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Gerrymandering Threat to American Democracy

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Ghadbane Djihan & Ben Fenniche Bouckra

DEDICATION

We would like to dedicate this work to our supportive parents
helped us to accomplish this work

To our lovely sisters

To our decurted brothers

Finally, to our loyal friends with whom we shared joyful
memories.

Ghadbane Djikan & Ben Fenniche Bouckra

Content

Thanks and Appreciation.....	I
Dedication.....	II
Content.....	III
List of tables.....	V
List of figures.....	VII
List of Appendixes.....	IX
Introduction.....	01
Chapter One: Gerrymandering History and Salience	
Definition.....	03
History of gerrymandering.....	04
Types of gerrymandering: there are two main types behind gerrymandering "packing" and "cracking.....	07
1.3: Packing.....	07
2.3: Cracking.....	08
How gerrymandering work.....	08
• Effects of Gerrymandering.....	10
Chapter two: Methods of Understanding and Analysing Gerrymandering	
Methods of Understanding and Analyzing Gerrymandering.....	12
Gerrymandered States.....	13
1.2: North Carolina.....	13
2.2: Pennsylvania.....	15
3.2: Wisconsin.....	16
• States That Seek To Avoid Gerrymandering.....	18
1.3: Arizona.....	18
2.3: Iowa.....	20
3.3: Washington.....	22
Chapter Three: Results of Methods and Analyzing of the State	
Study Area.....	25
Analysis Methods.....	25
• Results.....	26
1.3: North Carolina.....	26

A Comparison of Compactness Measures.....	31
1.4: North Carolina.....	31
2.4: Pennsylvania.....	32
3.4: Wisconsin.....	37
4.4: Arizona.....	41
5.4: Iowa.....	46
6.4: Washington.....	50
7.4: The Efficiency Gap Data.....	55
Conclusion	58
References	60
Appendixes	62
Abstarct	
End notes	

List of Tables

Table 1.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information–Median House hold Income	27
Table 2.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Race (Non White).....	28
Table 3.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Race (White).....	29
Table 4.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact the District).....	30
Table 5.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Median Household Income.....	32
Table 6.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Race (Non- White).....	33
Table 7.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Race (White).....	34
Table 8.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact the District).....	35
Table 9.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Median Household Income.....	37
Table 10.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Race (Non-White) Wisconsin.....	38
Table 11.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information– Race (White).....	39
Table 12.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact the District).....	40
Table 13.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Median Household Income.....	42
Table 14.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Race (Non- White).....	43
Table 15.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Race (White).....	43
Table 16.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact the District).....	44

Table 17.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Median Household Income.....	46
Table 18.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Race (Non-White).....	47
Table 19.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Race (White).....	48
Table 20.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact the District).....	49
Table 21.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information – Median Household Income.....	51
Table 22.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information - Race (Non- White).....	52
Table 23.3: Spatial Autocorrelation (Moran’s I) Report Summary & Dataset Information - Race (White).....	53
Table 24.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact theDistrict).....	54
Table 25.3: 2016 Efficiency Gap Data (http://gerrymander.princeton.edu/) (R = Republican, D = Democrat).....	56

List of Figures

Figure 1.1: Gerrymander.....	06
Figure 2.1: How Gerrymandering Works.....	08
Figure 1.2: North Carolina Congressional Districts.....	15
Figure 2.2: Pennsylvania Congressional Districts.....	16
Figure 3.2: Wisconsin Congressional Districts.....	18
Figure 4.2: Arizona Congressional Districts.....	19
Figure 5.2: Iowa Congressional Districts.....	22
Figure 6.2: Washington Congressional Districts.....	23
Figure 1.3: Research Graphic Organizer.....	24
Figure 2.3: Spatial Autocorrelation (Moran's I) Report – Median Household Income (A Moran's Index value greater than zero tells us that more clustering is taking place).....	28
Figure 3.3: Spatial Autocorrelation (Moran's I) Report – Race (Non-White) (A Moran's Index value greater than zero tells us that more clustering is taking place).....	29
Figure 4.3: Spatial Autocorrelation (Moran's I) Report - Race (White) (A Moran's Index value greater than zero tells us that more clustering is taking place).....	30
Figure 5.3 A Comparison of Compactness: North Carolina (The Closer a Given Value is to 1, the More Compact the District).....	31
Figure 6.3 Spatial Autocorrelation (Moran's I) Report – Median Household Income (A Moran's Index value greater than zero tells us that more clustering is taking place).....	33
Figure 7.3 Spatial Autocorrelation (Moran's I) Report – Race (Non-White) (A Moran's Index value greater than zero tells us that more clustering is taking place).....	34
Figure 8.3 Spatial Autocorrelation (Moran's I) Report – Race (White) (A Moran's Index value greater than zero tells us that more clustering is taking place).....	35
Figure 9.3: A Comparison of Compactness: Pennsylvania (The Closer a Given Value is to 1, the More Compact the District).....	36
Figure 10.3: Spatial Autocorrelation (Moran's I) Report – Median Household Income (A Moran's Index value greater than zero tells us that more clustering is taking place).....	38
Figure 11.3: Spatial Autocorrelation (Moran's I) Report – Race (Non-White) (A Moran's Index value greater than zero tells us that more clustering is taking place).....	39
Figure 12.3: Spatial Autocorrelation (Moran's I) Report – Race (White) (A Moran's Index value greater than zero tells us that more clustering is taking place).....	40
Figure 13.3: A Comparison of Compactness: Wisconsin (The Closer a Given Value is to 1, the	

More Compact the District).....41

Figure14.3: Spatial Autocorrelation (Moran's I) Report – Median Household Income (A Moran’s Index value greater than zero tells us that more clustering is taking place).....42

Figure15.3: Spatial Autocorrelation (Moran's I) Report – Race (Non-White) (A Moran’s Index value greater than zero tells us that more clustering is taking place).....43

Figure16.3: Spatial Autocorrelation (Moran's I) Report – Race (White) (A Moran’s Index value greater than zero tells us that more clustering is taking place).....44

Figure17: A Comparison of Compactness: Arizona (The Closer a Given Value is to 1, the More Compact the District).....45

Figure18.3: Spatial Autocorrelation (Moran's I) Report – Median Household Income (A Moran’s Index value greater than zero tells us that more clustering is taking place).....47

Figure19.3: Spatial Autocorrelation (Moran's I) Report – Race (Non-White) (A Moran’s Index value greater than zero tells us that more clustering is taking place).....48

Figure20.3: Spatial Autocorrelation (Moran's I) Report – Race (White) (A Moran’s Index value greater than zero tells us that more clustering is taking place).....49

Figure21.3: A Comparison of Compactness: Iowa (The Closer a Given Value is to 1, the More Compact the District).....50

Figure22.3: Spatial Autocorrelation (Moran's I) Report - Median Household Income (A Moran’s Index value greater than zero tells us that more clustering is taking place).....51

Figure23.3: Spatial Autocorrelation (Moran's I) Report – Race (Non-White) (A Moran’s Index value greater than zero tells us that more clustering is taking place).....52

Figure24.3: Spatial Autocorrelation (Moran's I) Report – Race (White) (A Moran’s Index value greater than zero tells us that more clustering is taking place).....53

Figure25.3: A Comparison of Compactness: Washington (The Closer a Given Value is to 1, the More Compact the District).....55

List of Appendixes

Appendix A: North Carolina.....	71
Appendix B: Pennsylvania.....	72
Appendix C: Wisconsin.....	73
Appendix D: Arizona.....	74
Appendix E: Iowa.....	75
Appendix F: Washington.....	76

INTRODUCTION

Introduction

Every Ten years, the United States redraw the congressional districts that elect the 435 members of the house of representatives after the decennial census data has been collected and organized politicians around the country have taken to using these map revisions for their party's own political gains and have been doing so since the time even before the united states constitution was ratified. The process where politicians draw district lines to favor their own party and expand their political power is called **gerrymandering** (trickey, 2017).

Over the last two increasingly common and sophisticated, the way legislators manipulating borders live is the loophole to American democracy.

I. The aim

The aim is to revive the history of gerrymandering, also is to understand the impact gerrymandering has on democracy in the United States, examining some state specifically at the federal level.

II. Research questions

The research questions that would be intended to pursue are:

1. To what extent gerrymandering affect the US elections and democracy?
2. How can the US be characterized as less democratic depending on the geographic location of where are lives?
3. How can mays that are less gerrymandered or mot gerrymandered at all be drawn?

III. Hypothesis

- A.** The rise of gerrymandering in the united states as a method of politicization of empirical evidence to benefit a group in power leads to the eroding of a nation's democracy;
- B.** America imposes democracy on the countries while it still suffering from the issue of gerrymandering;
- C.** US Supreme Court allows manipulations of electoral maps to continue.

IV. Objectives

The true democracy is that citizens have the ability to choose their elected leaders by voting. Instead, gerrymandering allows politicians to choose their voters giving legislators power over drawing their own districts and congressional maps creates a conflict of interest that turns democracy on its head. Fight over gerrymandering is a year's most important. This study merits research because gerrymandering should be of interest to legislators who draw the lines, journalists who write about the process, Teachers and students who want to understand it and perhaps the most importantly for citizens.

V. Review of literature :

a plethora of works Have been done on the current topic to rely on while conducting this dissertation. The book “**partisan gerrymandering and the construction of American democracy**”by Eric J.Engstrom who offers an important historically grounded perspective on the states of congressional redistricting by evaluating the impact of gerrymandering on elections and on party control of the US likewise the book “ **the realities of redistricting**” by Jonathan Winburn who explores the process of redistricting from 2000 to 2002 across eight states from start to finish and understanding how the process actually works.

On the other hand, “**Elkridge Gerry Salamander**” this book is about the history to American gerrymandering. The Supreme Court's landmark reapportionment decisions in the early 1960 and their electoral consequences.

1. In this research, we are going to use a variety of approaches we will depend firstly a descriptive and historical approaches to depict the historical events related to gerrymandering, then we will adapt the analytical approach to interpret and discuss these events. Data will be collected from books, archives, interview, newspapers, websites and governmental sources.
2. This study consists of three chapters:
 - ✓ The first chapter sheds light of the history and salience of gerrymandering.
 - ✓ The second chapter gerrymandered states, and state that avoid gerrymandering.
 - ✓ The third chapter Results of Methods and Analyzing of the States.

Chapter one
Gerrymandering history and salience

Chapter One: Gerrymandering History and Salience

this chapter will deal with two main sections the first includes some definitions and the historical background of gerrymandering in US from its appearance till nowadays. The second one is the theoretical part includes types and kinds of gerrymandering and how does it work.

I. Definition of Gerrymandering

According to Merriam-Webster the word Gerrymandering means “the practice of dividing or arranging a territorial unit election districts in a way that gives one political party an unfair advantage in elections.”, That the based on choosing a preferable areas to benefit from by collecting voters from it according to the right of each member represents a geographic district. Equal representation requires that districts comprise the same number of residents or voters. Merriam Webster defines gerrymandering as (the act) separating (a territorial region) into election districts to gain one political side an electoral plurality in a huge number of districts while focusing the voting strength of the opposition in as few districts as possible. (Webster Dictionary).

Also, according to Cambridge Dictionary claims that gerrymandering is “An occasion when someone in authority changes the borders of an area in order to increase the number of people within that area who will vote for a particular party or person.” Which means that the main aim of gerrymandering is to maximize the number of legislative seats that can help the party to win in order to redraw a new districts’ boundaries, and to have a legal seat in the House of Representative, that happen when the party have a numerous voter in a fixed region. (Cambridge Dictionary).

According to Steve Fiorello in his article “Gerrymandering Definition, History and legality in 2018”, he defines it as the act of changing the boundaries of districts in states to manipulate the voting demographics within those districts, thus helping a political party maintain power there even if statewide demographics don’t necessarily.

Chapter One: Gerrymandering History and Salience

suggest a majority. Because different parties in different states have wanted different voting populations highlighted or quarantined in order to weaken their opponent's power.

Another writer, Mariam Morshedi, said in her article "Political Gerrymandering Explained", March 21, 2019 in the simple put, it is a sly method that state officials may use to draw districts lines so they can influence election results. State legislators control the process of allocating people into voting districts "districting". When you look at the map of the congressional districts in a state, you will see the result of their efforts. Districting can influence the outcomes of elections because determining which voters are in which districts can alter the district majorities. For example, a political party that has 45% of public favor and 03 districts by which to allocate people could ensure that 02 districts go in its favor. It could put a "Supermajority" of the other party's voters in one of the districts. When the party in control of the map-drawing process draws the lines to its own advantage to the detriment of the disfavored party, it engages in political gerrymandering sometimes mapmakers get so specific with carving that the district shapes end up looking pretty bizarre. (Morshedi).

II. History of gerrymandering¹

Gerrymandering, in this study, is defined as politicians drawing district lines to favor their own party and expand their power (Trickey, 2017). Before the word "gerrymander" came to be and even before the United States Constitution took effect, redistricting was already being used for political gain (Barasch, 2012). The term "gerrymander" came into existence when illustrator Elkanah Tisdale drew a picture map of the Massachusetts voting districts as if it were a monster with claws and a snake-like head on its neck as shown in Figure 2. Another guest at the Boston dinner party they were attending noted that it looked like a salamander. Richard Alsop, who often collaborated with Tisdale, said "No, a Gerry-mander", which was in reference to Elbridge Gerry, after the 1840 census, the Apportionment Act of 1842 made it so that congressional districts had to be contiguous and compact. Before this act in 1842, many states elected their members of the House of Representatives at large, which allowed for the majority party in a state to elect all of its congressmen. This bill made it so that every state had to be split into congressional districts based on the number of representatives they were allotted after the census, and that a single representative be elected from each district (Barasch, 2012). After the Voting Rights Act of 1965 was passed, some states, such as North Carolina created "majority-minority" districts in which the majority of the constituents in the district are non-white, based on census

Chapter One: Gerrymandering History and Salience

data (Daley, 2017). This was done with the intention that it would remedy historic discrimination and help to promote the election of minority politicians (Barasch, 2012). Although this strategy may have been successful in its goals, it also diluted the minority vote as most people of color were packed into these racially gerrymandered districts.

The United States Constitution only mentions redistricting a few times, which has left a lot of room for debate about what is constitutional and what might be unconstitutional. What the United States Constitution explicitly states about electing members to the House of Representatives or actions closely related is as follows (U.S. Constitution, 1787):

- Article I, Section 2, Clause 1: “The House of Representatives shall be composed of Members chosen every second year by the people of the several states, and the electors in each state shall have the qualifications requisite for electors of the most numerous branch of the state legislature”.
- Amendment XIV, Clause 1: “All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the state wherein they reside. No state shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any state deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws.”
- Amendment XIV, Clause 2: “Representatives shall be appointed among the several states according to their respective numbers, counting the whole number of persons in each state, excluding Indians not taxed...” With all of this room for debate, it has meant that several cases have been brought before the United States Supreme Court. The most important ones in terms of this study are as follows (McGann, Smith, Latner, & Keena, 2016):
 - Reynolds v. Sims (1964)- The U.S. Supreme Court held that the Equal Protection Clause of the Fourteenth Amendment to the U.S. Constitution requires as close to equal population sizes in each congressional district as possible ;
 - Davis v. Bandemer (1986)- The U.S. Supreme Court said that partisan gerrymanders are allowable unless they “consistently degrade a voter’s or a group of voters’ influence on the political process as a whole” ;
 - Shaw v. Hunt (1996)- The U.S. Supreme Court concluded that the Equal Protection Clause is violated when race is the predominant consideration in drawing district lines and the legislature subordinates “traditional districting principles” to race in order to create

Chapter One: Gerrymandering History and Salience

minority districts without a compelling state interest.

- Hunt v. Cromartie (1999)- The U.S. Supreme Court accepted the argument that a redrawn district in North Carolina was drawn for political, not racial, reasons and thus was potentially not unconstitutional.
- Vieth v. Jubelirer (2004)- The U.S. Supreme Court dismissed the political gerrymandering claim raised in that case and found no existing manageable rules for measuring whether a political gerrymander burdens the representational rights of a party's voters.
- League of United Latin American Citizens v. Perry (2006)- The U.S. Supreme Court considered a political gerrymander claim and held that a state legislature's mid-decade redrawing of a plan drawn by a federal court did not violate the Equal Protection Clause as a partisan gerrymander, even if the legislature's primary purpose was the advancement of their own party.

Time and time again the United States Supreme Court has heard cases regarding redistricting biases. The cases listed above are the most relevant to this study because they lay out the majority of rules that have been developed for the process of redistricting. These Supreme Court cases also show that there simply is no pleasing everyone when it comes time for redistricting. Overall, it is more accurate to describe the Supreme Court's actions in regards to gerrymandering as signaling that districts should be drawn so that all votes count equally and so that no one's voting rights are violated.

Figure 1.1: Gerrymander



BY GREG MILLER

Chapter One:Gerrymandering History and Salience

III. Types of gerrymandering: there are two main types behind gerrymandering "packing" and "cracking" :2

1.3: Packing

“Packing” concentrates supporters for a particular party/candidate into a single district, thereby decreasing their ability to influence the outcome of surrounding districts. Concentrating voters, however, is not alone enough to be considered gerrymandering. While many associate gerrymandering with partisan acts, some gerrymandering is the result of federally mandated minority-majority districts, which seek to ensure equal representation for minority groups. The hope behind concentrating minority voters into specific districts is to garner enough support to elect representatives that will reflect the needs and priorities of the minority voters in that district. Such minority-majority districts are typically created to conform to the Voting Rights act of 1965, which enforces the 15th Amendment and prevents the creation of representative districts that diminish a racial or language minority. For instance, Florida’s 20th Congressional District is a minority-majority district that concentrates high numbers of African-American voters, and is represented by an African American congressman. By looking at maps of the **underlying predominant racial and ethnic groups**, it is clear that Florida’s 20th Congressional District represents most of the Black voters in North Miami.

However, there is a fine line between concentrating voters to secure their representation and over-concentrating a group to remove their ability to influence the outcome of surrounding districts. For this reason, several legal cases has limited the power of minority-majority districts, most notably in Shaw v. Reno (1993) which forced North Carolina to not cluster all of its African American population into one congressional district. North Carolina’s First Congressional District was already predominantly African American before the 2010 redistricting, afterwards for the 114th Congress the districts were redrawn to include many additional nearby concentrations of African American voters. By looking at **maps of racial composition** with 114th Congressional Districts boundaries, it is clear that North Carolina’s First District snakes through the state to capture most of the predominantly black population.

In **May of 2017 the U.S. Supreme Court** again found that North Carolina had unnecessarily used “race as the predominant factor in drawing district lines” and without good reason, despite changes the previous gerrymandered districts. Despite improvements, the 115th Congressional Districts in North Carolina are still predominantly aligned around race, which can be seen by comparing **predominant racial and ethnic groups** with 115th Congressional District boundaries.

Chapter One: Gerrymandering History and Salience

2.3: Cracking

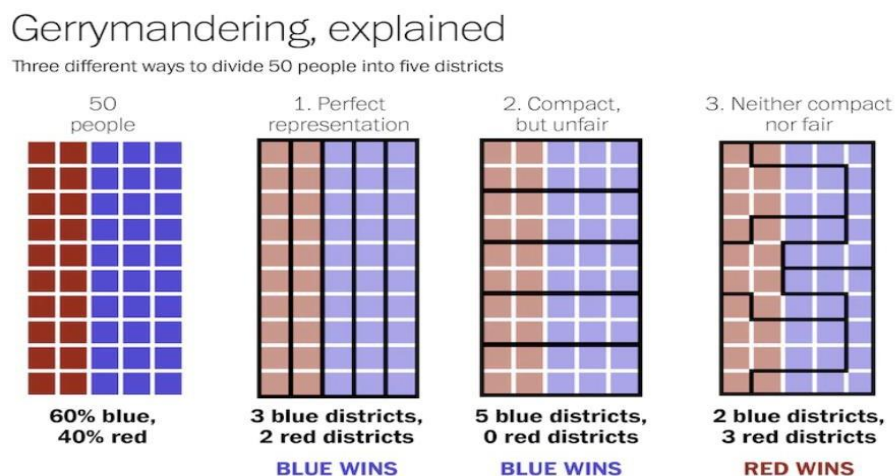
The second strategy, “cracking,” employs the opposite technique by breaking a voting bloc into multiple districts so that their votes will be watered down and not constitute a majority anywhere. Redistricting in Maryland after 2010 reveals a how the typically Republican district in the North was split into other districts and thereafter each of those districts voted majority Democrat.

Before 2010 the northern most Congressional district in Maryland consistently voted in favor of a Republican representative. However, after the redistricting following the 2010 census, the district was divided across several other districts, each of which consistently voted thereafter for Democrat representatives. It is likely that the change in voting was due to splitting the Republican voters into minorities in each of the new Democrat-leaning districts. See PolicyMap maps on **U.S. House of Representatives margins of victory** for more historic data for Maryland.

