.1990} + \text{yr.1992} + \text{yr.1994} + \text{yr.1996} + \text{yr.1998} + \text{yr.2000} + \text{yr.2002} + \text{yr.2004} + \text{yr.2006} + \text{yr.2008} + \text{yr.2010} + \text{yr.2012} + \text{yr.2014})$				
Coefficients:				
	Estimate	Standard Error	T Value	Pr(> t )

Intercept	0.156	0.018	8.733	<2e-16***
Presidential year	0.029	0.018	1.551	0.121
Third Party	0.262	0.019	13.565	<2e-16***
Partisan	0.080	0.012	6.707	2.11e-11***
Incumbency	0.137	0.008	16.393	<2e-16***
1974	0.014	0.018	0.745	0.456
1976	-0.003	0.018	-0.139	0.889
1978	0.040	0.018	2.221	0.026*
1980	-0.005	0.018	-0.269	0.788
1982	0.020	0.018	1.072	0.284
1984	0.012	0.018	0.645	0.519
1986	0.083	0.018	4.491	7.19e-06***
1988	0.065	0.018	3.586	0.0003***
1990	0.041	0.018	2.271	0.023*
1992	-0.064	0.018	-3.595	0.0003***
1994	-0.015	0.018	-0.829	0.407
1996	-0.058	0.018	-3.240	0.001**
1998	0.060	0.018	3.231	0.001**
2000	0.024	0.018	1.333	0.183
2002	0.082	0.018	4.469	7.94e-06***
2004	-0.000	0.018	-0.013	0.990
2006	0.011	0.018	0.602	0.547

2008	-0.007	0.018	-0.411	0.681
2010	-0.031	0.018	-1.680	0.093
2012	-0.060	0.018	-3.263	0.001**
2014	n/a	n/a	n/a	n/a
Residual standard error: 0.2619 on 9253 degrees of freedom (144 observations deleted due to missingness) Multiple R-squared: 0.06943, Adjusted R-squared: 0.06701 F-statistic: 28.76 on 24 and 9253 DF, p-value: < 2.2e-16				

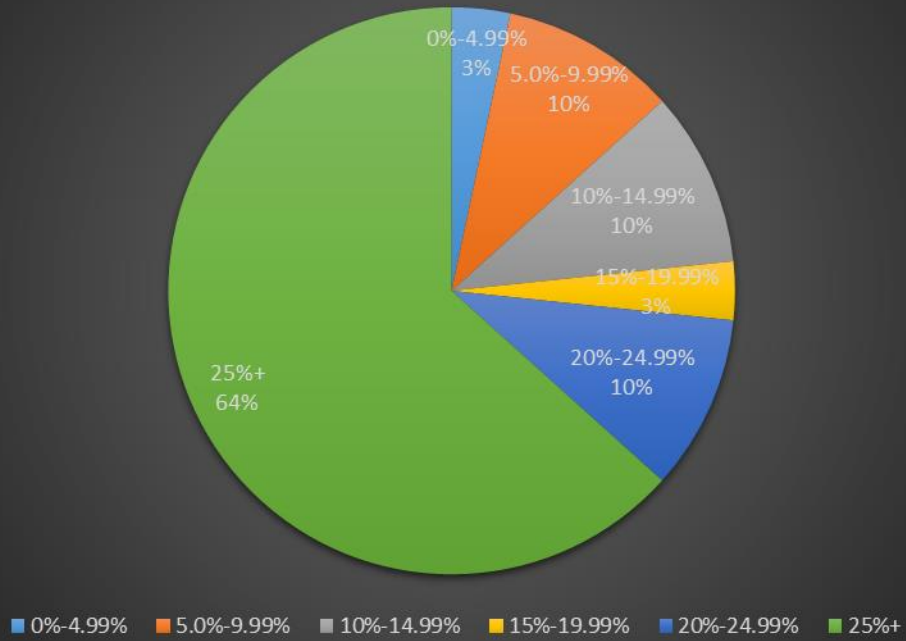
To test the robustness of my model and to decrease the possibility of year-specific issues, the above model controls for each race year in the time frame. Ultimately, the results demonstrate that that is indeed the case. While the effect of redistricting type is slightly diminished in this model, the results demonstrate that controlling for each individual year within the model, elections in districts drawn by partisan actors were still about 7.96% less competitive over time than those in districts that were drawn by nonpartisan actors. Here, none of the other control variables lose any level of significance that can be measured by the model. The R-squared value has only slightly ticked up to .067, which is still very low. There still appears, however, to be an effect of the type of institution responsible for redistricting on the levels of competition in a given district in this model.

