Gerrymandering

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Introduction

Gerrymandering became a coined phrase during 1812 when the Boston Gazette drew a political cartoon of a new type of monster called the “Gerry-Mander”. It depicted the state of Massachusetts as a fork-tongued monster with the body of the voting district. The nickname was taken from Elbridge Gerry who would eventually become the vice-president once he had signed off on the redistricting of Massachusetts in February, which will be remembered historically as being one of the United States’ underhanded political tricks.

Gerrymandering “is when politicians redraw voting districts to benefit their political party.” (Little, B. 2021). Every 10 years, there is a requirement for states to redraw their legislative and congressional district lines following the census. Since communities’ change, there is a requirement to redistrict maps to ensure that districts are equally populated, comply with laws such as the Voting Rights Act, and are representative of the state's population. In theory, each map is a creation of the “exact portrait, a miniature” (Li, M., Kirschenbaum, J. 2021) of the people. However, since state lawmakers are allowed to create the maps of each district, they are able in turn to choose the voters for their district. This can be accomplished by two methods: Cracking and Packing. Cracking means that state lawmakers can break up a highly concentrated area of a certain party. Since the area is split up, the sway of the party is also split. Packing on the other hand means that the map makers attempt to cram the members of a party into one district, to lessen their influence in other districts. This means that those parties cannot influence as many voters as they would have originally wanted to.

Ethical Concerns

Obviously, there are several ethical concerns with gerrymandering, which began almost immediately once the United States was founded. In 1812, the extreme shapes that were representative of the parties within Massachusetts became the way for political parties to gain power, which eventually became one of the primary issues with gerrymandering. Luckily, in 1813, people had noticed this, and the districts were withdrawn.

However, issues such as distorted shapes in drawing the districts have shown up in other situations, such as gerrymandering in the southern states. Before the Voting Rights Act of 1965, southern states had been composed of mostly white supporting parties as opposed to the black supporting parties. This was done because of the racism that the White population held against the Black population. In addition to gaining their voting rights in 1965, the Supreme Court also ordered voters that are black to be represented equally in their state legislature and the U.S. House of Representatives. The U.S. Supreme Court created a series of court decisions which would be known as the “redistricting revolutions”, which ensured that all voting districts must have roughly equal populations.

Some issues with southern states are that gerrymandering isn’t occurring for racist reasons but that the reasoning behind the mapping of the district is for partisan sake. An example is Georgia, where Black voters are about one third of the voting make up and 88 percent of them voted for Biden in 2020. In this state, Republicans are trying to crack or pack the predominantly Black districts. The argument is that the reasoning behind the gerrymandering of the district lines is due to racist reasons, while the Republicans can state that it is for partisan sake. One other example, which is of the district for Representative Terri Sewell,

a Black Alabama Democrat. More than 60 percent of people who are voting for her are Black, which makes up a third of Alabama's population. However, the bulk of Alabama has been Republican due to population splitting and 'cracking'. In 2018, a group of Black voters filed a federal lawsuit stating that the Alabama map violated the Voting Rights Act and lost. Despite issues faced by both states, a Supreme court decision in 2019, *Rucho v. Common Cause* allowed for partisan gerrymandering to continue. *Rucho* allowed for Republican controlled states to defend racially discriminatory maps on the grounds that they were discriminating against Democratic voters and not Black, Latino or Asian voters.

Ethical Justifications

There does not seem to be any justifiable way that gerrymandering can be seen as a positive for voters. Gerrymandering manages to keep those in power longer, which can be seen as a significant flaw in the voting system. The only question that can be asked is what can be done differently? There is one answer: independent panels. Independent panels can be asked to draw the district maps for each state. Although there will still be issues with minority groups and partisan fairness, independent panels could break up the spell that partisan gerrymandering has maintained up until now.