Cracking influences more than just the political party of the representative being elected. Many states require that districts not separate “communities of interest,” which form around issues of social, cultural racial, ethnic and economic interests. The motivation behind keeping these groups in the same voting block is to give them the power to elect a representative that can advocate on their behalf for relevant legislation and funding priorities. The main issue behind cracking is that it splits potential “communities of interest” and removes their ability to elect advocates that champion relevant issues and concerns to those communities.

IV. How gerrymandering works:³

Figure 2.1: How Gerrymandering Works



Chapter One: Gerrymandering History and Salience

Suppose we have a very tiny state of fifty people. Thirty of them belong to the Blue Party, and 20 belong to the Red Party. And just our luck, they all live in a nice even grid with the Blues on one side of the state and the Reds on the other.

Now, let's say we need to divide this state into five districts. Each district will send one representative to the House to represent the people. Ideally, we want the representation to be proportional: if 60 percent of our residents are Blue and 40 percent are Red, those five seats should be divided up the same way.

Fortunately, because our citizens live in a neatly ordered grid, it's easy to draw five lengthy districts -- two for the Reds, and three for the Blues. Voila! Perfectly proportional representation, just as the Founders intended. **That's grid 1 above, "perfect representation."**

Now, let's say instead that the Blue Party controls the state government, and they get to decide how the lines are drawn. Rather than draw districts vertically they draw them horizontally, so that in each district there are six Blues and four Reds. **You can see that in grid 2 above, "compact but unfair."**

With a comfortable Blue majority in this state, each district elects a blue candidate to the House. The Blues win 5 seats and the Reds don't get a single one. Oh well! All's fair in love and politics.

In the real world, the results of this latter scenario are similar to what we see in New York, though there are no good examples of where a majority party gives itself a clean-sweep. In 2012, Democrats received 66 percent of the popular House vote. But they won 21 out of 27 House seats, or **three more than you'd expect from the popular vote alone**. And from a purely geometric standpoint, New York's congressional districts aren't terribly irregular -- at least **not compared to other states**.

Finally, what if the Red Party controls the state government? The Reds know they're at a numeric disadvantage. But with some creative boundary drawing -- **the type you see in grid 3, "neither compact nor fair"** -- they can slice the Blue population up such that they only get a majority in two districts. So, despite making up 40 percent of the population, the Reds win 60 percent of the seats. Not bad!

In the real world, this is similar to what we see in Pennsylvania. In 2012, Democrats won 51 percent of the popular House vote. But they only won 5 out of 18 House seats -- **fewer than**

Chapter One: Gerrymandering History and Salience

one third. This was because when Pennsylvania Republicans redrew the state's Congressional districts, they made highly irregular districts that look like the one below, PA-7, one of the most geographically irregular districts in the nation.

Now, this exercise is of course a huge simplification. In the real world people don't live in neatly-ordered grids sorted by political party. But for real-world politicians looking to give themselves an advantage at redistricting time, the process is exactly the same, as are **the results for the parties that gerrymander successfully.**

V. Effects of Gerrymandering⁴

When it comes to American politics, geography matters geography is central to the operation of almost all electoral systems through the interaction of two map entities, the distribution of voters (and their political preferences), and the division of natural space into constituencies. This interaction results in election outcomes that are both disproportional and biased with the allocation of seats being unequal to the distribution of votes across parties (Johnston, 2002). Partisan gerrymandering has major consequences not only for who wins elections, but for the political process as a whole. Large efficiency gaps lead to large changes in the ideology of the median voter in the legislature (increased polarization, which is Republicans being ideologically farther to the right while Democrats are ideologically farther to the left, leaving little chance for the two sides to come to a compromise) and have significant effects on state policy (Caughey, Tausanovitch, & Warshaw, 2017).

The most detrimental effect that gerrymandering has on the United States as a whole is the intense polarization that we are witnessing in contemporary politics (Daley, 2017).

Those who say that gerrymandering does not cause polarization say that people who are alike tend to live by each other (McCarty, Poole, & Rosenthal, 2009). While in some cases this may be correct, it is an oversimplified answer to a complicated problem. Gerrymandering definitely causes polarization because it creates safe districts for one party or the other. The result of this map full of safe districts is that the only thing a congressperson has to fear is a primary challenger from farther to the right if they're a Republican or a primary challenger from further to left if they're a Democrat. What happens when the only competitive election a congressperson might face is in a primary election? They vote along the party lines constantly and nearly without exception. Aside from those voting in the House of Representatives, it further polarizes the American people as well because it's seen as weakness to work with the other side anymore (Daley, 2017). The reason it's seen as weakness is because they're the ones

Chapter One: Gerrymandering History and Salience

being exposed to the campaign ads put out during primary season by primary contenders that are saying that representative such and such doesn't represent your values because of the way they voted on x, y, and z bills.

Conclusion

In short, the process of redistricting is a very long process. The legislators, governor, and state courts must approve it. These groups of people check to make sure all the requirements are met such as equality, contiguity, or compactness.

They also make sure there is no gerrymandering such as the cracking or packing types of gerrymandering because this is the loophole of American democracy.

CHAPTER TWO
Methods of Understanding and
Analyzing Gerrymandering

Chapter two :Methods of Understanding and Analyzing Gerrymandering

The propose of this study is to understand the impact gerrymandering has on democracy in the United States, examining six states specifically at the federal level. The six states are: North Carolina, Pennsylvania, Wisconsin, Arizona, Iowa, Washington.

Methods of Understanding and Analyzing Gerrymanderings

While it's relatively simple to pick out your favorite definition of gerrymandering from the literature and then be able to understand what it means, it's a lot harder of a concept to describe scientifically in a way that is admissible in court- this is the issue that gerrymandering poses. It is important to remember that when it comes to gerrymandering, there is no guarantee of finding a way to draw districts in an unbiased fashion. States with larger populations and a large number of congressional districts, the problem of finding a fair solution to the problem that is redistricting becomes even more difficult. While some have come up with ways to try and measure how gerrymandered districts are or talked about how important independent redistricting commissions are, others have more partisan solutions such as an alternating move game where parties sequentially choose districts (Puppe & Tasnádi, 2008). Independent Redistricting Commissions make it so that the people drawing the congressional districts are independent of partisan public officials. Relative to legislatures, Independent Redistricting Commissions tend to draw more compact districts, show more respect for the boundaries of local governments, and may also do a better job of preserving the population cores of prior districts (Edwards et al., 2017). It is relatively easy to understand why state legislators compromise traditional redistricting principles when they control the redistricting process, partisan gain. In general, redistricting commissions have less incentive to manipulate district boundaries for partisan gain (Edwards et al., 2017). The alternating move game is a simple solution to a complex problem, otherwise known as politics in 2018.

The first way that gerrymandering can be measured quantitatively is by measuring the compactness of districts. Compactness refers to how compressed congressional districts are or how spread out that they might be as well. When measuring compactness, courts have focused on three quantitative measures; Reock scores, Convex Hull ratios, and Polsby- Popper scores (Edwards et al., 2017). Reock scores and Convex Hull ratios are two dispersion measures that can be calculated by dividing the area of the district by the area of the smallest circle that would fully contain the district or the smallest convex polygon enclosing the district. Polsby-Popper scores are calculated by dividing the area of a district by the area of a circle with a perimeter

Chapter two :Methods of Understanding and Analyzing Gerrymandering

equal in length to the perimeter of the district (Edwards et al., 2017). Each of these measures falls between 0 and 1, higher values correspond with more compact districts.

The other and, perhaps, the more scientifically accurate way that gerrymandering can be measured quantitatively is by calculating the efficiency gap for congressional districts (Stephanopoulos, 2014). The efficiency gap is the difference between the parties' respective wasted votes in an election, divided by the total number of votes cast. Wasted votes are ballots that don't contribute to victory for candidates and they come in two forms; lost votes cast for candidates who are defeated, and surplus votes cast for winning candidates but in excess of what was necessary for them to win (Stephanopoulos, 2014). The efficiency gap tells us exactly how big the difference between the parties' wasted votes actually is. In a state that has perfect partisan symmetry, both parties would have the same number of wasted votes. The efficiency gap does a better job of quantifying a gerrymander because it shows the packing and cracking that are at the heart of every gerrymander. Surplus votes for winning candidates are the definition of packing, and lost votes for defeated candidates the definition of cracking (Stephanopoulos, 2014).

II. Gerrymandered states⁶

1.2: North Carolina

Gerrymandering in North Carolina has been an issue for quite some time now (Almasy, 2018). Most recently, on January 9, 2018, federal judges said that North Carolina will have to redraw its 13 congressional districts as they exist in Figure 4 because the map is so partisan that it is unconstitutional (Almasy, 2018). Then, on August 27, 2018, a panel of three federal judges held that North Carolina's congressional districts were unconstitutionally gerrymandered to favor Republicans over Democrats and said it may require new districts before the November elections, possibly affecting control of the house (Barnes, 2018b). A three-judge panel rejected the previous map drawn by the Republican controlled General Assembly, stating that it violated the Equal Protection Clause, the First Amendment, and Article I of the Constitution. These three judges only gave the state of North Carolina about three weeks to file a new map with the court so that it can be in place by the 2018 midterms (Almasy, 2018). This case is significant for the entire country because it is the first time a federal court has struck down a congressional map because it represented a partisan gerrymander. Judge James A. Wynn of the 4th U.S. Circuit Court of Appeals wrote in the majority opinion, "... Partisan gerrymandering runs contrary to

Chapter two :Methods of Understanding and Analyzing Gerrymandering

numerous fundamental democratic principles and individual rights...”. Voters in North Carolina have been nearly split along partisan lines recently in elections. With this being said however, Republicans control ten U.S. House seats compared with only three for Democrats (Almasy, 2018).

While redistricting and gerrymandering especially are very important issues in terms of the legitimacy of our democracy here in the United States, it’s almost impossible to make something as complicated and confusing as redistricting a winning political issue. A politician would have a very hard time running a winning campaign with redistricting being the focus of that campaign. As we have seen time and time again, campaigns are won on catchy slogans and simple solutions to complex problems here in the United States. In the 1990s, Republicans in North Carolina partnered with black Democrats to create new districts that would almost certainly elect a minority candidate due to the demographic makeup of these new districts (Daley, 2017). While African Americans did indeed make historic gains in congressional representation, Republicans claimed the rest of the seats (besides these few they had created with black Democrats) for themselves (Daley, 2017). In North Carolina, race has played an explicit role in gerrymandering and changing the makeup of the state’s congressional delegation. Because of the gerrymandering happening in North Carolina, a state that leans Republican but could truly go either way in any given election season, that has only elected three Republican governors in the last century, which went for Barack Obama in 2008, has a congressional delegation that’s 77% Republican (Daley, 2017).

In North Carolina, even as it sat so obviously gerrymandered for so long, there were several attempts to make the case that it was indeed an issue. The reason that it was hard to make this gerrymandering case is because of the rules that the North Carolina legislature has in place for redistricting. In North Carolina, the General Assembly, at the first regular session convening after the return of census data that is gathered every ten years by order of Congress, revises the representative districts and the apportionment of representatives among the districts (Research Division N.C. General Assembly, 2011). The politicians in the General Assembly have only their interpretation of the following requirements to regulate the maps they produce (Research Division N.C. General Assembly, 2011):

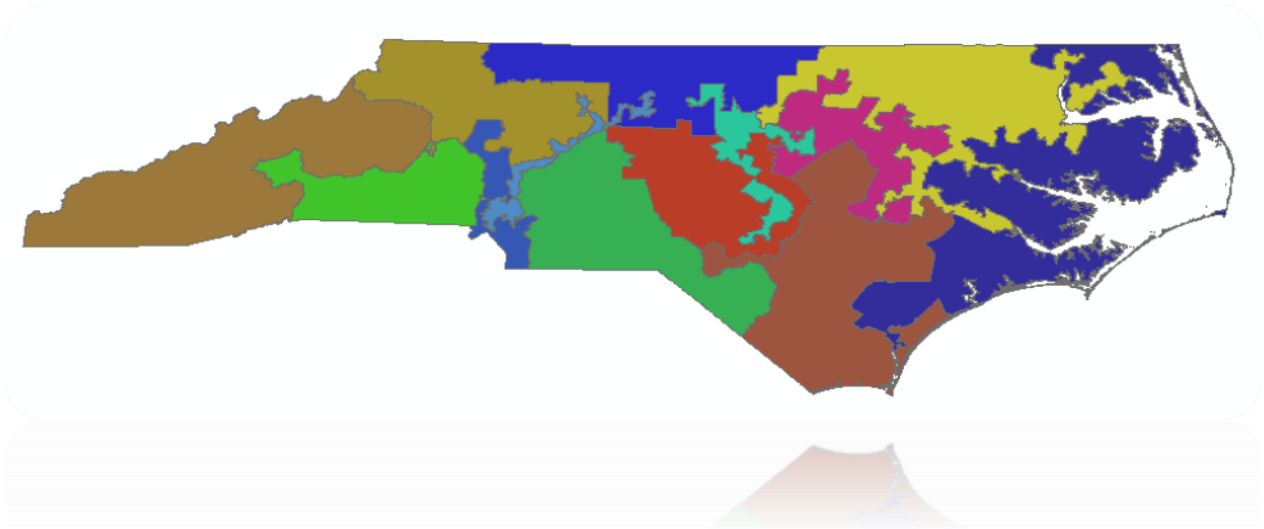
- a. Each Representative shall represent, as nearly as may be, an equal number of inhabitants, the number of inhabitants that each representative represents being determined for this purpose

Chapter two :Methods of Understanding and Analyzing Gerrymandering

by dividing the population of the district that he represents by the number of Representatives apportioned to that district.

- b. Each representative district shall at all times consist of contiguous territory.
- c. No county shall be divided in the formation of a representative district.
- d. After the districts and apportionment of representatives are established, they shall remain unaltered until the return of new census data taken by order of Congress.

Figure 1.2: North Carolina Congressional Districts



2.2 Pennsylvania

When it's time for redistricting in Pennsylvania, congressional lines are drawn by the state legislature and are ultimately only subject to a veto by the governor. In 2010, just before the census data was returned to the legislators for redistricting, the Republican Party won the majority of the state legislature including the governorship (Daley, 2017).

As Pennsylvania legislators have shown, when you craft the lines just right on the map, you control every last detail of a state's politics. They had created districts where the Democrats win a small number of seats with a high percentage of the votes, and where the Republicans win more seats with safe but not excessive margins (Daley, 2017). The perfect gerrymander as illustrated in Figure 5 (Daley, 2017). The Republican Party was able to carve itself a lasting domination of the congressional delegation, despite Pennsylvania's longtime status as a blue state. In 2012, Obama won 52% of the vote but Democratic House candidates only won 28% of the seats (Daley, 2017).

Pennsylvania's gerrymandered congressional map was brought before the Pennsylvania Supreme Court and they decided that a new congressional map must be made. The Pennsylvania

Chapter two :Methods of Understanding and Analyzing Gerrymandering

Supreme Court released that map earlier this year in 2018 (Cohn, 2018). In Pennsylvania, a decision to pursue partisan balance when redistricting would be particularly helpful for the Democrats because they have a significant number of votes wasted in both districts that each contain Philadelphia and Pittsburgh. The new Pennsylvania map released by the Pennsylvania Supreme Court meets every nonpartisan criteria that seems to be standard elsewhere. It's compact, minimizes county or municipal splits and preserves communities of interest (Cohn, 2018). On top of meeting these nonpartisan criteria, it seems as though the mapmakers consistently made subtle choices that suggest that partisan balance may have been an important consideration. The court's order did not specify that partisan balance was an objective for this new map. The new map is closer to fair if it's judged based on the relationship between seats won and the statewide popular vote (Cohn, 2018).

Figure 2.2: Pennsylvania Congressional Districts



3.2 Wisconsin

Gerrymandering in Wisconsin is a process that is only governed by courts and procedural precedents. These precedents dictate that the resulting plan must have districts equal in population and be enacted into law following the same process as any bill. There are no statutory or constitutional guidelines in Wisconsin law for congressional redistricting (Keane, 2016). In 2010, the current gerrymandered map shown in Figure 6 was constructed after the Republicans gained control of the state's government (Liptak, 2017). In Wisconsin, there have been several reform proposals recently, while the Republicans were still in control, to make

Chapter two :Methods of Understanding and Analyzing Gerrymandering

changes to this map- all of them failed to pass.

These reform proposals included things such as establishing competitiveness criteria for redistricting plans, excluding incarcerated felons disenfranchised by law from the official census count for redistricting purposes, and requiring the legislature to create an independent redistricting commission. All of these reform proposals would have had to have been amendments made to the state of Wisconsin's constitution (Keane, 2016).

While the Supreme Court has struck down voting districts as racial gerrymanders, it has never struck down a legislative map because of partisan gerrymandering. This year (2018) however, the Supreme Court heard an appeal of a decision striking down the legislative map for the Wisconsin State Assembly drawn by Republicans (after the Republican Party gained control of the state's government for the first time in more than 40 years in 2010). The decision made by the federal court that is to be appealed in the Supreme Court is the first in more than 30 years to reject a voting map as an unconstitutional, partisan gerrymander (Liptak, 2017). The Supreme Court was not persuaded by the challengers that they had presented a way for courts to determine when partisan efforts so infect a state's political maps that they violate the constitution (Barnes, 2018a) The map they drew, Judge Kenneth F. Ripple wrote on behalf of the majority of a divided three judge Federal District Court, "was designed to make it more difficult for Democrats, compared to Republicans, to translate their votes into seats" (Liptak, 2017). The Republicans responded to this ruling saying essentially that if Democrats lack electoral power, it is because of geography rather than gerrymandering because Democrats are often concentrated in cities, effectively diluting their voting power, while Republicans are more evenly distributed across most states (Liptak, 2017).

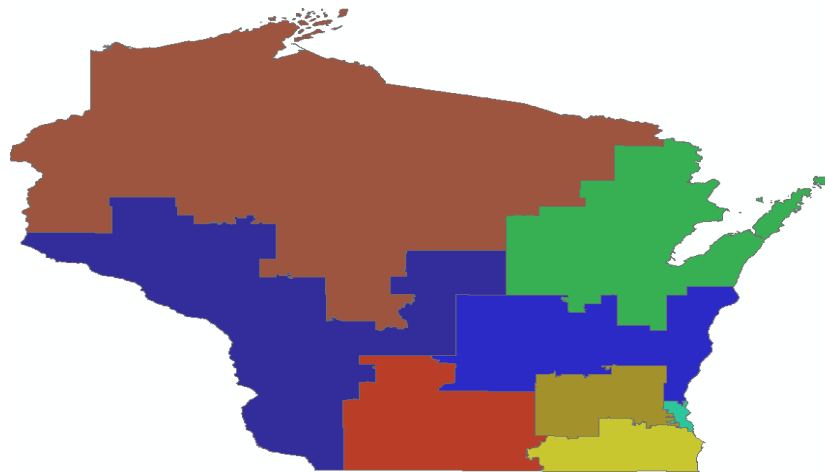
The argument that will be made to the Supreme Court will use the efficiency gap to make the case for the maps being overturned and redrawn. The efficiency gap in Wisconsin was 13.3% in 2012 and 9.6% in 2014. The Wisconsin voters who sued to challenge the Assembly map argued that gaps over 7% violated the constitution. That number was meant to capture the likelihood that the gap would endure over a 10 year election cycle (Liptak, 2017).

As mentioned previously, Republicans took complete control of state government in 2010, just in time to oversee the redistricting process essentially. The first time that their map was put to the test in 2012, it showed just how effective their partisan gerrymander was going to be. In 2012, Wisconsin voters would cast 174,000 more votes for assembly Democrats than assembly Republicans, yet Republicans won 60% of the seats. Republicans had only managed

Chapter two :Methods of Understanding and Analyzing Gerrymandering

to get 49% of the aggregate vote in the eight congressional elections, but still won five of the eight seats. At the state legislative level, Republicans won 56 of 76 contested assembly races (74% of the seats) with just 52% of the vote. In state senate races, Republicans brought home six of eleven contested seats (flipping two Democratic districts in the process), despite Democrats earning 51% of the votes (Daley, 2017). In order to achieve a gerrymander that would have this type of results was done very strategically. Wisconsin Republicans wanted to pack as many Hispanic voters as they could into Milwaukee districts as possible, which would bleach the surrounding districts whiter and more Republican (Daley, 2017). Wisconsin is an excellent place to look for an example of the impact gerrymandering has on American democracy.