**Chapter 6**  
**Arizona Case Study**

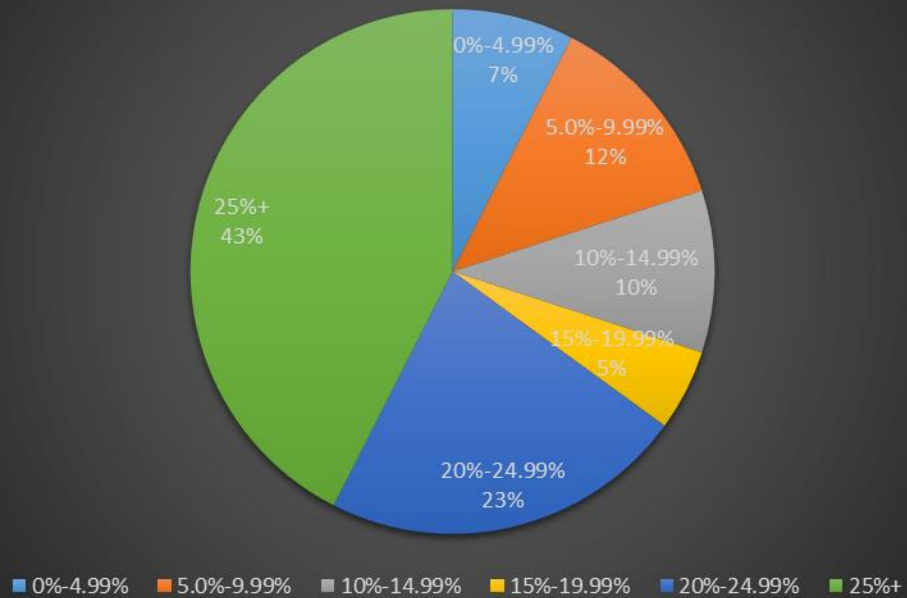


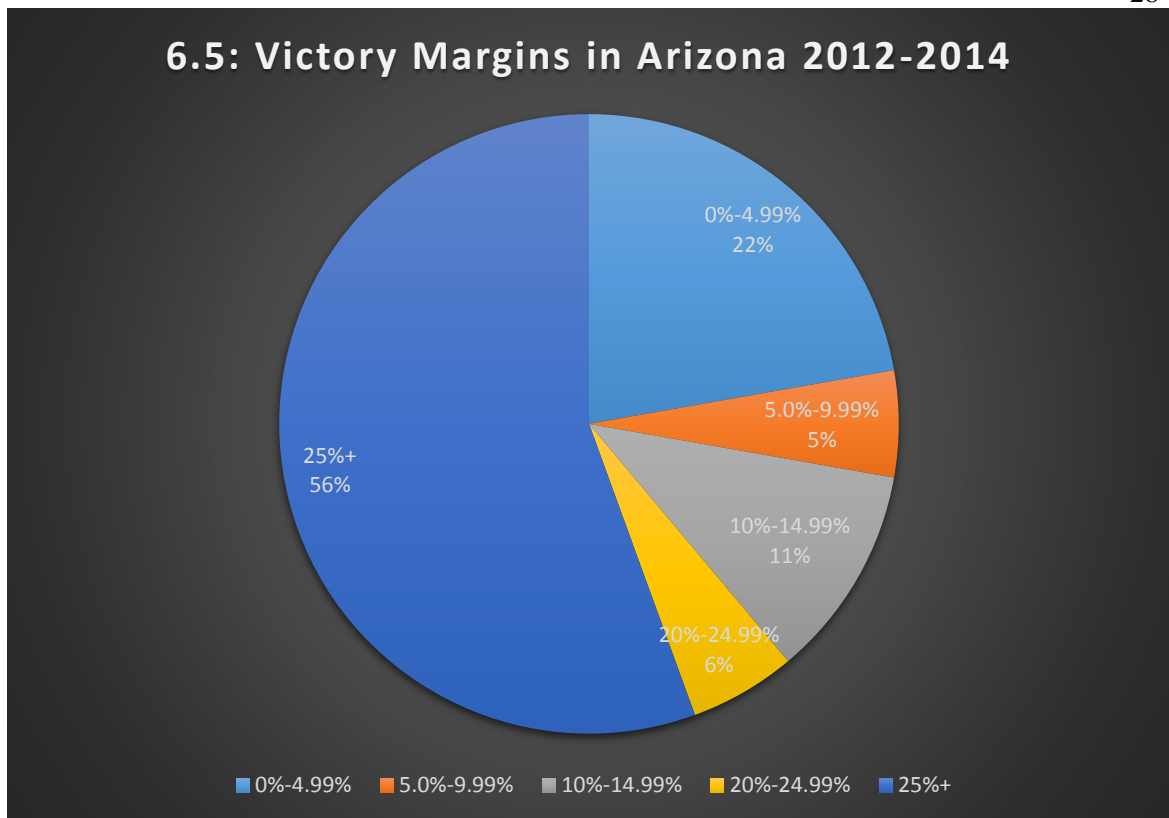


### 6.3: Victory Margins in Arizona 1992-2000



### 6.4: Victory Margins in Arizona 2002-2010





To get a more qualitative understanding of the potential effect of partisan redistricting methods on competition levels, I have conducted a case study of the state of Arizona. In the series of pie charts above, I present the distribution of victory margins in Arizona over the last five census cycles. As stated earlier, Arizona is a great case study to get a closer look at the effects of partisan redistricting, because it provides ample data as both a state that employed partisan redistricting, as well as one that employed non-partisan redistricting. As was noted above, Arizona shifted from a partisan style of redistricting to a non-partisan style beginning with the 2002 redistricting cycle. The time periods listed in the title of each pie chart was determined by the census cycles. The time period studied covered five separate cycles, and thus there are five different pie charts. Independently the charts do not tell the reader much. As a series, though, they reveal some interesting details regarding the competitiveness of elections.

First, the graphs demonstrate that there is really no time span where all elections are extraordinarily competitive. While the most non-competitive census cycle is clearly 1982-1990, where

84% of elections were won by a 25 point margin or greater and 92% were won by a 10 point margin or greater, the pattern is fairly stable over time. The most non-competitive category in each graph (25%+) fluctuates between a majority and a solid plurality of elections within the state. Perhaps the most interesting results from an analysis of the margins of victory lies within the two most competitive categories.