Figure 3.2: Wisconsin Congressional Districts



III. States That Seek To Avoid Gerrymandering⁷

1.3: Arizona

Arizona is a state that has recognized the problem that gerrymandering poses to democracy and voters there have taken steps to take politics out of the map drawing process. In the year 2000, Proposition 106 was a referendum put on the ballot by the voters in Arizona and it passed with 56% of the vote. Proposition 106 took control of the redistricting process from partisans and established a citizen panel to redraw lines, beginning after that year's census (Daley, 2017). After each census, a new independent redistricting commission is assembled to redraw Arizona's congressional and legislative districts. The state constitution requires the commissioners, two Republicans, two Democrats, and an independent chairperson, to start on a fresh map rather than redraw the existing districts. The concept of one person, one vote dictates

Chapter two :Methods of Understanding and Analyzing Gerrymandering

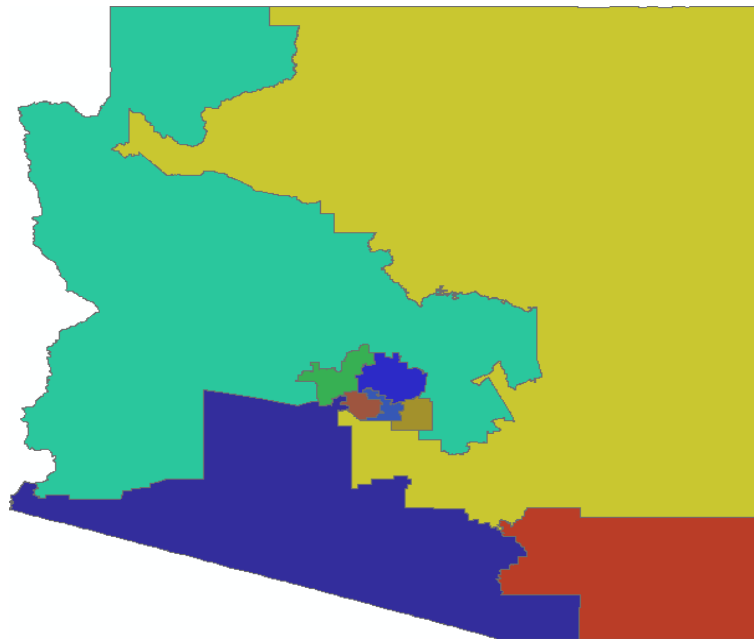
that districts should be roughly equal in population. Other factors that the independent redistricting commission considers are the federal Voting Rights Act, district shape, geographical features, respect for communities of interest and potential competitiveness (Arizona Independent Redistricting Commission, 2011).

The first independent commission in 2001 proved successful in crafting congressional districts that shifted sides in swing years.

Republicans held a 5-1 advantage after 2000, which grew to 6-2 after the 2002 elections, then evened to 4-4 amid Democratic gains in 2006. Democrats took a 5-3 majority after the Obama win in 2008, and the Republicans reversed that in their 2010 wave election (Daley, 2017). So far, after the 2012 redistricting process, the same holds true for the current map shown in Figure 7 as well. While these maps might get the job done that they were created to do, that doesn't mean they come without controversy.

The maps have been challenged by the state's Republican majority in the legislature and by Arizona's conservative governor Jan Brewer (Daley, 2017). Each time that the map has been challenged in court since the process has been handed to an independent redistricting commission by partisans, it has not had to be redrawn for any reason.

Figure 4.2: Arizona Congressional Districts



Chapter two :Methods of Understanding and Analyzing Gerrymandering

2.3: Iowa

Iowa is a state that takes great pride in their redistricting process by aiming to keep politics out of the process entirely. The redistricting process in Iowa is filled with trust and no one dares to even challenge the integrity of the lines (Daley, 2017). Since the year 2000, Iowa has had more competitive congressional races than Texas, California, and Florida combined, despite having a fraction of the number of seats. Iowa only had five congressmen throughout the 2000s, then lost one of those seats in the 2010 reapportionment as shown on the map in Figure 8. There is only one district in Iowa that has been automatic for either party since 2000, with Republicans owning the rural south western corner of the state, where representative Steve King and the Tea Party have established a heartland base. Over the last four decades, Democrats have controlled both the governor's office and the legislature for four years while Republicans have had it all for only two years (Daley, 2017).

Typically, partisan balance is not usually a goal when drawing a new map (Cohn, 2018). Instead, a good map usually means that it is partisan blind, meaning that it strives for compact districts that respect communities of interest with little or no regard for partisan outcome. The best example of a partisan blind map is Iowa's congressional map shown in Figure 8. The districts are all perfectly compact, according to their rules, counties cannot be split, and at no point in time when the map is being drawn does anyone even attempt to do anything partisan (Daley, 2017; Dickinson & Cook, 2011).

After the census, a redistricting commission puts together a plan to be sent to legislators to approve and sign into law. The standards for redistricting in Iowa include (Dickinson & Cook, 2011):

- a. Districts shall be established on the basis of population. The districts shall each have a population as nearly equal as practicable to the ideal population. A Congressional district shall not vary from the ideal population by more than 1 percent. Districts shall not vary in population from the ideal population for a State Senatorial or State Representative district by an average of more than 1 percent. A Senate or House district shall not have a population which exceeds that of any other Senate or House district by more than 5 percent. The burden of proof rests with the General Assembly to justify the selection of any district in a plan which deviates from the ideal population for that district by more than 1 percent.
- b. Within the population variance limitations of the first standard, and to the extent possible,

Chapter two :Methods of Understanding and Analyzing Gerrymandering

the number of counties and cities divided among more than one district shall be as small as possible. When there is a choice between dividing local political subdivisions, the more populous subdivisions shall be divided before the less populous, except when a county line divides a city.

- c. Districts shall be composed of convenient contiguous territory.
- d. Districts shall be reasonably compact in form, to the extent consistent with the first three standards. In general, reasonably compact districts are those which are square, rectangular, or hexagonal in shape, and not irregularly shaped, to the extent permitted 2 by natural or political boundaries. Methods for determining compactness are provided by law and include a length- width compactness test and a perimeter compactness test.

A district shall not be drawn for the purpose of favoring a political party, incumbent legislator or member of Congress, or other person or group, or for the purpose of augmenting or diluting the voting strength of a language or racial minority group. In establishing districts, no use shall be made of any of the following data:

- e. Addresses of incumbent legislators or members of Congress.
- f. Political affiliations of registered voters.
- g. Previous election results.
- h. Demographic information, other than population head counts, except as required by the Constitution and the laws of the United States.
- i. Each Representative district shall be wholly included within a single Senatorial district and, so far as possible, each Representative and each Senatorial district shall be included within a single ongressional district. However, the standards described above shall take precedence where a conflict arises between those standards and the requirement, so far as possible, of including a Senatorial or Representative district within a single Congressional district.
- j. The new districting plan shall not be used prior to the primary election of 2012. If a vacancy in a district occurs at a time where a special election is required to fill a term prior to January 2013, the present Congressional, Senatorial, and House district plans as described in the 2011 Iowa Code shall be used.
- k. Each bill embodying a plan shall include provisions for election of senators to the general assemblies, which take office in 2013 and 2015, which shall be in conformity with Article III, section 6, of the Constitution of the State of Iowa.

Chapter two :Methods of Understanding and Analyzing Gerrymandering

Figure 5.2: Iowa Congressional Districts



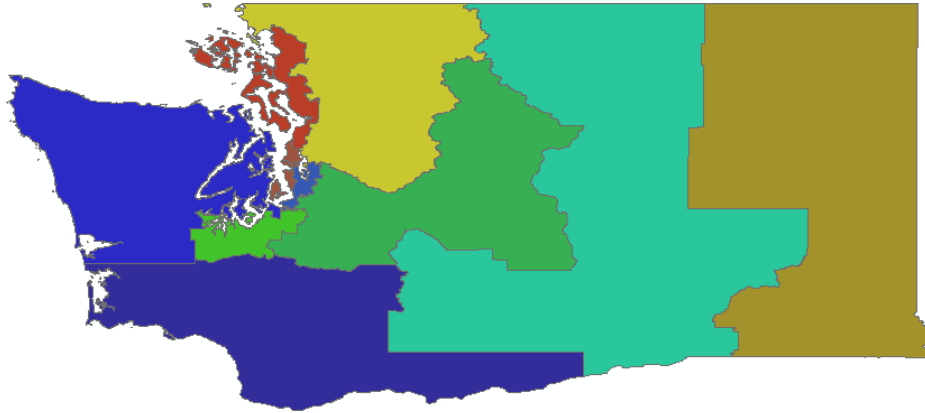
3.3: Washington

Every ten years, the bipartisan Washington State Redistricting Commission is put together for the purpose of redrawing legislative and congressional district boundaries. Four commissioners are appointed by the legislature (a house Democrat, house Republican, senate Democrat and senate Republican). The commissioners, then appoint a fifth, non-voting, non-partisan chairperson, (Redistricting, 2011). In spring of 2011, Washington received its 2010 census data for redrawing legislative and congressional district boundaries. The Washington State Redistricting Commission to redraw the boundaries for each of the state's 49 legislative and now ten congressional districts as shown below in Figure 9 then used all of the redistricting data. After redistricting was complete in 2012, the commission was disbanded and will be put back together with different members in 2021, following the 2020 census.

The Washington State constitution says that when redistricting, districts should be contiguous, compact, and convenient, while following natural geographic, artificial, or political subdivision boundaries. The commission is also not allowed to purposely draw plans to favor or discriminate against any political party or group. By statute, Washington further provides that districts should be drawn to preserve areas recognized as communities of interest, and that the number of divided counties and municipalities be as small as possible. Washington statute also requires the commission to “provide fair and effective representation and to encourage electoral competition” (“All about Redistricting -- Washington,” n.d.)

Chapter two :Methods of Understanding and Analyzing Gerrymandering

Figure 6.2: Washington Congressional Districts



Conclusion

Gerrymandering is a political strategy that should not only alarm Americans, but also be an issue that drives them to the polls. Even a redistricting strategy that is partisan blind is more democratic than allowing partisans to gerrymander the map. It can be said that redistricting processes that take pride in keeping politics out of it all together as seen in Iowa is the best way to go about redistricting. While this strategy is idealistic in terms of the rest of the country, independent redistricting commissions such as the ones in Arizona and Washington are the next best way to go about the redistricting process (Daley, 2017). The maps drawn are at least bipartisan as hardcore partisans have argued against these maps in federal court in states such as Arizona (Daley, 2017). The partisan gerrymander is becoming so much of a problem that the courts have forced some states such as Pennsylvania to redraw their map on account of partisan gerrymandering for the first time. Gerrymandering is responsible for the erosion of democracy as the goal is to make one party's votes count more than that of their counterpart.

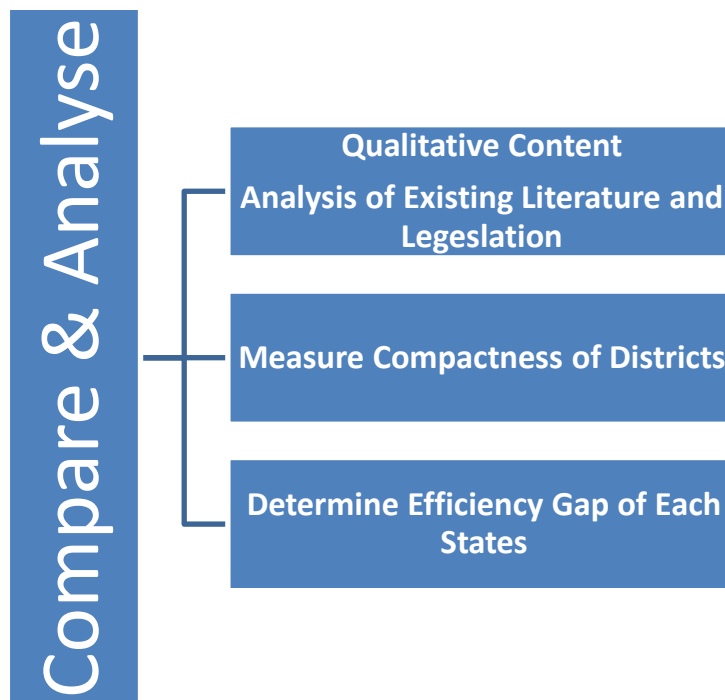
CHAPTER THREE

Results of Methods and Analyzing of the States

Chapter Three: Results of Methods and Analyzing of the States

This mixed methods study was done using an integration of correlational analysis and investigation of specific case study states. Six states were chosen to examine three that are notoriously gerrymandered, and three that take steps to make sure they draw maps without bias. The following steps were taken to analyze each case study state: first, existing literature on each state's redistricting policies, historically to present, were examined and synthesized, second, GIS was used to measure compactness of the districts within each of the states and then to display this information, third, analysis of clustering patterns based on race and median household income was completed, and, fourth, the efficiency gaps were gathered for each of the districts in the case study states for a comparative analysis. The outcomes of this work speak to how gerrymandering plays a significant role in the erosion of democracy in the United States⁸.

Figure 1.3: Research Graphic Organizer



In order to identify the most precise measure of gerrymandered congressional districts, clustering analysis based on race and median household income demographics as well as compactness measures of individual districts and efficiency gaps of entire states were examined. Comparing these numbers to actions being taken in court are a good measure to show which numbers do the best job of describing a partisan gerrymander. Upon examining the case study

Chapter Three: Results of Methods and Analyzing of the States

literature, it became easier to understand the impact gerrymandering has on individuals' votes who live in these gerrymandered districts and the political process as a whole. After examining case study literature, measuring compactness of each individual district within these states, efficiency gaps of entire states, and comparing the data collected for the six selected states, identifying ways in which gerrymandered maps can be avoided and understanding the overall impact that gerrymandering has on democracy became something that is able to be done in a scientific manner.

I. Study Area

To reiterate, this study looks at federal congressional districts of six states in the United States in order to see whether there is indeed a better way to do redistricting after each decennial census. The six states to be examined in this study are Pennsylvania, North Carolina, Wisconsin, Iowa, Arizona, and Washington. Pennsylvania, North Carolina, and Wisconsin were chosen because they are states that are notoriously gerrymandered. Each of these three states has either been forced by a federal court to redraw their map to some extent or has a case pending with the United States Supreme Court later in 2018. Iowa, Arizona, and Washington were chosen because they are states that take active measures in order to hopefully avoid partisan gerrymandering.

II. Analysis Methods⁹

For this study, as shown above in Figure 10, first, existing literature on each state's redistricting policies, historically to present, were examined and synthesized. Next, GIS was used to measure compactness of the districts within each of the states and then to display this information. Third, analysis of clustering patterns based on race and median household income was completed. Fourth and finally, the efficiency gaps were gathered for each of the districts in the case study states for a comparative analysis.

The existing literature on each state's redistricting policies came from a vast array of sources; everything from newspaper articles to actual laws and procedures that are in place in different states. The literature examined for this study came from a search for measures of gerrymandering and going through the tools included with the ArcGIS software. Measuring gerrymandering by looking at compactness measures, efficiency gap data, and by analyzing clustering patterns alongside the analysis of the existing literature were chosen as analysis method because of the contrast between each of the methods.

The compactness of each district within each of the six states examined was calculated using two different measures of compactness, Reock Scores and Convex Hull Ratios. Reock

Chapter Three: Results of Methods and Analyzing of the States

Scores are calculated by the GIS software by dividing the actual area of the district by the area of the smallest circle that can enclose the district. Convex Hull Ratios are calculated by the GIS software by dividing the area of the actual district by the area of the smallest convex polygon that can enclose the entire district.

The grouping on the median household income maps was done according to tax brackets while the percentages in the race maps are percentages of the census block groups as a whole. Using the GIS software to run the Local Moran's I test led to the output tables included which were used to examine states individually as well as for comparison. Upon running this test, it became clear to the naked eye that grouping is happening based on both variables (median household income and race) and, in the states that are notoriously gerrymandered, that the congressional districts drawn on the map are related to this grouping phenomenon.

The efficiency gap data came from Princeton University's "Princeton Gerrymandering Project" and can be found at : <http://gerrymander.princeton.edu/> ("Princeton Gerrymandering Project," n.d.). In order to make the maps in the appendices, the decennial census data as well as the American Community Survey data, both found on the census website (Geography, n.d.), were used for this study.

III. Results¹⁰

The results of this research will be reported in the following format, with each state following the same formatting. First, the existing literature examined as part of the literature synthesis will be discussed in terms of what each state is experiencing in terms of redistricting. Next, the spatial autocorrelation (global Moran's I) data generated using ArcGIS will be used to explain what kind of clustering is happening in each state based on three variables (median household income, and race (non-white and white)). Finally, Convex Hull Ratios and Reock Scores will be reported and used to discuss the compactness of each district within the given state and how these numbers relate to the other states included in this study.

1.3: North Carolina¹¹

North Carolina is a state that can be considered less democratic according to several different measures. The first hint that this is the case came with the January 9, 2018 federal court ruling that North Carolina would have to redraw its 13 congressional districts and then the August 27, 2018 ruling by a panel of three federal judges that held the January 9, 2018 ruling due to the congressional districts being drawn in an unconstitutional fashion as they favor

Chapter Three: Results of Methods and Analyzing of the States

Republicans over Democrats also forcing them to redraw districts before the November 2018 midterm elections (Almasy, 2018; Barnes, 2018b). According to existing literature, voters in North Carolina have been nearly split along partisan lines recently in elections (Almasy, 2018). With this being said however, Republicans control ten U.S. House seats compared with only three for Democrats (Almasy, 2018). While North Carolina does have requirements in place to avoid gerrymandering, politicians in the General Assembly have only their interpretation of the requirements to regulate the maps they produce (Research Division N.C. General Assembly, 2011).

Table 1.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Median Household Income

North Carolina: Global Moran's I Summary (Median Household Income)	
Moran's Index	0.308436
Expected Index	-0.000163
Variance	0.000003
Z-Score	187.603018
P-Value	0.000000

The first measures that we will examine have to do with packing and clustering. Packing has been measured based on three different variables; median household income, and two different race variables, white and non-white. The two biggest takeaways from Table 1 above include the Moran's Index and Z-Score. Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 11, it can first be said that the clustering taking place based on median household income has less than a 1% likelihood of being the result of random chance according to the Z-Score. In other words, there is definitely clustering happening based on median household income. The Moran's Index being 0.308436 also tells us that there is significant clustering based on median household income taking place. The Moran's Index will typically be a value that falls between -1 and 1. A value greater than zero tells us that more clustering of the groups is taking place while a value less than zero tells us there is more dispersion of the groups.

Figure 2.3: Spatial Autocorrelation (Moran's I) Report - Median Household Income (A Moran's Index value greater than zero tells us that more clustering is taking place)

Chapter Three: Results of Methods and Analyzing of the States

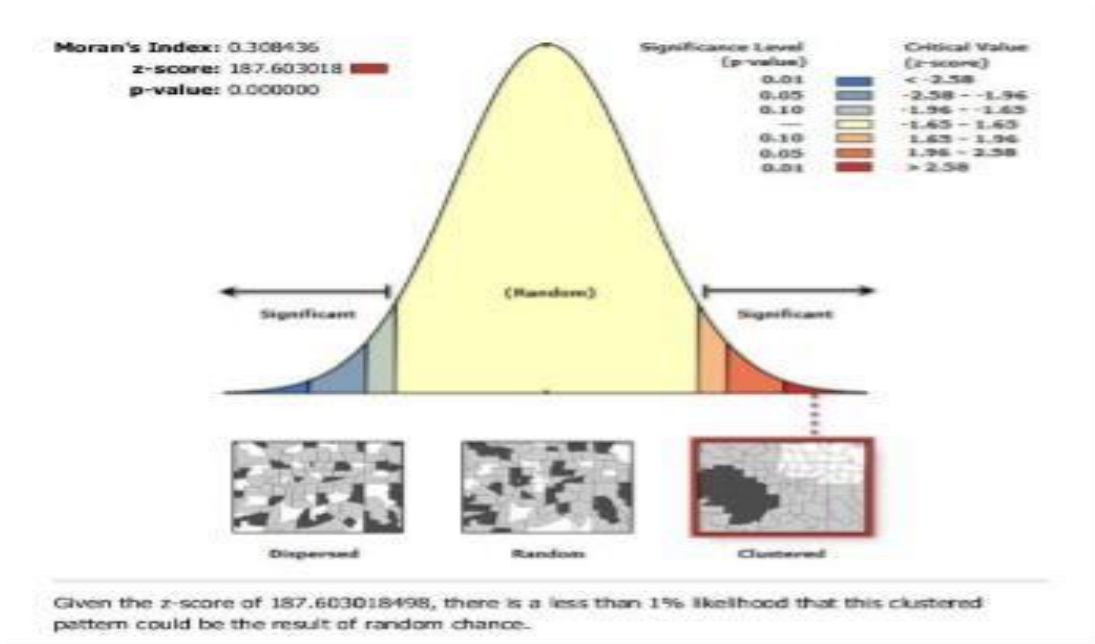


Table 2.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Race (Non-White)

North Carolina: Global Moran's I Summary (Race: Non-White)	
Moran's Index	0.344456
Expected Index	-0.000164
Variance	0.000003
Z-Score	208.922704
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 3.3, it can first be said that the clustering taking place based on race (non-white) has less than a 1% likelihood of being the result of random chance according to the Z-Score value seen above in Table 2.3. Also shown above in Table 2.3 is the Moran's Index of 0.344456, telling us again that clustering is indeed happening based on race (non-white).