While a full 25% of elections in Arizona were won by less than 10% points from 1972-1980, that appears to be abnormal for the partisan redistricting period in the state (pre-2002). That number decreases to 8% of elections from 1982-1990, and 13% from 1992-2000. After the switch, however, the numbers tell us a different story. From 2002-2010 (after the switch to non-partisan redistricting), nearly one in five elections were decided by less than 10 points. Further, so far in the current census cycle (2012-2020), more than one in four elections (or 27%) fell into one of those two categories. While data are only available through the 2014 elections, fully 22% of elections in the state were decided by less than 5 points, the most in that category in the entire time-frame of this research. The increasing number of elections that were decided by that margin is incredibly reassuring for those scholars who value heightened competition in elections. That being said, however, it is important to note that so far during this census cycle the number of elections decided by 25 points or more has increased from 43% in 2002-2010 to 56%.

The differences of means between the partisan years and the non-partisan years in the state demonstrates clearly the potential influence of partisanship on district competition. From 1972-2000 the average level of electoral competition was about 0.321, or about 32%. After the redistricting process was changed, however (2002-2014), that number dropped to .278, or about 28%. This denotes about a 12.5% increase in the level of competition since the adoption of a non-partisan approach to redistricting.

This difference of means test, however, does not hold up to statistical significance analyses, which suggests that there is too much variation between the time periods to derive significance. There is simply not enough evidence to suggest that the difference can be attributed to partisan versus non-partisan

methods. That being said, the difference is still observed, and perhaps over time and with more election results observed, this test could be conducted again to determine significance.

## Chapter 7

### Conclusions, Implications, and Suggestions for Further Research

It seems apparent that partisan methods of redistricting drive down competition levels of elections in American Congressional districts. This has been demonstrated in every aspect of this research in one way or another. I believe that it is true that partisan redistricting is harmful to electoral competition. The fundamental question of “Why?” though, remains unanswered. Perhaps it is true that partisan actors are compelled to make elections less competitive out of a desire to pursue the agenda of their party. I believe that it may be the case that partisan actors are “packing” their political opponents into districts, which would drive down competition levels. This research, however, provides no evidence to support that claim, and further research would be warranted to prove that. That research question might examine congressional districts that were won by the party that was *not* responsible for drawing the boundaries. An example of such a district would be a Philadelphia area district that was won by a Democrat in 2012. Republicans dominated the redistricting process in 2010, so any district in Pennsylvania that was won by a Democrat would be included in that study.

There are certainly other factors at play. Improving the models utilized in this study is incredibly important for future studies. I recommend that future authors research more potential contributing factors to competition levels and include them in this study. There are also more angles from which one could approach this research question regarding the actual process of redistricting. When districts are drawn, for example, they have some degree of compactness. Determining whether or not more compact districts are more competitive could ultimately be an interesting research question. In fact, my original plan was to test that as well. The scope of the project, however, became too large. Further, there are different measures of compactness, which

make determining your method somewhat of a challenge. Nonetheless, the question is incredibly interesting and very important moving forward. It is my hope that this research can serve as a series of studies on redistricting to determine how we can improve the process to foster democracy rather than hinder it.

The implications of this study cannot really be overstated. Competition in elections is an inherent good. Elections that remain non-competitive drive down electoral responsiveness. In other words, representatives who are confident that they will not face a competitive election are less likely to follow the will of their constituents. It is therefore imperative that elections remain competitive. Even in a state with non-partisan redistricting like Arizona, over half of elections so far this cycle have been decided by 25%+. This is not a high degree of competition, even if it is improving.

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## ACADEMIC VITA

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**Academic Vita of Joseph Alan Carper**  
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# Joseph A. Carper

## EDUCATION

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Bachelor of Arts, Political Science; Bachelor of Arts, History  
(Expected Completion Date: May 2017)  
Pennsylvania State University, State College, PA

## ACADEMIC ACHIEVEMENTS & MEMBERSHIPS

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### Dean's List

Fall 2016  
Fall 2015  
Spring 2015  
Fall 2014  
Spring 2014  
Fall 2013

### Honors

Paterno Fellow (2015-present) – Gateway into the honors program  
Penn State Schreyer Honors College

## RELEVANT COURSEWORK AND RESEARCH

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### Course on Public Opinion

—This course required in-depth analysis and research behind the driving forces of public opinion. Research projects focused on understanding the statistics behind a quantitative analysis of the given subjects for each week.

### Course on Electoral Analysis

—This 400-level course taken during my freshman year introduced students to gathering and understanding election results in different states primarily from the 2008 and 2012 presidential elections. The course culminated in a research project focused on building your own research project pertaining to the subject matter of the course.

### Course on Political Parties and Interest Groups

—The course focused on the history and general studies of political parties and interest groups in American politics. The final project in the course required students to submit an in-depth literature review on any research question that related back to the course material.

#### Course on Quantitative Analysis in Political Science

—This course was required for honors scholars in the field of political science. The course required us to become familiar with “R,” a statistical analysis software on the computer. The course explored statistics as it pertains to political science and required a final project where we were required to apply the knowledge we had learned.

#### Course on Thesis Writing/Honors Thesis

—Writing an undergraduate thesis is a required part of graduating from the Pennsylvania State University with honors. My thesis advisor, Dr. Suzanna Linn, has been guiding me as I write my thesis on redistricting and its effects on electoral competition. Further, there is a required sequence of courses which are designed to help students formalize their thesis and understand the rigor which professional submissions will be scrutinized at.

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### PROFESSIONAL EXPERIENCE

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#### Pennsylvania State University – State College, PA

*Research Assistant: Political Science Department (2014-2015)*

—Worked as an undergraduate research assistant for Dr. Suzanna Linn. Primarily worked on data collection.

*Research Assistant: Political Science Department (2015)*

—Worked as an undergraduate research assistant for a graduate student at the Pennsylvania State University. Worked solely on data collection.

#### Red Maverick Media – Harrisburg, PA

*Intern (May – August 2016)*

Learned skills pertaining to campaign operations including (but not limited to); the production of campaign mail pieces, the production of campaign commercials, the planning and execution of campaign fundraisers, constituent outreach, campaign