Figure 3.3: Spatial Autocorrelation (Moran's I) Report - Race (Non-White) (A Moran's Index value greater than zero tells us that more clustering is taking place)

Chapter Three: Results of Methods and Analyzing of the States

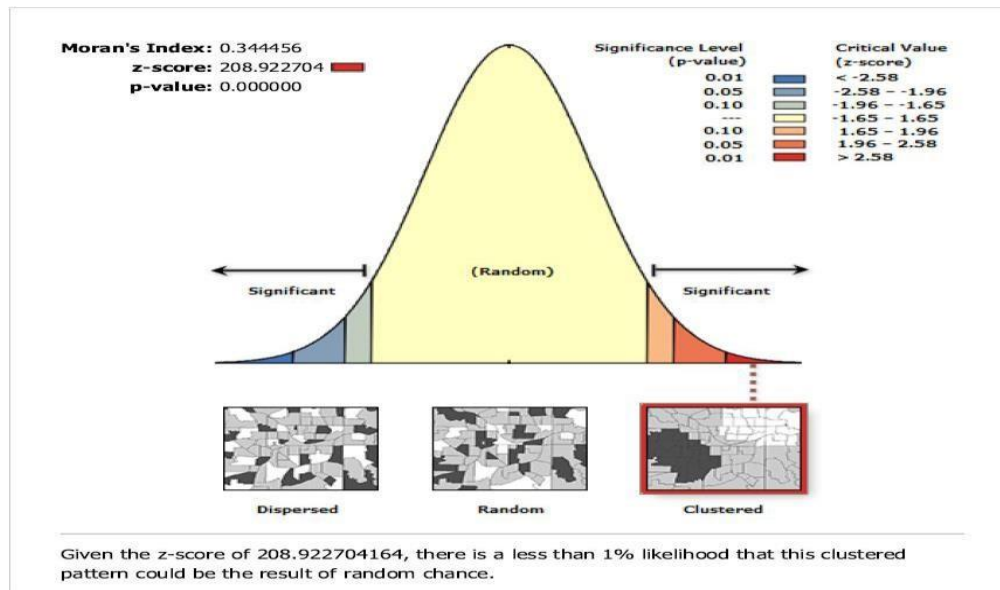


Table 3.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Race (White)

North Carolina: Global Moran's I Summary (Race: White)	
Moran's Index	0.344456
Expected Index	-0.000164
Variance	0.000003
Z-Score	208.922704
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 4.3, it can first be said that the clustering taking place based on race (white) has less than a 1% likelihood of being the result of random chance according to the Z-Score seen above in Table 3. Also shown above in Table 3.3 is the Moran's Index of 0.344456, telling us again that clustering is indeed happening based on race (white).

Chapter Three: Results of Methods and Analyzing of the States

Figure 4.3: Spatial Autocorrelation (Moran's I) Report - Race (White) (A Moran's Index value greater than zero tells us that more clustering is taking place).

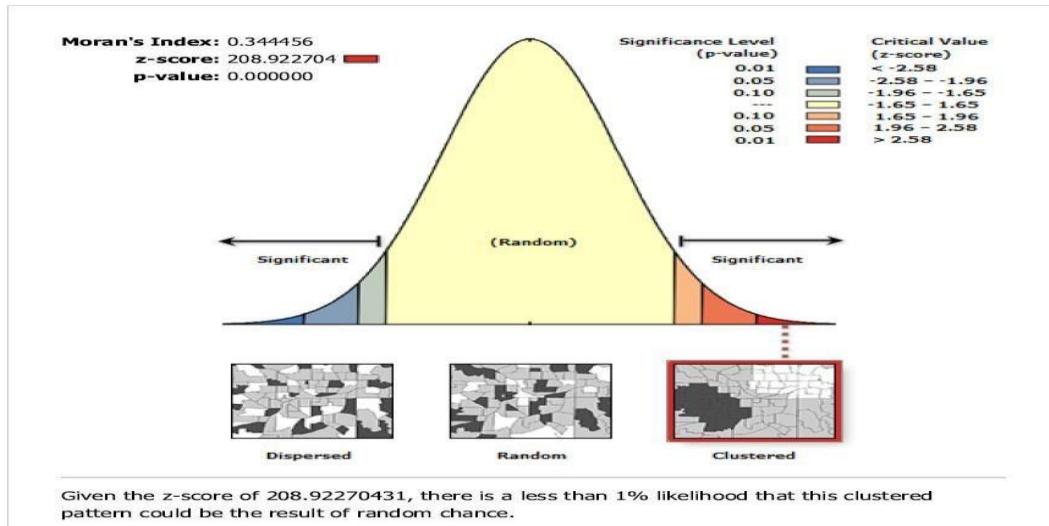


Table 4.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact the District)

North Carolina		
District	Convex Hull Ratio	Reock Score
1	0.685908	0.34477
2	0.715098	0.31626
3	0.559247	0.321763
4	0.599978	0.310936
5	0.772322	0.360643
6	0.764143	0.499161
7	0.760963	0.477022
8	0.672293	0.251167
9	0.639232	0.233544
10	0.704022	0.356448
11	0.815723	0.258459
12	0.740508	0.43555

Chapter Three: Results of Methods and Analyzing of the States

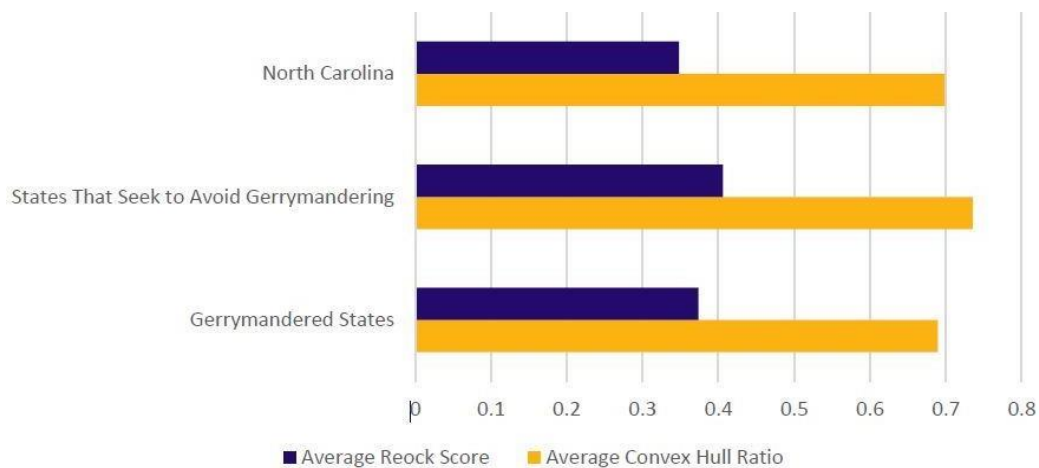
13	0.649517	0.360026
Mean	0.698381	0.348134

Finally, as we see below in Figure 4.3, gerrymandered states such as North Carolina tend to have less compact congressional districts than states that seek to avoid gerrymandering. What we can take from this is that in these states, there is a conscious effort to include and exclude certain voters from certain districts. Based on average Reock Score of 0.348134 as shown above in Table 4.3, North Carolina has even less compact districts than other states that are notoriously gerrymandered as seen in Figure 14. Based on average Convex Hull Ratio of 0.698381 as shown above in Table 4.3, North Carolina has more compact congressional districts than the average for states that are notoriously gerrymandered, but still less compact congressional districts than states that seek to avoid gerrymandering as seen below in Figure 5.3. It is also very interesting that, based on these measures of compactness, there isn't one congressional district within North Carolina that both compactness measures agree is the least compact. District 3 is the least compact district based on Convex Hull Ratio while District 9 is the least compact based on Reock Score as shown in Table 4.3. This is important because the argument can be made that compactness is not a measure that can be trusted to quantify a gerrymander being that two different measures of the compactness of a given district can be telling the interpreter of that data two different messages; this stands true for all of the case study states.

IV. A Comparison of Compactness

1.4: Measures North Carolina

Figure 5.3: A Comparison of Compactness: North Carolina (The Closer a Given Value is to 1, the More Compact the District)



Chapter Three: Results of Methods and Analyzing of the States

2.4: Pennsylvania

Pennsylvania is a state that can be considered less democratic according to several different measures. Signs that this is the case come from examining how the Republicans had created districts where the Democrats win a small number of seats with a high percentage of the vote, and Republicans win more seats with safe but not excessive margins (Daley, 2017). After the 2010 census when the Republican Party won the majority of the state legislature including the governorship, they turned what was once a long time blue state red. In 2012, Obama won 52% of the vote but Democratic House candidates only won 28% of the seats (Daley, 2017). With this anti-democratic practice happening in plain sight, the Pennsylvania Supreme Court was brought the gerrymandered congressional map and they decided that a new congressional map must be made. The Pennsylvania Supreme Court released that map in February of 2018 (Cohn, 2018). This new Pennsylvania map released by the Pennsylvania Supreme Court is compact; it minimizes county or municipal splits, and preserves communities of interest (Cohn, 2018).

Table 5.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information –
Median Household Income

Pennsylvania: Global Moran's I Summary (Median Household Income)	
Moran's Index	0.264484
Expected Index	-0.000103
Variance	0.000001
Z-Score	270.005702
P-Value	0.000000

Again, we look at packing and clustering based on three different variables; median household income, and two different race variables, white and non-white. As with North Carolina, the two biggest focal points from Table 5 above include the Moran's Index and Z-Score. Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 6.3, it can first be said that the clustering taking place based on median household income has less than a 1% likelihood of being the result of random chance according to the Z-Score. In other words, there is definitely clustering happening based on median household income. The Moran's Index being 0.264484 also tells us that there is significant clustering based on median household income taking place. The Moran's Index will

Chapter Three: Results of Methods and Analyzing of the States

typically be a value that falls between -1 and 1. A value greater than zero tells us that more clustering of the groups is taking place while a value less than zero tells us there is more dispersion of the groups.

Figure 6.3: Spatial Autocorrelation (Moran's I) Report - Median Household Income (A Moran's Index value greater than zero tells us that more clustering is taking place)

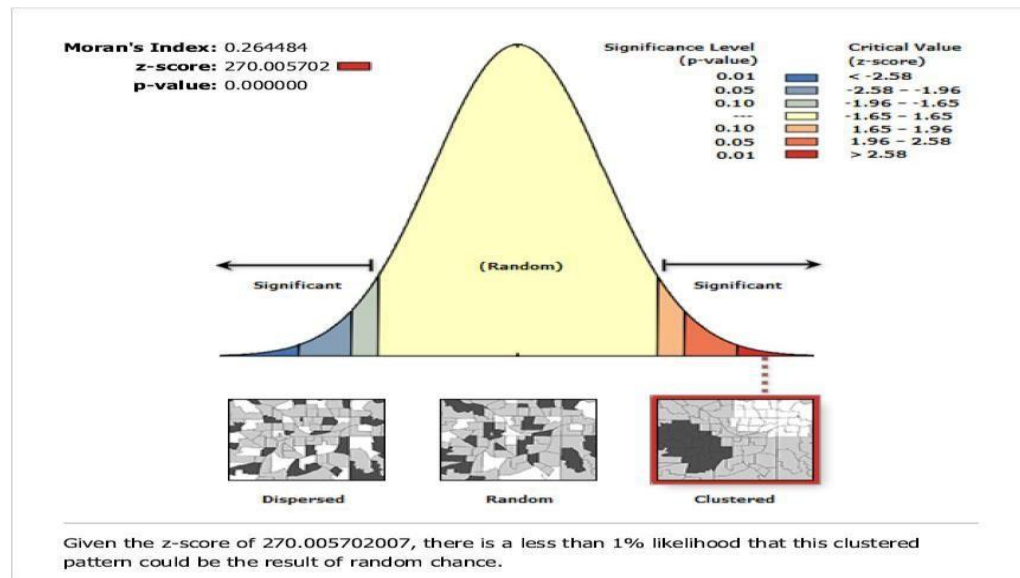


Table 6.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Race (Non-White)

Pennsylvania: Global Moran's I Summary (Race: Non-White)	
Moran's Index	1.494072
Expected Index	-0.000103
Variance	0.000001
Z-Score	1521.577456
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 7.3, it can first be said that the clustering taking place based on race (non-white) has less than a 1% likelihood of being the result of random chance according to the Z-Score value seen above in Table 6. Also shown above in Table 6 is the Moran's Index of 1.494072, telling us again that clustering is indeed happening based on race (non-white).

Chapter Three: Results of Methods and Analyzing of the States

Figure 7.3: Spatial Autocorrelation (Moran's I) Report - Race (Non-White) (A Moran's Index value greater than zero tells us that more clustering is taking place)

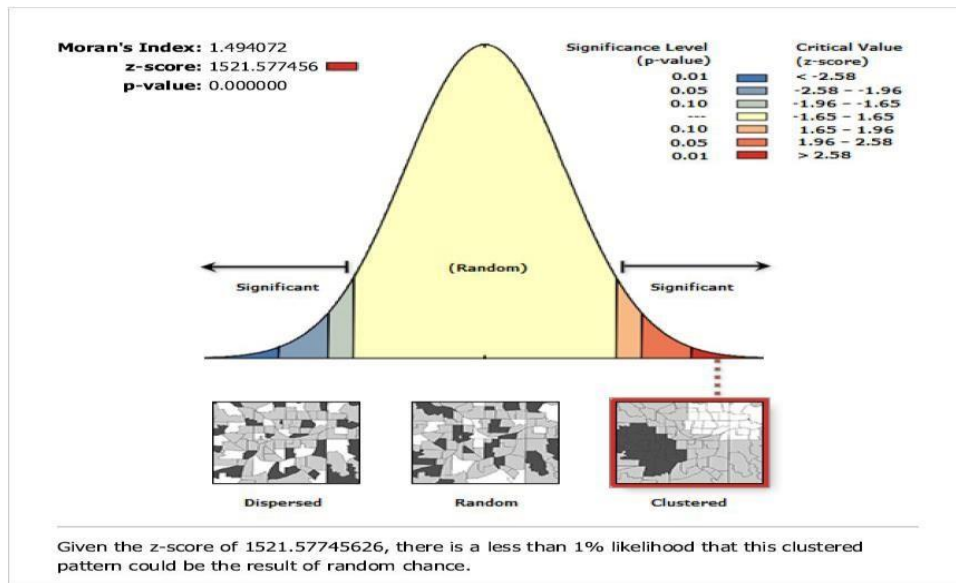


Table 7.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Race (White)

Pennsylvania: Global Moran's I Summary (Race: White)	
Moran's Index	1.442425
Expected Index	-0.000103
Variance	0.000001
Z-Score	1468.924928
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 8.3, it can first be said that the clustering taking place based on race (white) has less than a 1% likelihood of being the result of random chance according to the Z-Score seen above in Table 7.3. Also shown above in Table 7.3 is the Moran's Index of 1.442425, telling us again that clustering is indeed happening based on race (white).

Chapter Three: Results of Methods and Analyzing of the States

Figure 8.3: Spatial Autocorrelation (Moran's I) Report - Race (White) (A Moran's Index value greater than zero tells us that more clustering is taking place)

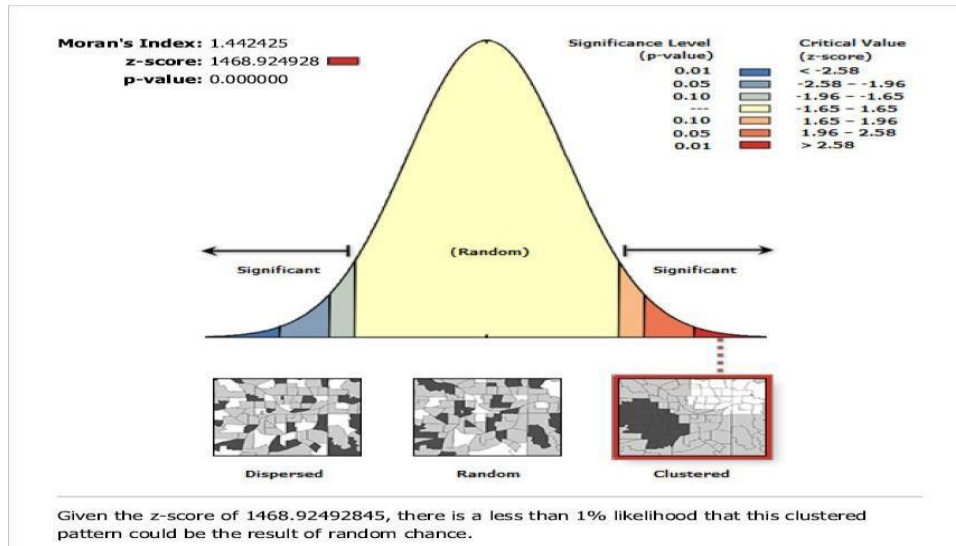


Table 8.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact the District)

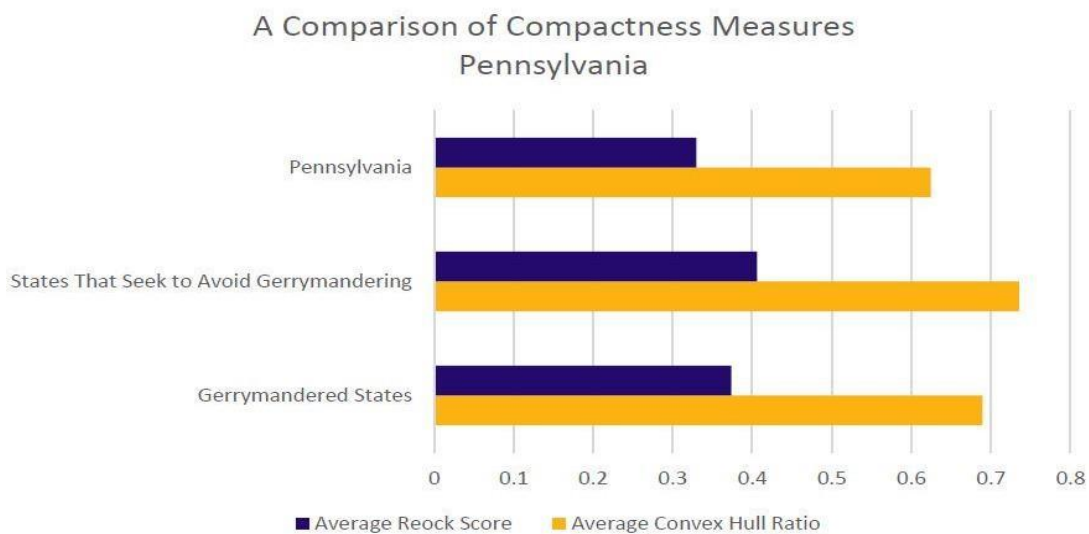
Pennsylvania		
District	Convex Hull Ratio	Relock Score
1	0.531544	0.149816
2	0.865916	0.533424
3	0.687536	0.352365
4	0.853705	0.43488
5	0.729835	0.444273
6	0.520541	0.302571
7	0.458794	0.336541
8	0.767395	0.420235
9	0.66164	0.36498
10	0.594171	0.326689
11	0.565588	0.196295
12	0.434985	0.231179
13	0.603775	0.342684
14	0.613699	0.342804

Chapter Three: Results of Methods and Analyzing of the States

15	0.601964	0.192154
16	0.617206	0.364683
17	0.461965	0.243334
18	0.669098	0.363508
Mean	0.624409	0.330134

Finally, as we see below in Figure 8.3, gerrymandered states such as Pennsylvania tend to have less compact congressional districts than states that seek to avoid gerrymandering. What we can take from this is that in these states, there is a conscious effort to include and exclude certain voters from certain districts. Based on average Reock Score of 0.330134 as shown above in Table 8.3, Pennsylvania has even less compact districts than other states that are notoriously gerrymandered as seen in Figure 18. Based on average Convex Hull Ratio of 0.624409 as shown above in Table 8.3, Pennsylvania also has less compact congressional districts than the average for states that are notoriously gerrymandered as seen below in Figure 9.3. Much like North Carolina, based on these measures of compactness, there isn't one congressional district within Pennsylvania that both compactness measures agree is the least compact. District 12 is the least compact district based on Convex Hull Ratio while District 1 is the least compact based on Reock Score as shown in Table 8.3.

Figure 9.3: A Comparison of Compactness: Pennsylvania (The Closer a Given Value is to 1, the More Compact the District)



Chapter Three: Results of Methods and Analyzing of the States

3.4: Wisconsin¹²

Wisconsin is a state that can be considered less democratic according to several different measures. Signs that this is the case first include the way that Wisconsin's redistricting process is only governed by their courts and procedural precedents. There are no statutory or constitutional guidelines in Wisconsin law for congressional redistricting (Keane, 2016). Also, earlier in 2018, the Supreme Court heard an appeal of a decision by a Wisconsin State Court that decided to strike down the legislative map based on an unconstitutional, partisan gerrymander for the Wisconsin State Assembly that was drawn by Republicans after they gained control of the state's government for the first time in more than 40 years back in 2010 (Liptak, 2017). The Supreme Court was not persuaded however by the challenges that were presented in court because they decided they had not been presented a way for the courts to determine when partisan efforts violate the United States Constitution (Barnes, 2018a). Wisconsin is an excellent place to look for an example of how gerrymandering destroys democracy.

**Table 9.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information –
Median Household Income**

Wisconsin: Global Moran's I Summary (Median Household Income)	
Moran's Index	0.271125
Expected Index	-0.000224
Variance	0.000004
Z-Score	142.252692
P-Value	0.000000

Following the same format as the previous states, based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 10.3 it can first be said that the clustering taking place based on median household income has less than a 1% likelihood of being the result of random chance according to the Z-Score. In other words, there is definitely clustering happening based on median household income. The Moran's Index being 0.271125, as shown in Table 9, also tells us that there is significant clustering based on median household income taking place. The Moran's Index will typically be a value that falls between -1 and 1. A value greater than zero tells us that more clustering of the groups is taking place while a value less than zero tells us there is more dispersion of the groups.

Chapter Three: Results of Methods and Analyzing of the States

Figure 10.3: Spatial Autocorrelation (Moran's I) Report - Median Household Income (A Moran's Index value greater than zero tells us that more clustering is taking place).

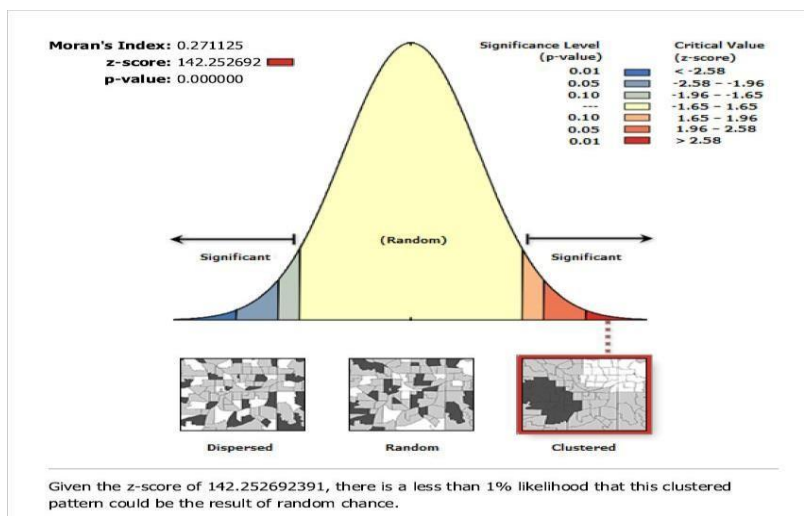


Table 10.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Race (Non-White)

Wisconsin: Global Moran's I Summary (Race: Non-White)	
Moran's Index	1.694673
Expected Index	-0.000224
Variance	0.000004
Z-Score	887.291963
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 20.3, it can first be said that the clustering taking place based on race (non-white) has less than a 1% likelihood of being the result of random chance according to the Z-Score value seen above in Table 10. Also shown above in Table 10 is the Moran's Index of 1.694673, telling us again that clustering is indeed happening based on race (non-white).

Chapter Three: Results of Methods and Analyzing of the States

Figure 11.3: Spatial Autocorrelation (Moran's I) Report - Race (Non-White) (A Moran's Index value greater than zero tells us that more clustering is taking place).

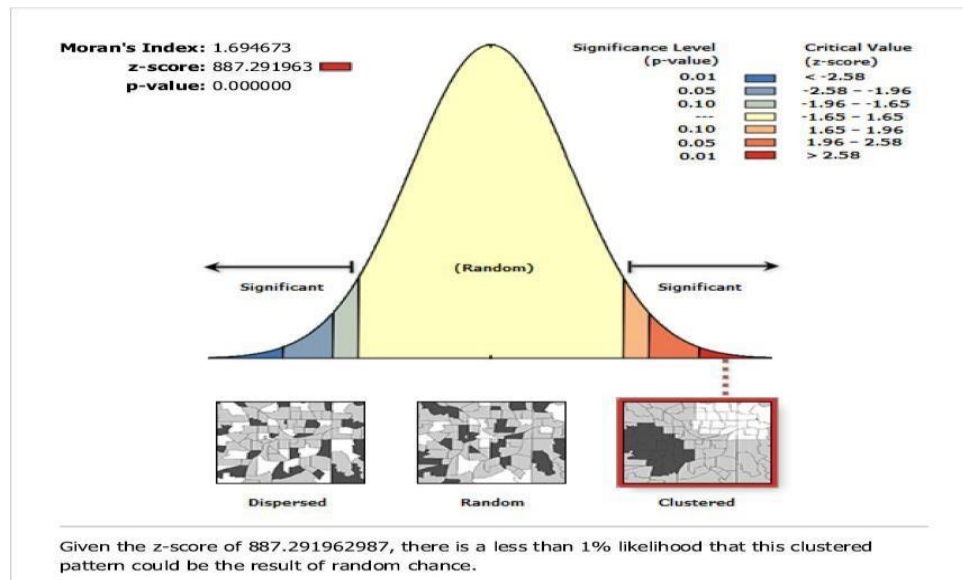


Table 11.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Race (White)

Wisconsin: Global Moran's I Summary (Race: White)	
Moran's Index	1.694673
Expected Index	-0.000224
Variance	0.000004
Z-Score	887.291961
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 12.3, it can first be said that the clustering taking place based on race (white) has less than a 1% likelihood of being the result of random chance according to the Z-Score seen above in Table 11.3. Also shown above in Table 11.3 is the Moran's Index of 1.694673, telling us again that clustering is indeed happening based on race (white).

Chapter Three: Results of Methods and Analyzing of the States

Figure 12.3: Spatial Autocorrelation (Moran's I) Report - Race (White) (A
Moran's Index value greater than zero tells us that more clustering is taking place)

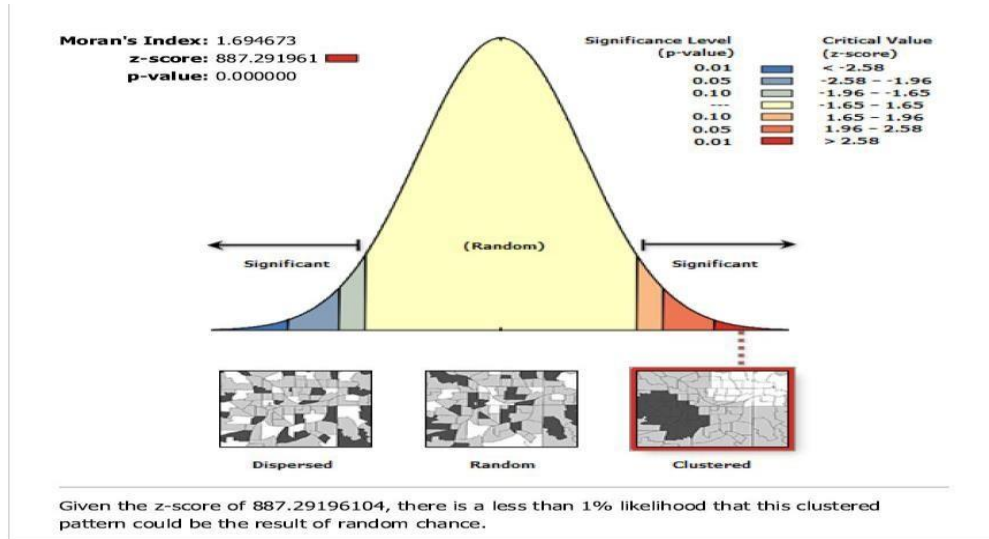


Table 12.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact the District)

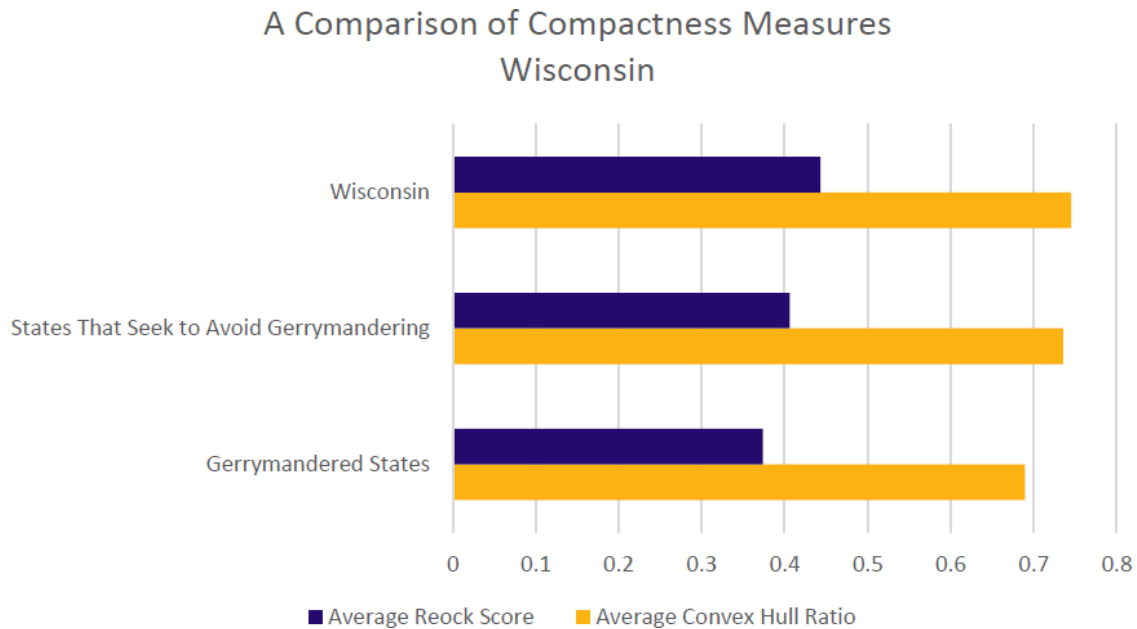
Wisconsin		
District	Convex Hull Ratio	Reock Score
1	0.87927	0.491302
2	0.878438	0.536049
3	0.585988	0.330515
4	0.718881	0.300809
5	0.820941	0.527907
6	0.689742	0.392621
7	0.708284	0.532797
8	0.681684	0.432227
Mean	0.745403	0.443029

Finally, as we see above in Figure 12.3, not all gerrymandered states such as Wisconsin tend to have less compact congressional districts than states that seek to avoid gerrymandering. Based on average Reock Score of 0.443029 as shown above in Table 12.3, Wisconsin has more compact districts than other states that are notoriously gerrymandered as seen in Figure 13.3. Based on average Convex Hull Ratio of 0.745403 as shown above in Table 12.3, Wisconsin also has more compact congressional districts than the average for states that are notoriously

Chapter Three: Results of Methods and Analyzing of the States

gerrymandered as seen below in Figure 13.3. Much like North Carolina and Pennsylvania, based on these measures of compactness, there isn't one congressional district within Wisconsin that both compactness measures agree is the least compact. District 3 is the least compact district based on Convex Hull Ratio while District 4 is the least compact based on Reock Score as shown in Table 12.3.

Figure 13.3: A Comparison of Compactness: Wisconsin (The Closer a Given Value is to 1, the More Compact the District)



4.4: Arizona¹³

It is without question that Arizona is a state that does its best to avoid gerrymandering for political gain. The citizen panel that was established to redraw lines after Proposition 106 passed with 56% of the vote back in 2000 aims to truly take partisanship out of the process (Daley, 2017).

vote back in 2000 aims to truly take partisanship out of the process (Daley, 2017). The maps drawn by these produced by these independent commissions since 2001 have proved successful as districts have shifted in swing years. For instance, Republicans held a 5-1 advantage after 2000, which grew to 6-2 after 2002 elections, and then evened to 4-4 amid Democratic nationwide gains in 2006 (Daley, 2017). While partisans within Arizona's state government may not always be happy about the maps produced by these independent commissions, they have

Chapter Three: Results of Methods and Analyzing of the States

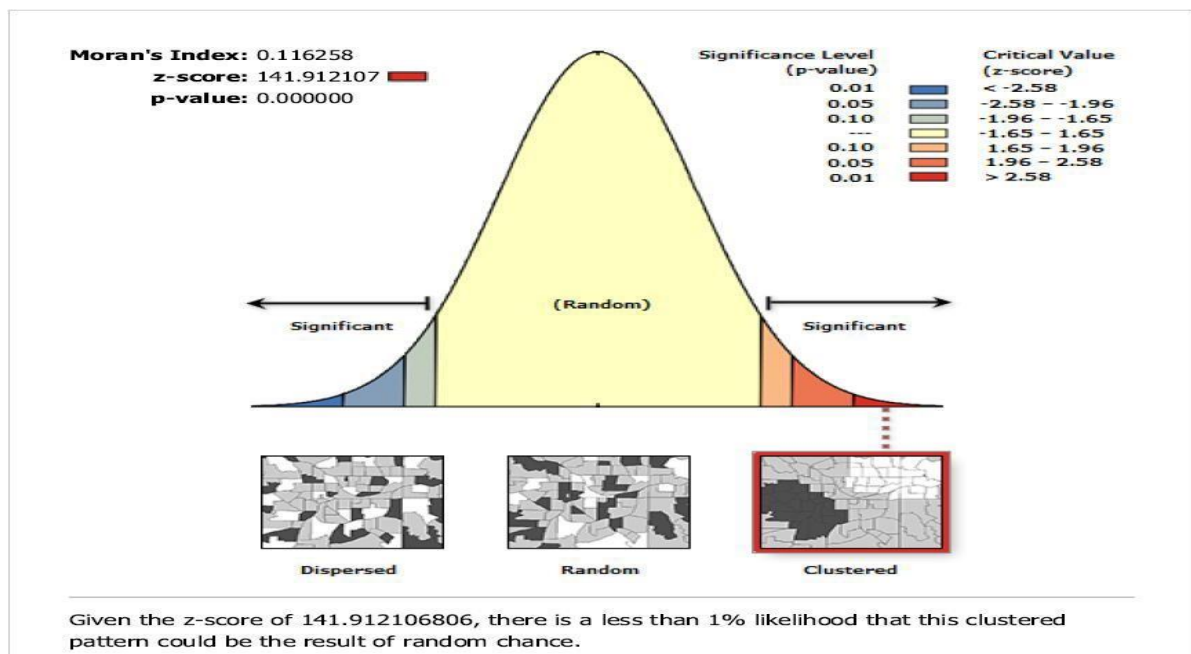
always held up when taken to court (Daley, 2017).

Table 13.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information –
Median Household Income

Arizona: Global Moran's I Summary (Median Household Income)	
Moran's Index	0.116258
Expected Index	-0.000239
Variance	0.000001
Z-Score	141.912107
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 14.3, it can first be said that the clustering taking place based on median household income has less than a 1% likelihood of being the result of random chance according to the Z-Score. In other words, there is definitely clustering happening based on median household income. The Moran's Index being 0.116258, as seen in Table 13.3, also tells us that there is significant clustering based on median household income taking place. The Moran's Index will typically be a value that falls between -1 and 1. A value greater than zero tells us that more clustering of the groups is taking place while a value less than zero tells us there is more dispersion of the groups.

Figure 14.3: Spatial Autocorrelation (Moran's I) Report - Median Household Income (A
Moran's Index value greater than zero tells us that more clustering is taking place)



Chapter Three: Results of Methods and Analyzing of the States

Table 14.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Race
(Non-White)

Arizona: Global Moran's I Summary (Race: Non-White)	
Moran's Index	0.162604
Expected Index	-0.000240
Variance	0.000001
Z-Score	198.219293
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 15.3, it can first be said that the clustering taking place based on race (non-white) has less than a 1% likelihood of being the result of random chance according to the Z-Score value seen above in Table 14.3. Also shown above in Table 14.3 is the Moran's Index of 0.162604, telling us again that clustering is indeed happening based on race (non-white).

Figure 15.3: Spatial Autocorrelation (Moran's I) Report - Race (Non-White) (A Moran's Index value greater than zero tells us that more clustering is taking place)

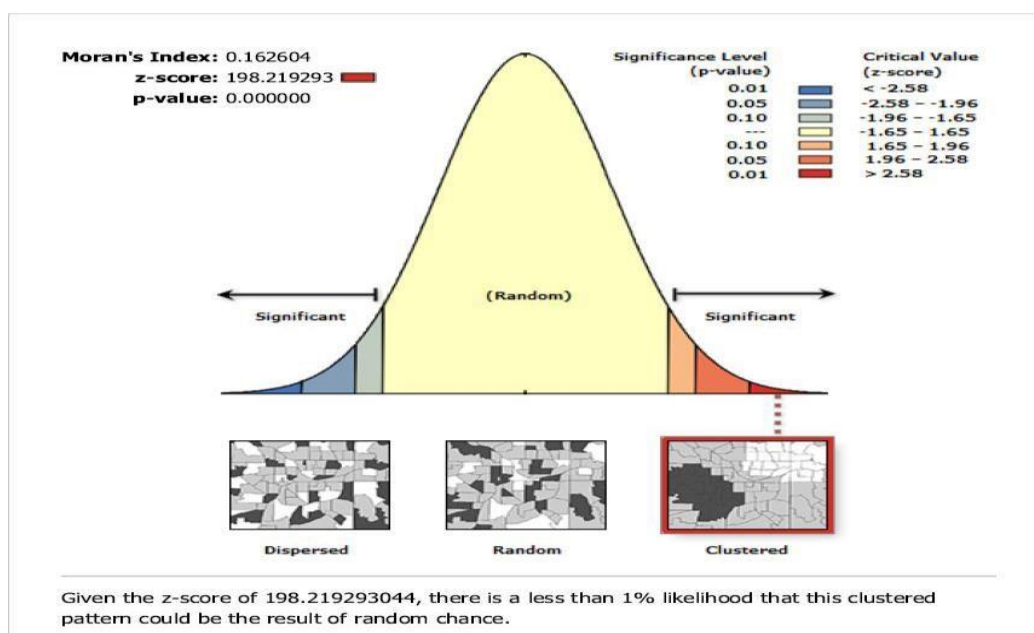


Table 15.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Race
(White)

Arizona: Global Moran's I Summary (Race: White)	
Moran's Index	0.162604
Expected Index	-0.000240

Chapter Three: Results of Methods and Analyzing of the States

Variance	0.000001
Z-Score	198.219293
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 16.3, it can first be said that the clustering taking place based on race (white) has less than a 1% likelihood of being the result of random chance according to the Z-Score seen above in Table 15.3. Also shown above in Table 15.3 is the Moran's Index of 0.162604, telling us again that clustering is indeed happening based on race (white).

Figure 16.3: Spatial Autocorrelation (Moran's I) Report - Race (White) (A Moran's Index value greater than zero tells us that more clustering is taking place).

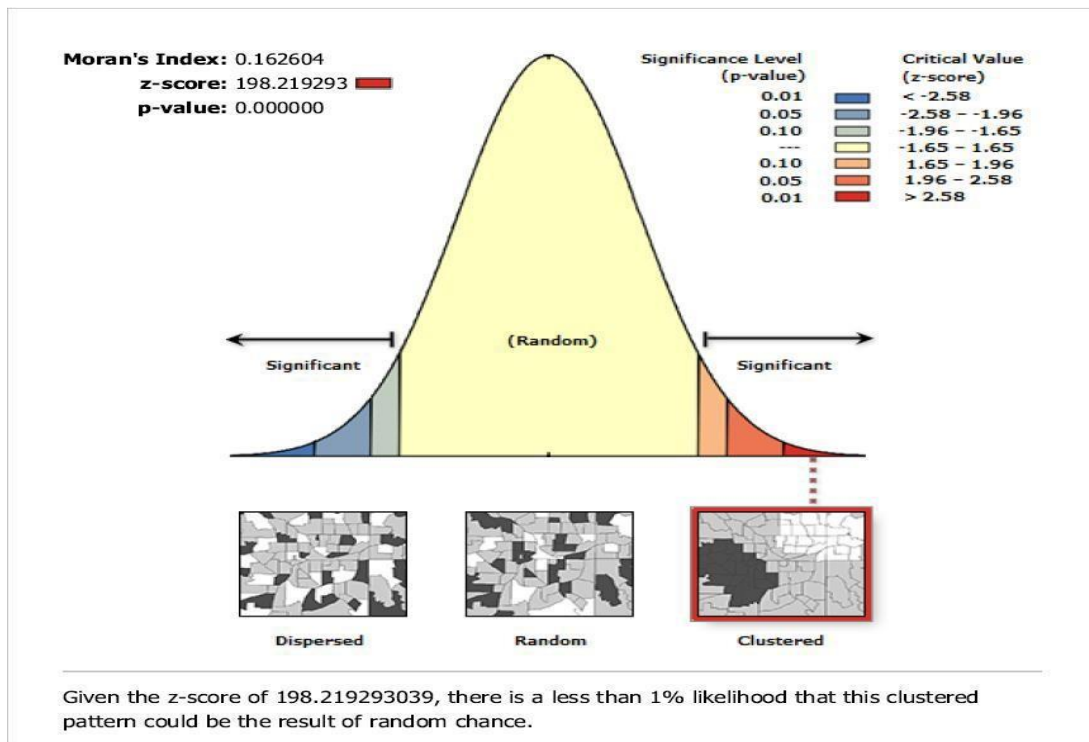


Table 16.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact the District)

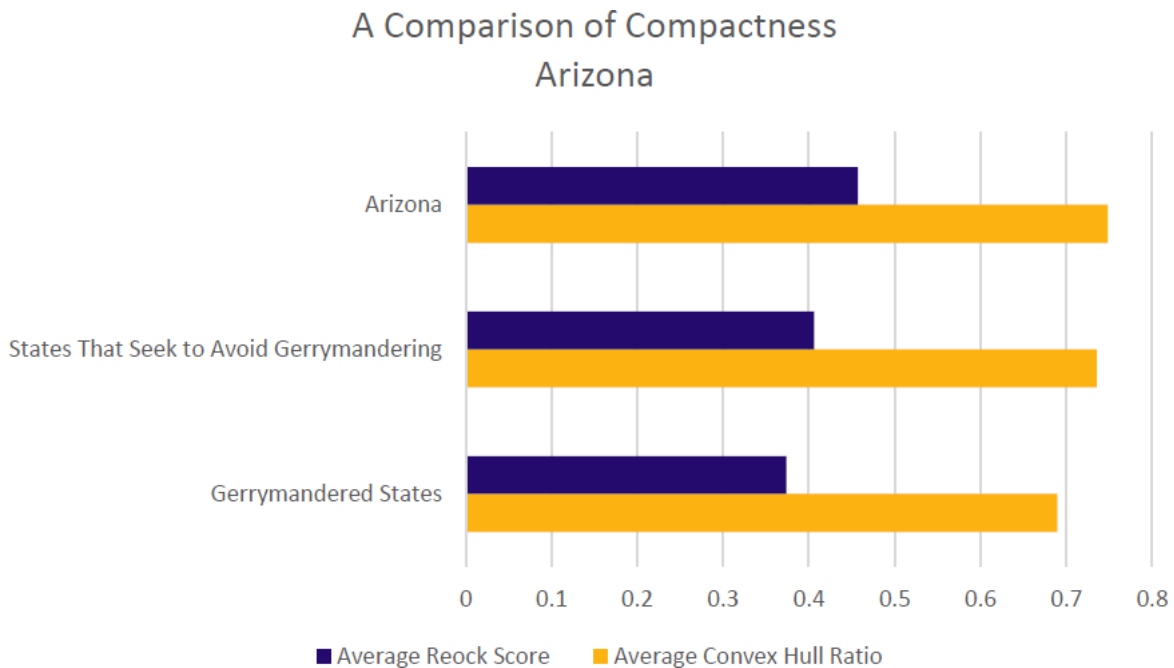
Arizona		
District	Convex Hull Ratio	Reock Score
1	0.741468	0.477949
2	0.884601	0.517757
3	0.747669	0.275485
4	0.62291	0.389759
5	0.880906	0.546898

Chapter Three: Results of Methods and Analyzing of the States

6	0.823491	0.673631
7	0.835722	0.549559
8	0.659491	0.357286
9	0.53809	0.324147
Means	0.748261	0.456941

Finally, as we see below in Figure 16.3, states that seek to avoid gerrymandering such as Arizona tend to have more compact congressional districts than states that are notoriously gerrymandered. Based on average Reock Score of 0.456941 as shown above in Table 16.3, Arizona has even more compact districts than other states that seek to avoid gerrymandering as well as states that are notoriously gerrymandered as seen in Figure 17.3. Based on average Convex Hull Ratio of 0.748261 as shown above in Table 16.3, Arizona has more compact congressional districts again than the average for both states that seek to avoid gerrymandering as well as states that are notoriously gerrymandered as seen below in Figure 17.3. It is also very interesting that, based on these measures of compactness, there isn't one congressional district within Arizona that both compactness measures agree is the least compact. District 9 is the least compact district based on Convex Hull Ratio while District 3 is the least compact based on Reock Score as shown in Table 16.3.

Figure 17.3: A Comparison of Compactness: Arizona (The Closer a Given Value is to 1, the More Compact the District)



Chapter Three: Results of Methods and Analyzing of the States

5.4: Iowa¹⁴

Iowa is another example of a state that takes great pride in respecting the will of their voters in terms of how they draw their congressional districts. The redistricting process in Iowa is filled with trust as no one dares to even challenge the integrity of the lines. Since the year 2000, Iowa has had more competitive congressional races than Texas, California, and Florida combined, despite having a fraction of the number of seats (Daley, 2017). In Iowa, there is only one district that has been automatic for either party since 2000; the Republicans own the rural northwestern corner of the state, where representative Steve King and the Tea Party have established a heartland base.

Table 17.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Median Household Income

Iowa: Global Moran's I Summary (Median Household Income)	
Moran's Index	0.293041
Expected Index	-0.000380
Variance	0.000028
Z-Score	55.616720
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 18.3, it can first be said that the clustering taking place based on median household income has less than a 1% likelihood of being the result of random chance according to the Z-Score. In other words, there is definitely clustering happening based on median household income. The Moran's Index being 0.293041, as shown above in Table 17.3, also tells us that there is significant clustering based on median household income taking place. The Moran's Index will typically be a value that falls between -1 and 1. A value greater than zero tells us that more clustering of the groups is taking place while a value less than zero tells us there is more dispersion of the groups.

Chapter Three: Results of Methods and Analyzing of the States

Figure 18.3: Spatial Autocorrelation (Moran's I) Report - Median Household

Income (A Moran's Index value greater than zero tells us that more clustering is taking place)

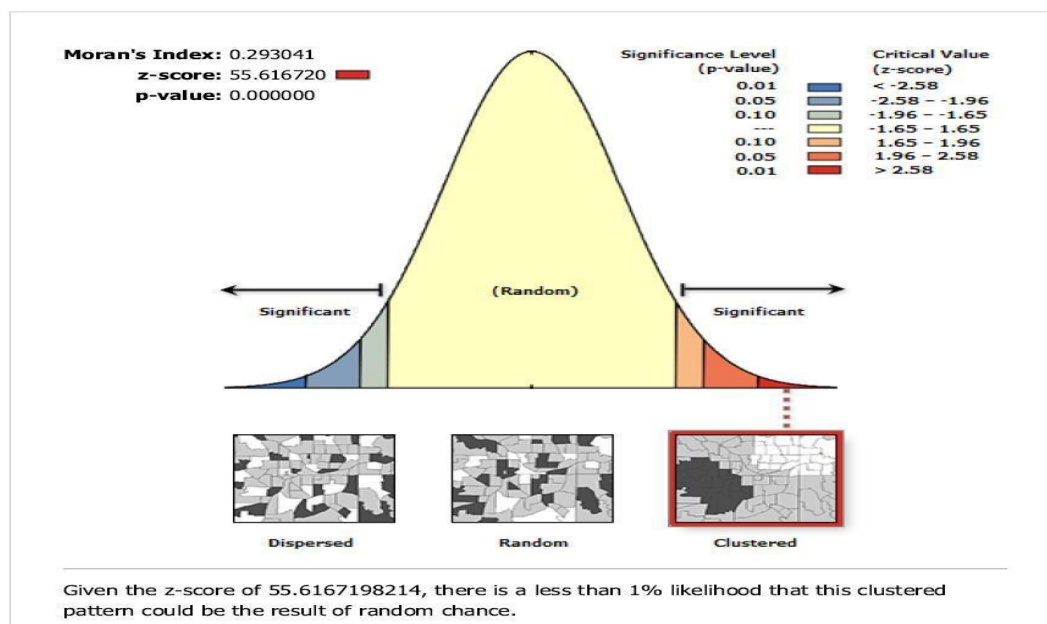


Table 18.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Race (Non-White)

Iowa: Global Moran's I Summary (Race: Non-White)	
Moran's Index	1.019826
Expected Index	-0.000380
Variance	0.000028
Z-Score	193.153791
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 19.3, it can first be said that the clustering taking place based on race (non-white) has less than a 1% likelihood of being the result of random chance according to the Z-Score value seen above in Table 18.3. Also shown above in Table 18.3 is the Moran's Index of 1.019826, telling us again that clustering is indeed happening based on race (non-white).

Chapter Three: Results of Methods and Analyzing of the States

Figure 19.3: Spatial Autocorrelation (Moran's I) Report - Race (Non-White) (A Moran's Index value greater than zero tells us that more clustering is taking place)

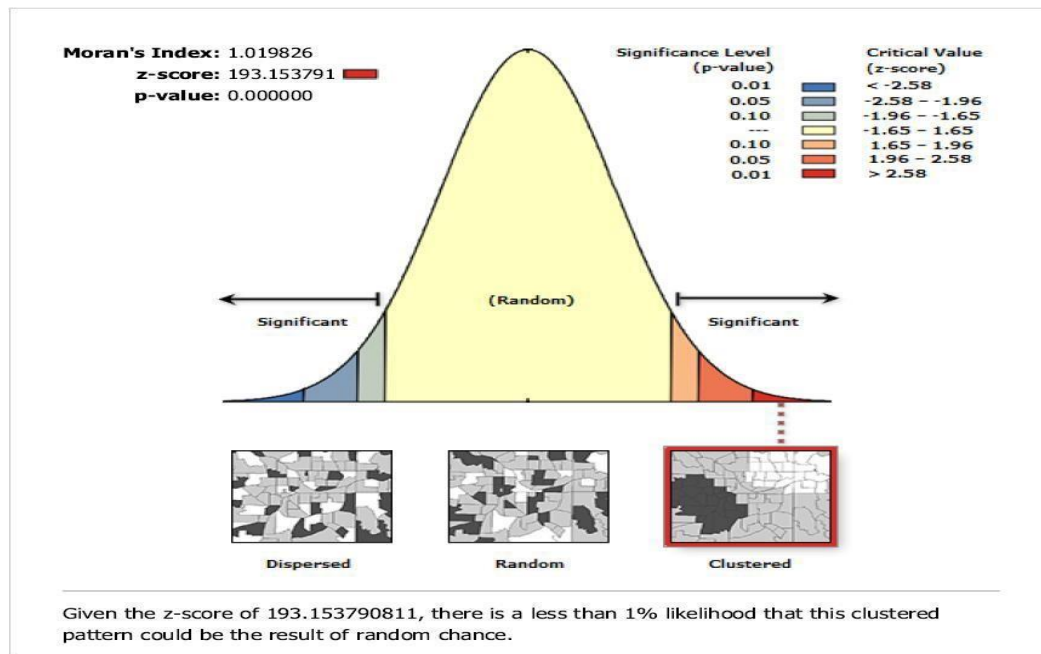


Table 19.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information – Race (White)

Iowa: Global Moran's I Summary (Race: White)	
Moran's Index	1.019826
Expected Index	-0.000381
Variance	0.000028
Z-Score	193.153789
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 20.3, it can first be said that the clustering taking place based on race (white) has less than a 1% likelihood of being the result of random chance according to the Z-Score seen above in Table 19.3. Also shown above in Table 19.3 is the Moran's Index of 1.019826, telling us again that clustering is indeed happening based on race (white).

Chapter Three: Results of Methods and Analyzing of the States

Figure 20.3: Spatial Autocorrelation (Moran's I) Report - Race (White) (A)

Moran's Index value greater than zero tells us that more clustering is taking place)

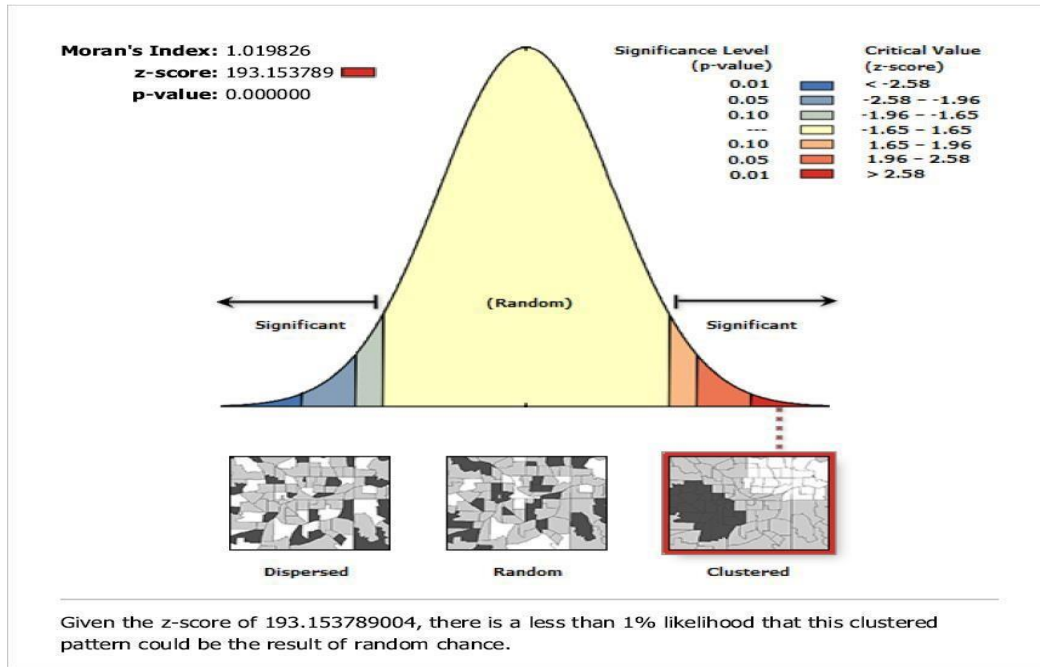


Table 20.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact the District)

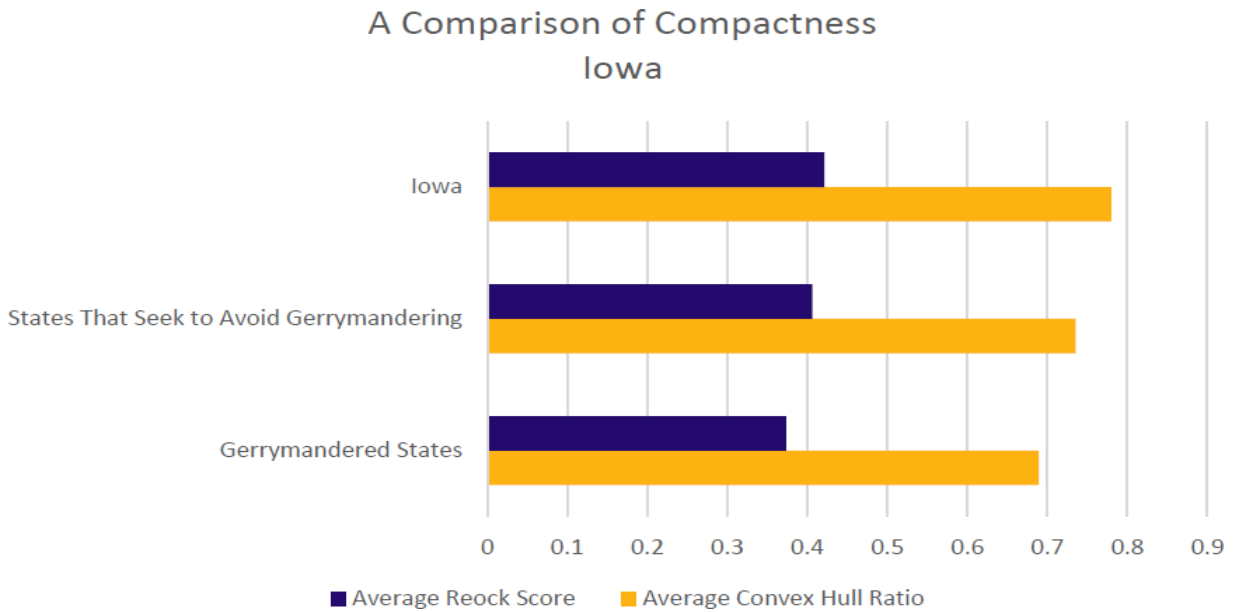
Iowa		
District	Convex Hull Ratio	Reock Score
1	0.673088	0.396807
2	0.734574	0.316157
3	0.83353	0.478767
4	0.879101	0.494205
Means	0.780073	0.421484

Finally, as we see below in Figure 20.3, states that seek to avoid gerrymandering such as Iowa tend to have more compact congressional districts than states that are notoriously gerrymandered. Based on average Reock Score of 0.421484 as shown above in Table 20.3, Iowa has even more compact districts than other states that seek to avoid gerrymandering as well as states that are notoriously gerrymandered as seen in Figure 21.3. Based on average Convex Hull Ratio of 0.780073 as shown above in Table 20.3, Iowa has more compact congressional districts again than the average for both states that seek to avoid gerrymandering as well as states that are notoriously gerrymandered as seen below in Figure 21.3. It is also very interesting that, based on these measures of compactness, there isn't one congressional district within Iowa that both

Chapter Three: Results of Methods and Analyzing of the States

compactness measures agree is the least compact. District 1 is the least compact district based on Convex Hull Ratio while District 2 is the least compact based on Reock Score as shown in Table 20.3.

Figure 21.3: A Comparison of Compactness: Iowa (The Closer a Given Value is to 1, the More Compact the District)



6.4: Washington¹⁵

Similar to Arizona and Iowa, Washington is another state that goes above and beyond to try and avoid partisan gerrymandering. Every ten years, after the census data is received, an independent redistricting commission is put together specifically to draw the new maps for the state of Washington and then disbanded upon the completion of the redistricting process. The Washington State constitution says that when redistricting, districts should be contiguous, compact, and convenient, while following natural geographic, artificial, or political subdivision boundaries. The commission is also not allowed to purposely draw plans to favor or discriminate against any political party or group. By statute, Washington further provides that districts should be drawn to preserve areas recognized as communities of interest, and that the number of divided counties and municipalities be as small as possible. Washington statute also requires the commission to “provide fair and effective representation and to encourage electoral competition” (“All About Redistricting -- Washington,” n.d.). The wording in the Washington State constitution is the most sound in terms of wording in that it states clearly the importance of encouraging electoral competition.

Chapter Three: Results of Methods and Analyzing of the States

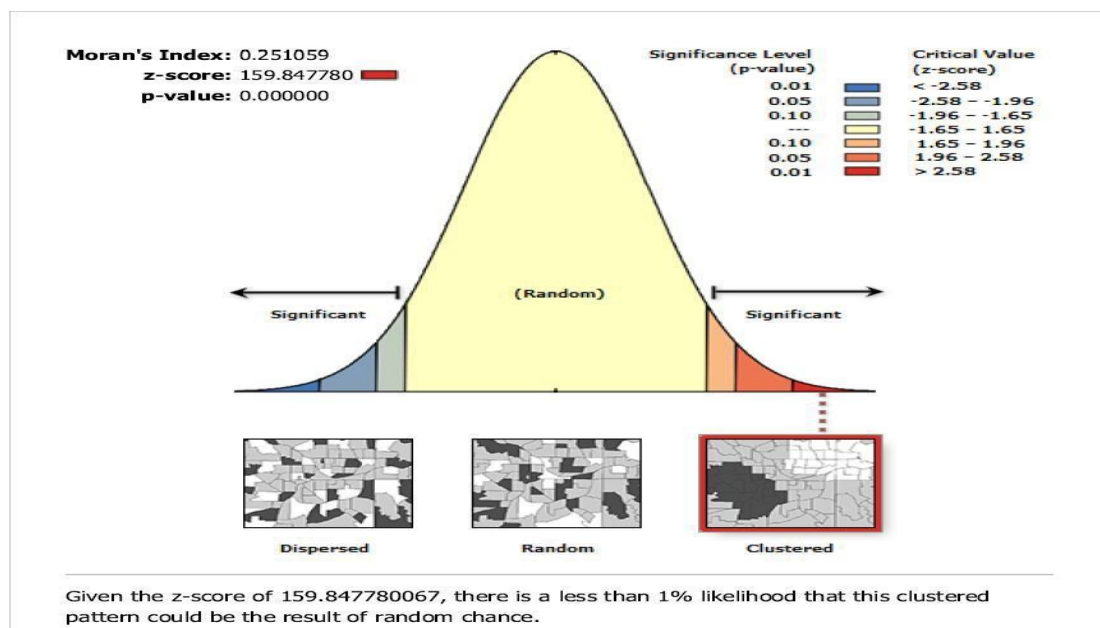
Table 21.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information - Median Household Income

Washington: Global Moran's I Summary (Median Household Income)	
Moran's Index	0.251059
Expected Index	-0.000210
Variance	0.000002
Z-Score	159.847780
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 22.3, it can first be said that the clustering taking place based on median household income has less than a 1% likelihood of being the result of random chance according to the Z-Score. In other words, there is definitely clustering.

Happening based on median household income. The Moran's Index being 0.251059, as shown in Table 21.3, also tells us that there is significant clustering based on median household income taking place. The Moran's Index will typically be a value that falls between -1 and 1. A value greater than zero tells us that more clustering of the groups is taking place while a value less than zero tells us there is more dispersion of the groups.

Figure 22.3: Spatial Autocorrelation (Moran's I) Report - Median Household Income (A Moran's Index value greater than zero tells us that more clustering is taking place)



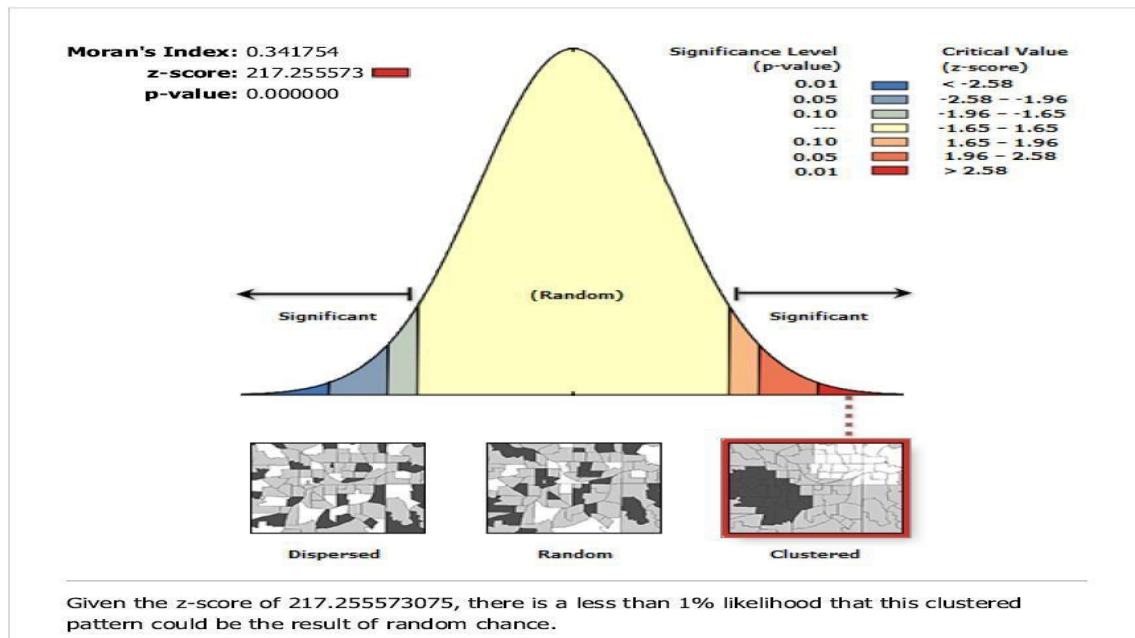
Chapter Three: Results of Methods and Analyzing of the States

Table 22.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information - Race (Non-White)

Washington: Global Moran's I Summary (Race: Non-White)	
Moran's Index	0.341754
Expected Index	-0.000210
Variance	0.000002
Z-Score	217.255573
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 23.3, it can first be said that the clustering taking place based on race (non-white) has less than a 1% likelihood of being the result of random chance according to the Z-Score value seen above in Table 22.3. Also shown above in Table 22.3 is the Moran's Index of 0.341754, telling us again that clustering is indeed happening based on race (non-white).

Figure 23.3: Spatial Autocorrelation (Moran's I) Report - Race (Non-White) (A Moran's Index value greater than zero tells us that more clustering is taking place)



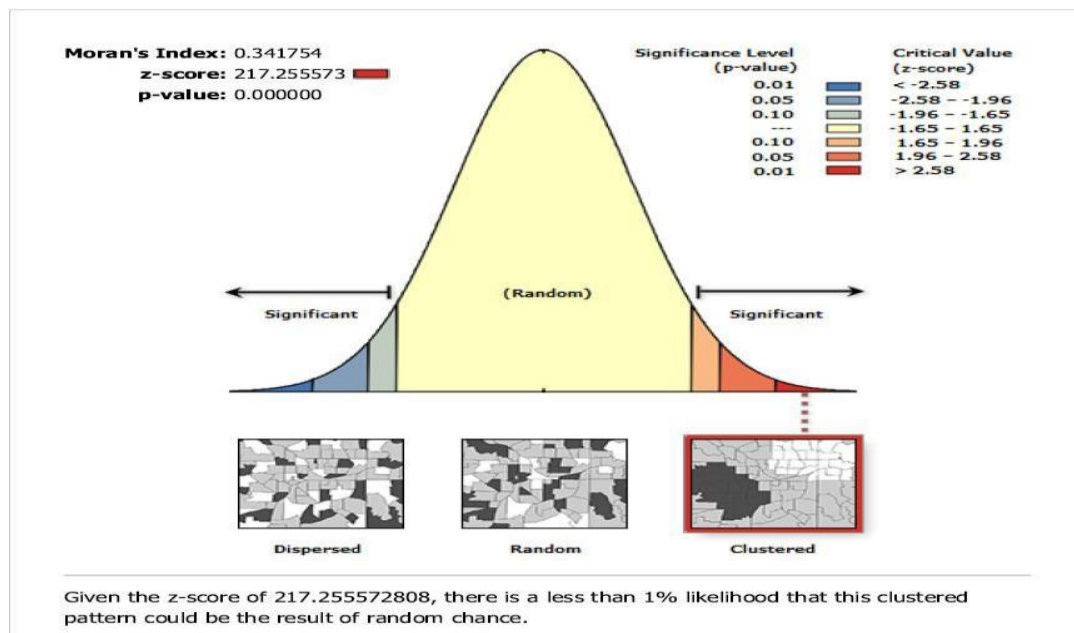
Chapter Three: Results of Methods and Analyzing of the States

Table 23.3: Spatial Autocorrelation (Moran's I) Report Summary & Dataset Information - Race (White)

Washington: Global Moran's I Summary (Race: White)	
Moran's Index	0.341754
Expected Index	-0.000210
Variance	0.000002
Z-Score	217.255573
P-Value	0.000000

Based on the standard distribution graph included in the spatial autocorrelation (Moran's I) report as shown in Figure 24.3, it can first be said that the clustering taking place based on race (white) has less than a 1% likelihood of being the result of random chance according to the Z-Score seen above in Table 23.3. Also shown above in Table 23.3 is the Moran's Index of 0.341754, telling us again that clustering is indeed happening based on race (white).

Figure 24.3: Spatial Autocorrelation (Moran's I) Report - Race (White) (A Moran's Index value greater than zero tells us that more clustering is taking place)



Chapter Three: Results of Methods and Analyzing of the States

Table 24.3: Convex Hull Ratios and Reock Scores (The Closer a Given Value is to 1, the More Compact the District)

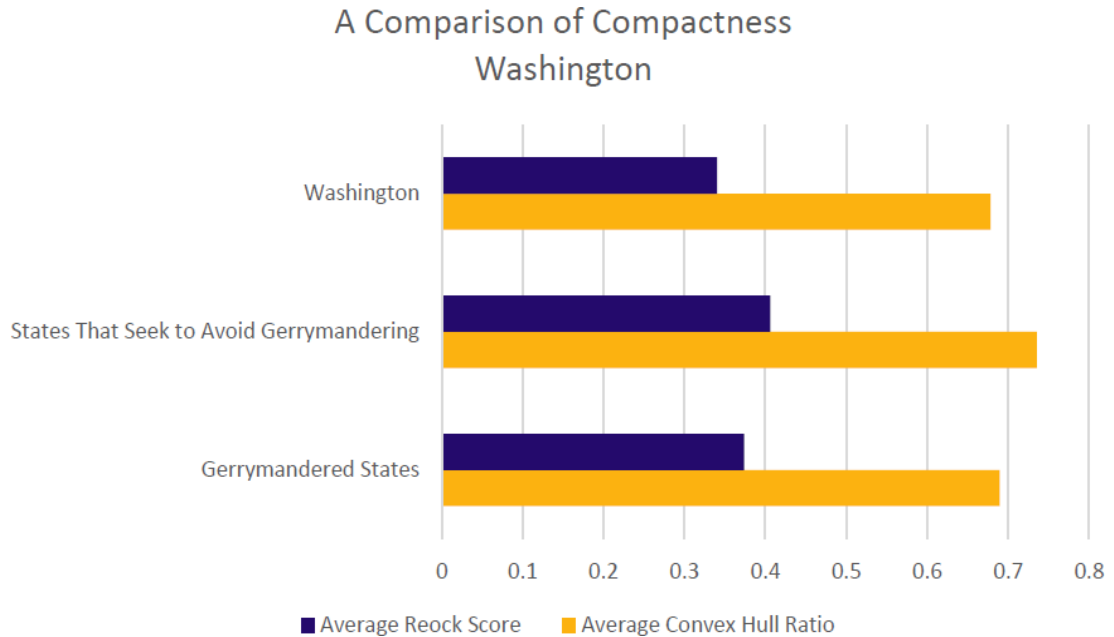
Washington		
District	Convex Hull Ratio	Reock Score
1	0.731825	0.421379
2	0.475268	0.222794
3	0.706187	0.25992
4	0.657158	0.432399
5	0.843393	0.394254
6	0.790966	0.477971
7	0.542369	0.144778
8	0.662719	0.411933
9	0.649873	0.248232
10	0.718898	0.393382
Mean	0.677866	0.340704

finally, as we see below in Figure 24.3, states that seek to avoid gerrymandering tend to have more compact congressional districts than states that are notoriously gerrymandered. However, when it comes to the average compactness of Washington State’s congressional districts, they are less compact than districts in the gerrymandered states selected by the researcher. Based on average Reock Score of 0.340704 as shown above in Table 24.3, Washington has less compact districts than other states that seek to avoid gerrymandering as well as states that are notoriously gerrymandered as seen in Figure 25.3. Based on average Convex Hull Ratio of 0.677866 as shown above in Table 24.3, Washington, again, has less compact congressional districts than the average for both states that seek to avoid gerrymandering as well as states that are notoriously gerrymandered as seen below in Figure 25.3. It is also very interesting that, based on these measures of compactness, there isn’t one congressional district within Washington that both compactness measures agree is the least compact. District 2 is the least compact district based on Convex Hull Ratio while District 7 is the least compact based on Reock Score as shown in Table 24.3. As a reminder, for all case study states, this is important because the argument can be made in court and to the public that compactness is not a measure

Chapter Three: Results of Methods and Analyzing of the States

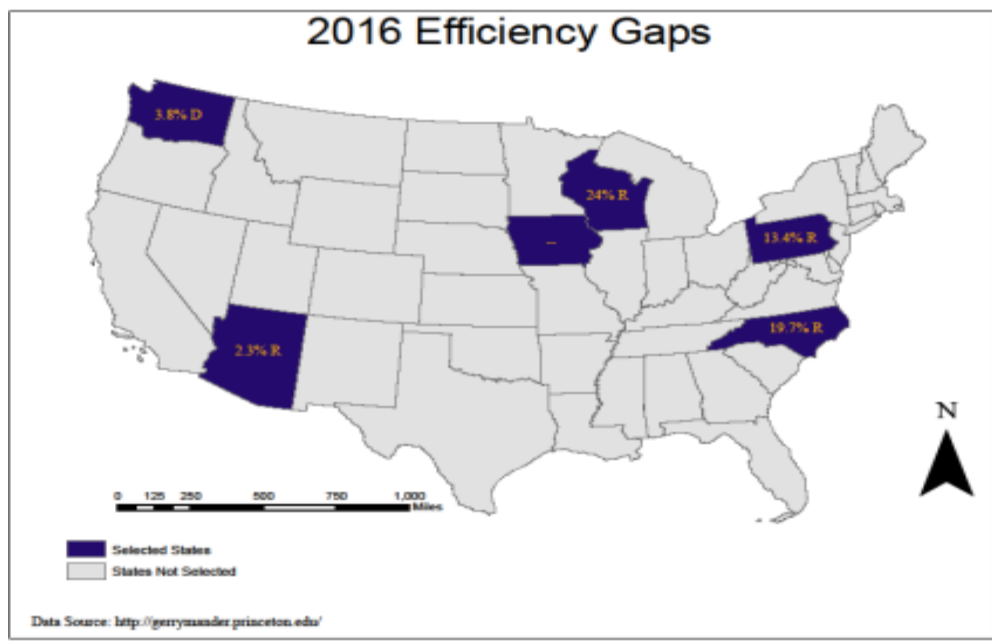
that can be trusted to quantify a gerrymander being that two different measures of compactness in any given district can be telling the interpreter of that data two different things.

Figure 25.3: A Comparison of Compactness: Washington (The Closer a Given Value is to 1, the More Compact the District)



7.4. The Efficiency Gap Data

Figure 26.3: 2016 Efficiency Gaps



Chapter Three: Results of Methods and Analyzing of the States

Note: Iowa's efficiency gap was not calculated as there are only four congressional districts, which is statistically too few for the tests run in the Princeton study where this efficiency gap data came from (<http://gerrymander.princeton.edu/>). The researcher was unable to calculate the efficiency gaps personally due to a lack of access to each of the six selected states voting data.

Table 25.3: 2016 Efficiency Gap Data (<http://gerrymander.princeton.edu/>) (R = Republican, D = Democrat).

State	2016 Efficiency Gap
North Carolina	19.7% R
Pennsylvania	13.4% R
Wisconsin	24% R
Arizona	2.3% R
Iowa	--
Washington	3.8% D

The results of this study show conclusively that the efficiency gaps of states that seek to avoid gerrymandering are substantially lower than the states that are notoriously gerrymandered.

Chapter Three: Results of Methods and Analyzing of the States

Conclusion

It is without question that it may be concluded that there are states right here within the United States of America that are less democratic. Based on all of the evidence in this study, it can be said that there are similar, measurable patterns that can be examined in each of the states that are notoriously gerrymandered. The conclusions drawn in this chapter use and reference the data discussed in the previous chapter.

Conclusion

Conclusion

Conclusion

Gerrymandering continues to be a problem in US political system because both parties benefit from redrawing districts. Still this issue needs to be addressed to ensure districts accurately represent the population. Districts should be determined by independent commissions, not party officials. Nonpartisan redistricting would create more competitive districts and make incumbents more accountable to their constituents.

Instead of "a government of the people, by the people and for the people" it can easily transform into one divided by partisan mapmakers with the use of gerrymandering as a nation, they must acknowledge this danger to American democracy and create solutions to end for good.

Answering the hypothesis:

- 1- for the first hypothesis the American political system has important normative and theoretical implications for the health of the American democratic system. "The character of our democracy is at stake in how we elect our representatives as much as in which representatives we elect and laws they enact" In fact, democracy does not exist without elections;
- 2- for the second hypothesis American democracy has always been messy, rough and unruly. The political process has suffered under rampant manipulation, cheating and corruption. Even so, democracy has delivered and America not only the world's supreme power but also it is high on socially and culturally and America is still the strongest in the world;
- 3- for the third hypothesis in a major blow to election reformers, the US Supreme Court rejected efforts to rein in electoral map manipulation by politicians and aimed at entrenching one party in power, a practice known as partisan gerrymandering that critics have said warps democracy.

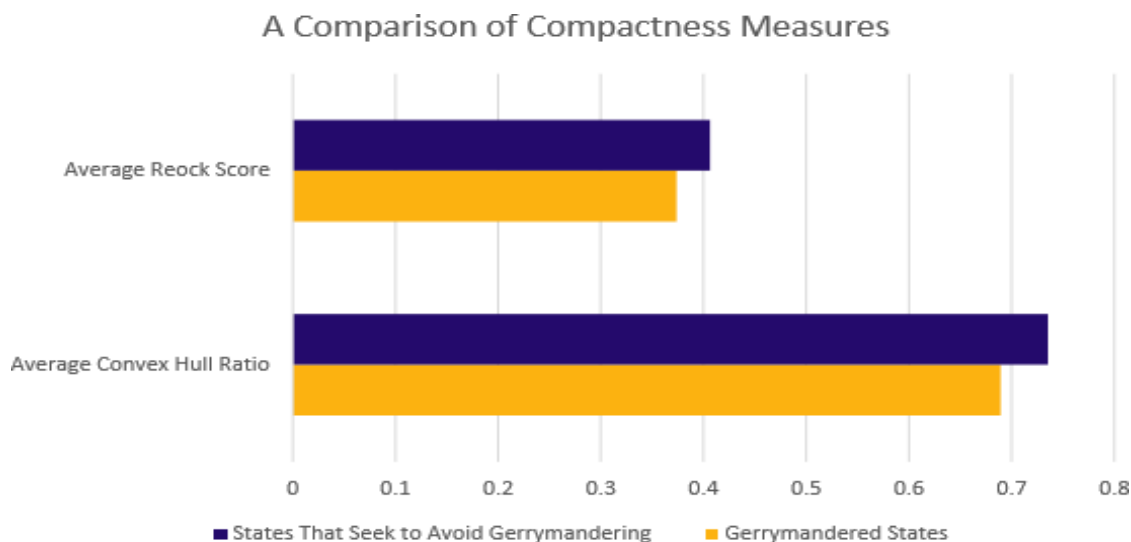
The results of the research:

The result of this research shows on the scale that states that seek to avoid gerrymandering have higher levels of compactness in terms of

Conclusion

their Reock Scores and Convex Hull Ratio.this is relevent because a sound argument can be made that compactness of congressional districts is not a mesure that can be trusted in and of itself as two diffrent measures of compactness can be telling the individual looking at that data two diffrent things.

Figure 1.C: A Comparison of Compactness Measures



Solutions to end Gerrymandering

democracy in America was designed so that voters could choose their politicians,not politicians could choose their voters across the country government have rigged electoral maps preserve political power,putting their interests over the people that they represent elected officials need to be held accountable to their voters,not shielded from competitive elections,so they must ensure that all voters. Republicans, Democrats,and Independents are fairly represented in the electoral maps to end gerrymandering in this country.

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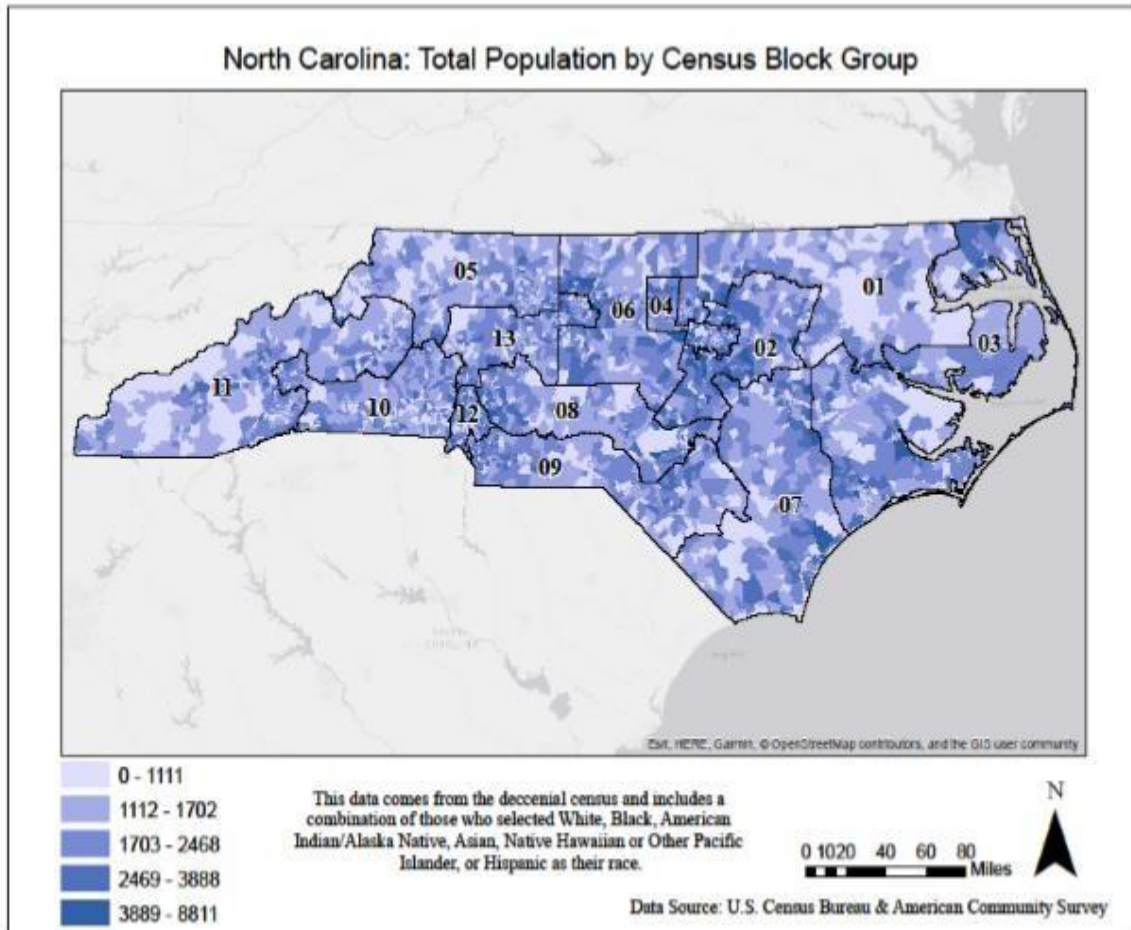
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APPENDIXES

Appendixes

APPENDIX A

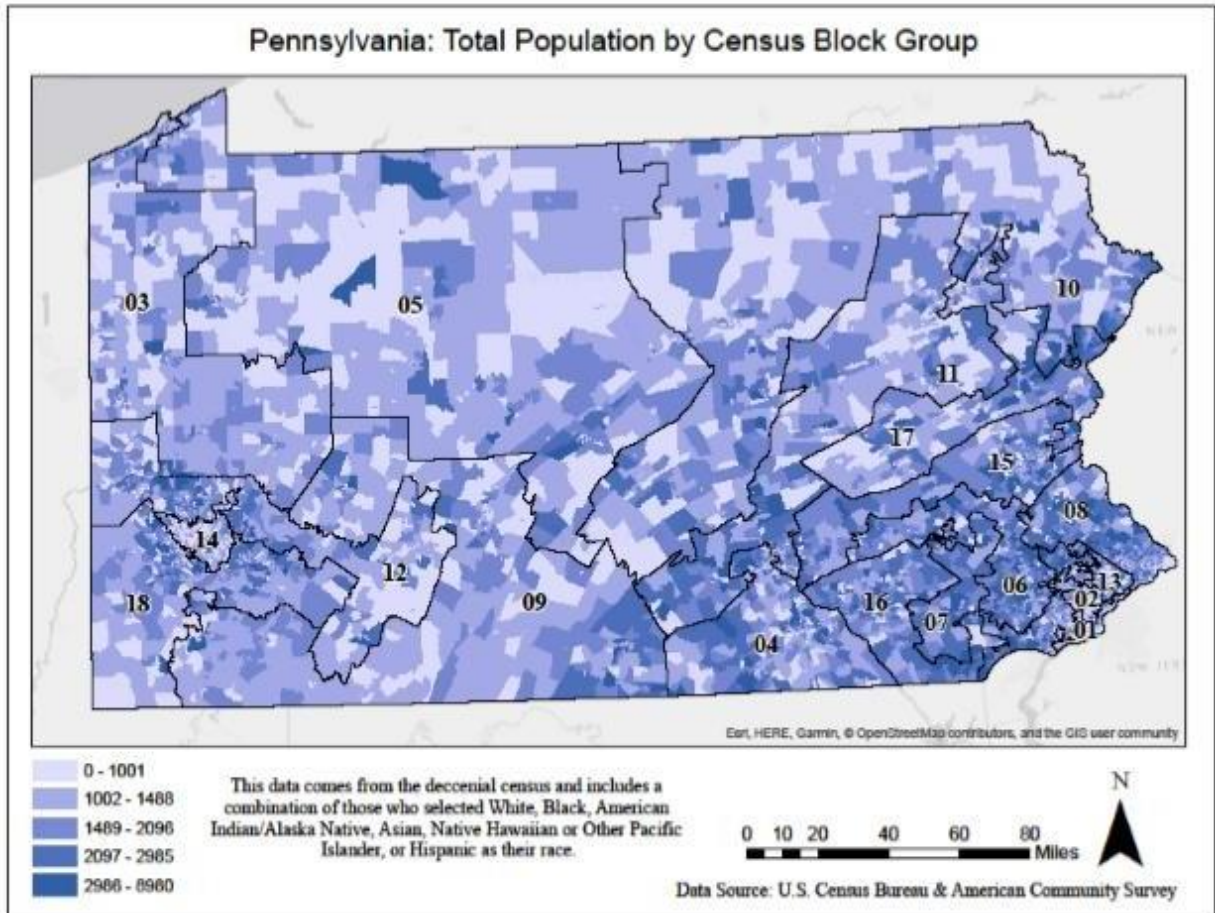
NORTH CAROLINA



Appendixes

APPENDIX B

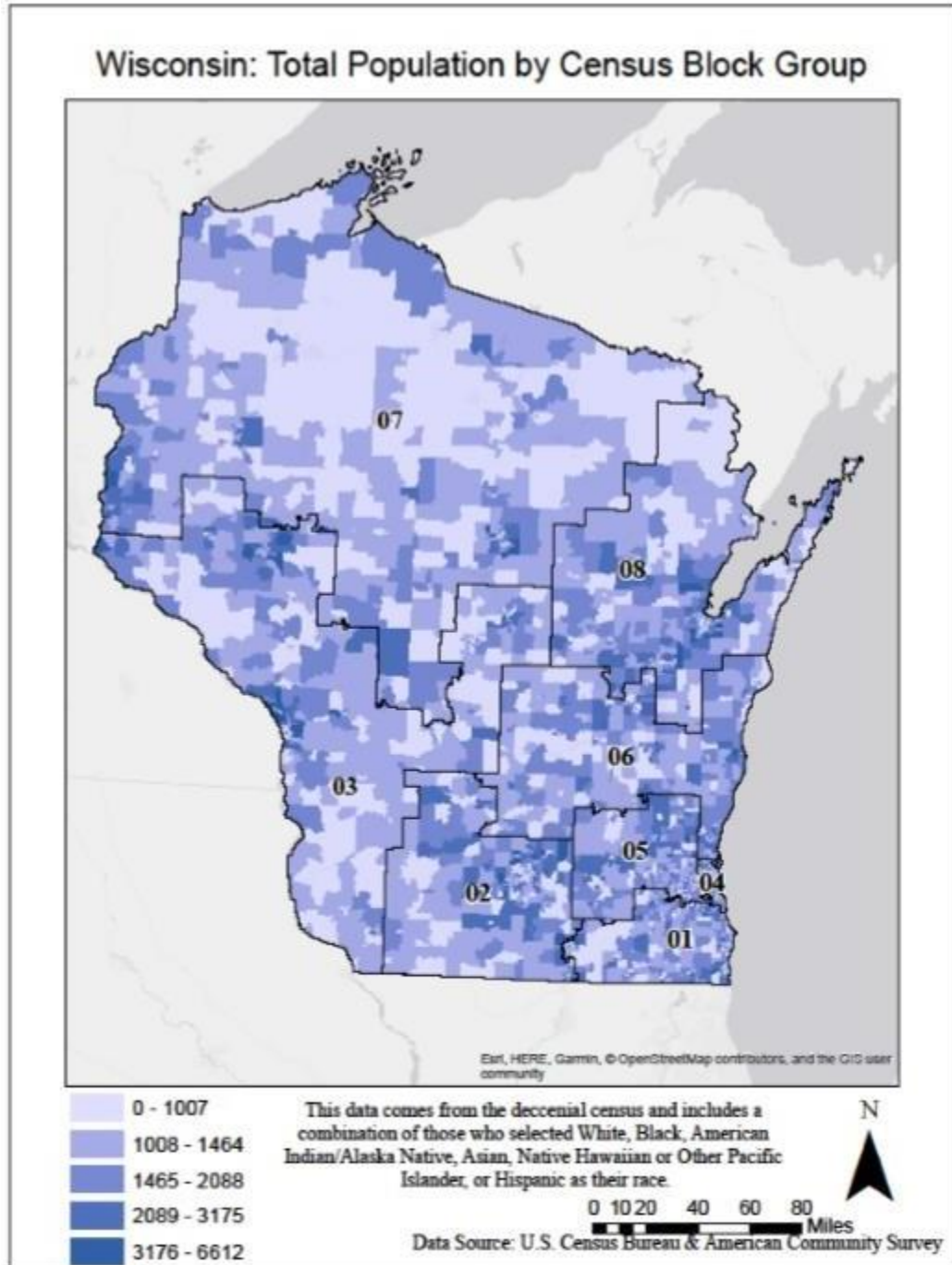
PENNSYLVANIA



Appendixes

APPENDIX C

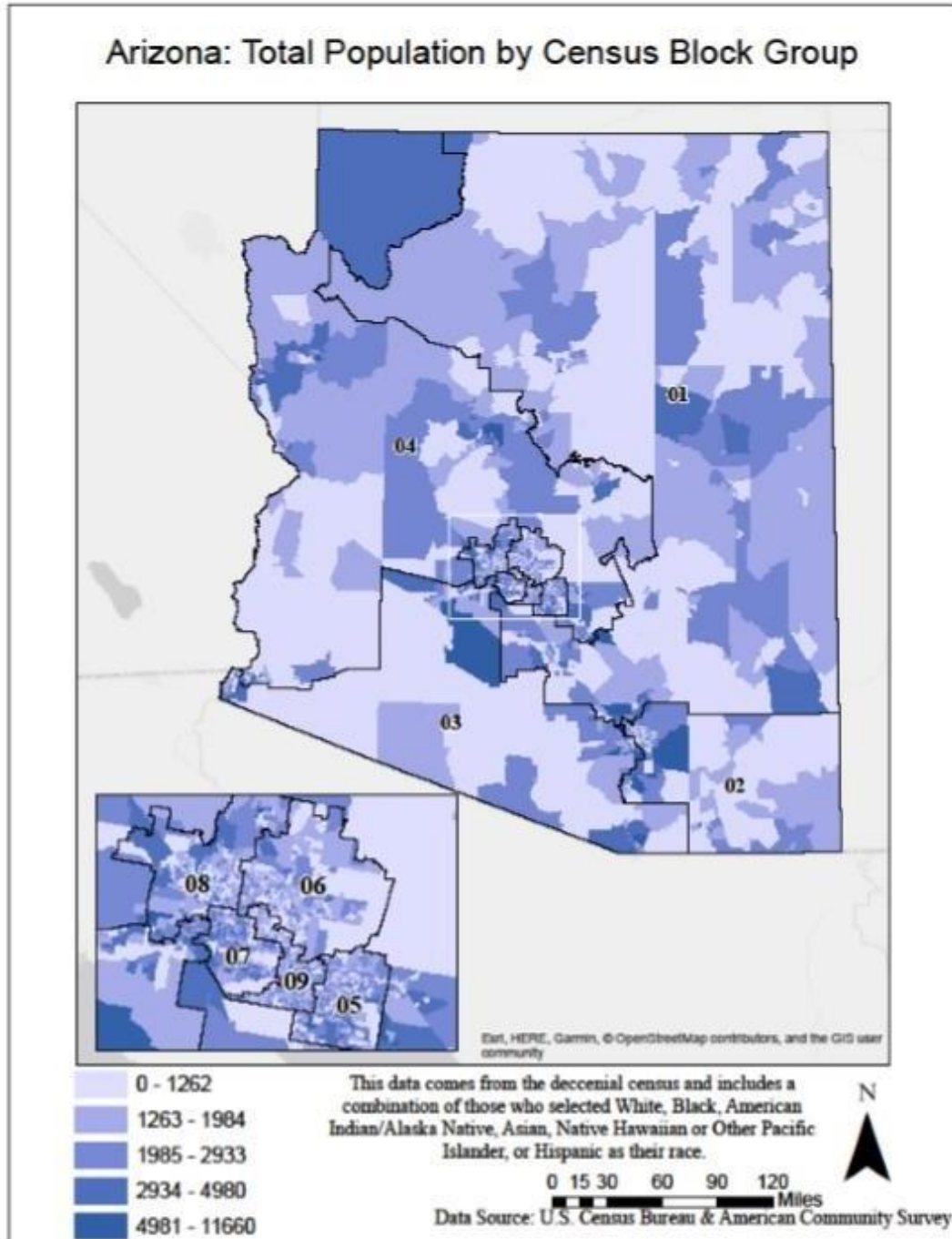
WISCONSIN



Appendixes

APPENDIX D

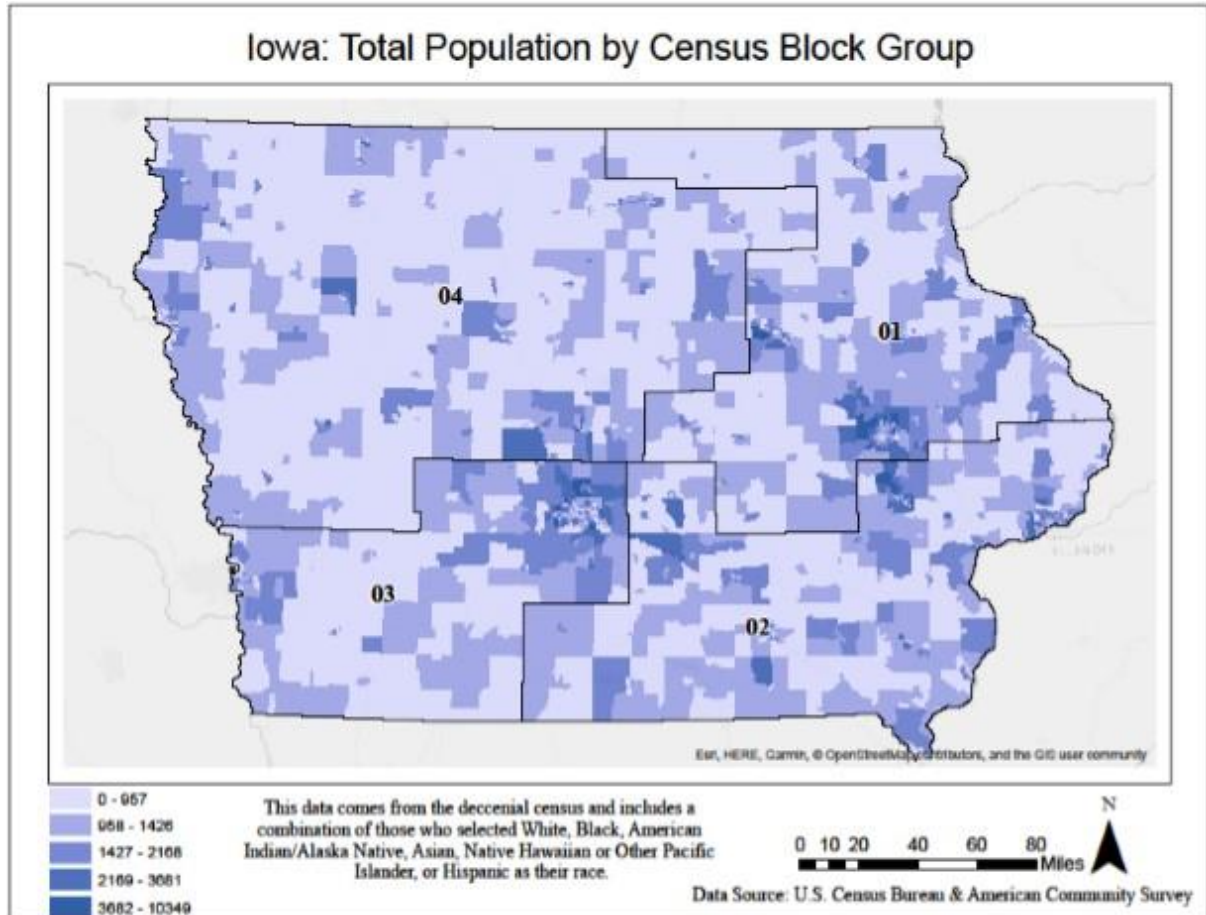
ARIZONA



Appendixes

APPENDIX E

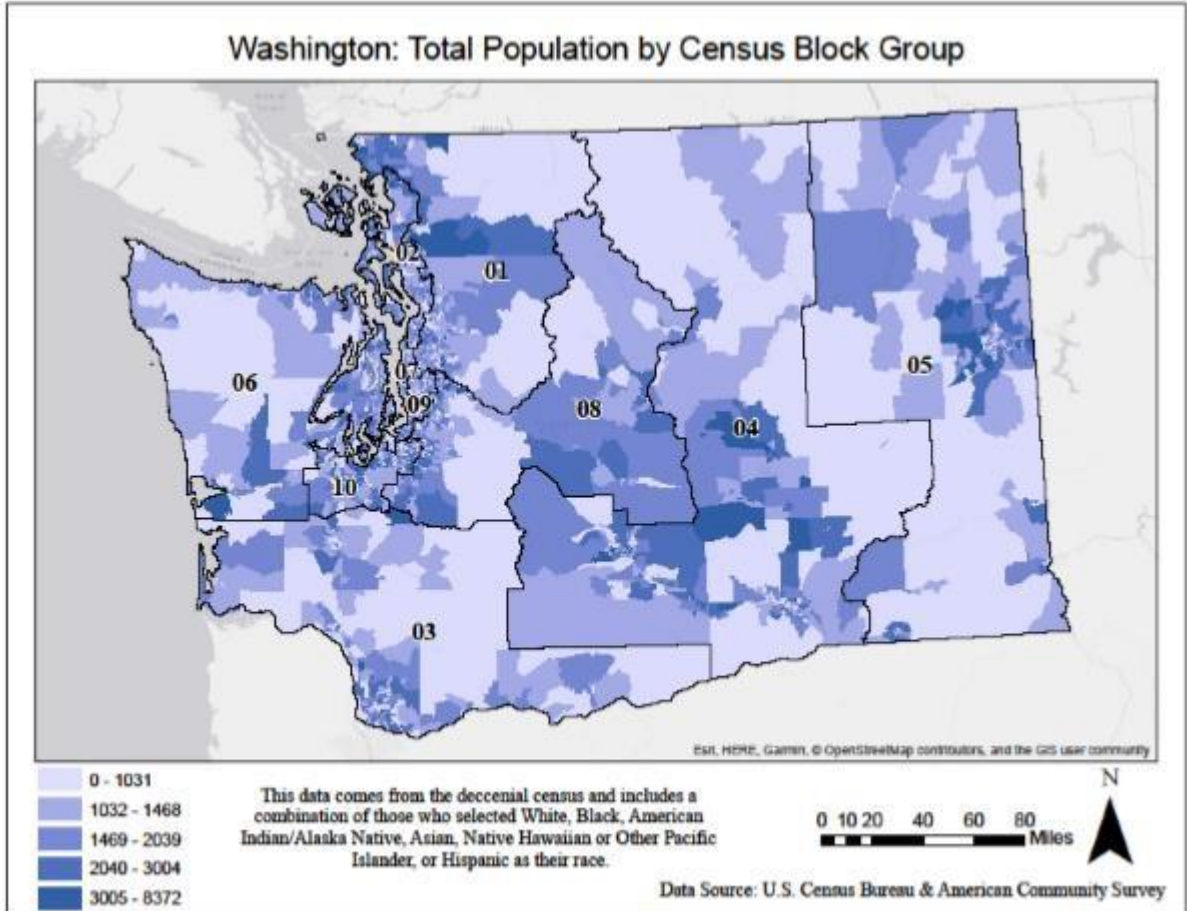
IOWA



Appendixes

APPENDIX F

WASHINGTON



Abstract

Abstract

Every ten years, The United States redraw congressional districts that elect the 435 members of the House of Representatives after the decennial census data has been collected and organized. Politicians around the country have taken to using these map revisions for their party's own political gains and have been doing so since the time even before the United States Constitution was ratified. This process where politicians draw district lines to favor their own party and expand their political power is called gerrymandering. The purpose of this mixed method study is to understand the impact gerrymandering has on democracy in the United States, examining six states specifically at the federal level, the six states examined for this study are Pennsylvania, North Carolina, Wisconsin, Iowa, Arizona, and Washington State. A qualitative analysis of the literature triangulated with a GIS spatial analysis of the six states answers whether or not specific locations in the US can be characterized as less democratic based on their political geography, as well as a discussion of how maps that are not gerrymandered could be drawn.

المخلص:

كل عشر سنوات، تعيد الولايات المتحدة ترسيم دوائر الكونجرس التي تنتخب 435 عضوًا في مجلس النواب بعد جمع بيانات التعداد العشري وتنظيمها. اعتاد السياسيون في جميع أنحاء البلاد على استخدام مراجعات الخرائط هذه لتحقيق مكاسب سياسية لأحزابهم، وكانوا يفعلون ذلك منذ وقت حتى قبل المصادقة على دستور الولايات المتحدة. تسمى هذه العملية التي يرسم فيها السياسيون خطوطًا محلية لصالح حزبهم وتوسيع سلطتهم السياسية بالتلاعب في الدوائر الانتخابية. الغرض من هذه الدراسة المختلطة هو فهم تأثير الغش على الديمقراطية في الولايات المتحدة، وفحص ست ولايات على وجه التحديد على المستوى الفيدرالي، والولايات الست التي تم فحصها من أجل هذه الدراسة هي بنسلفانيا، نورث كارولينا، ويسكنسن، آيوا، أريزونا، وولاية واشنطن. يجب التحليل النوعي للأدبيات المثلثة بتحليل مكاني لنظم المعلومات الجغرافية للولايات الست عما إذا كان يمكن وصف مواقع محددة في الولايات المتحدة بأنها أقل ديمقراطية بناءً على الجغرافيا السياسية، بالإضافة إلى مناقشة كيف يمكن رسم الخرائط التي لم يتم التلاعب بها.

End notes

End notes

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