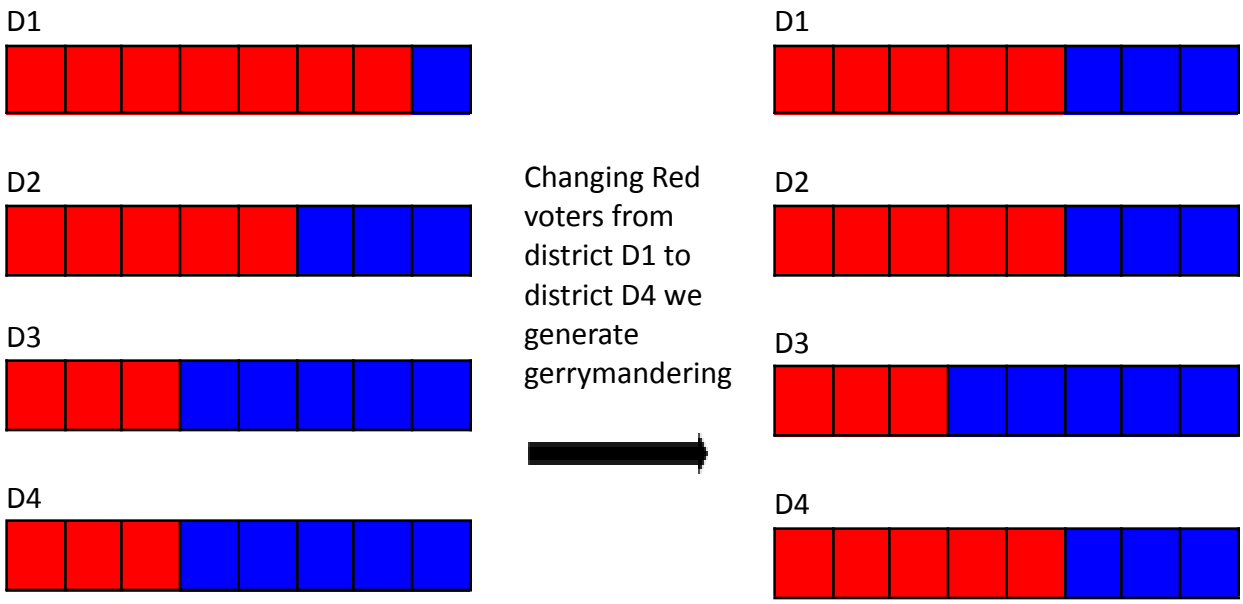
Another viable option is the For the People Act, which has been passed into the House of Representatives. It is a piece of federal democracy reform legislation that can curb the political hold in map drawing. It could improve voter's representation and also the ability to challenge gerrymandering maps in court.

Coding Component

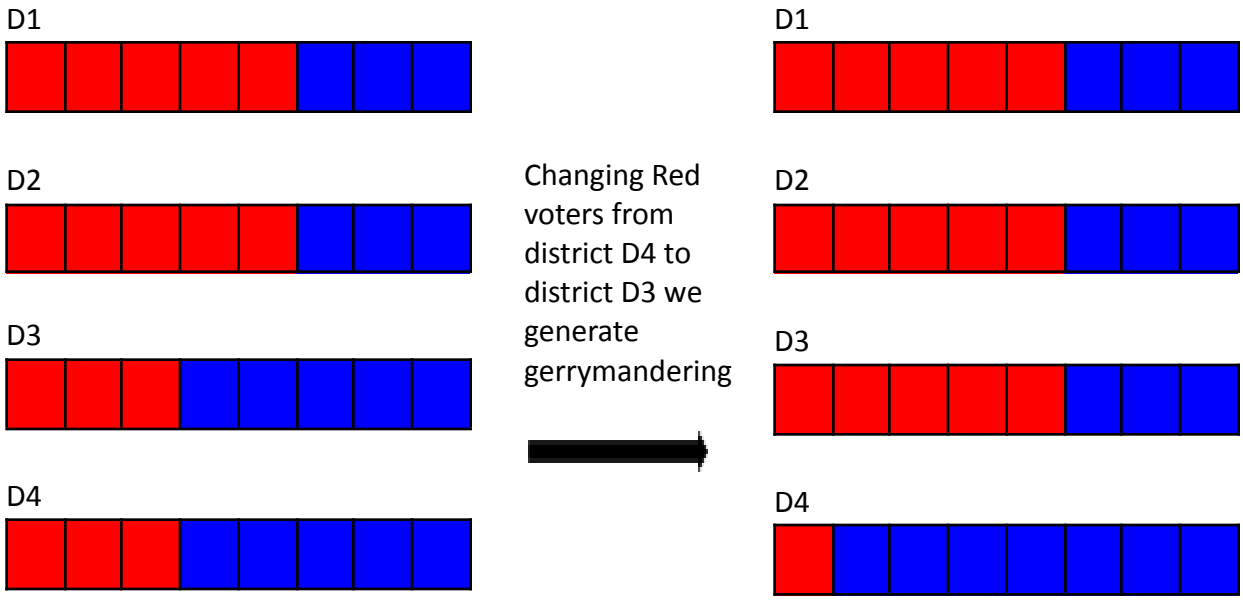
We developed an algorithm to generate gerrymandering. We are considering two parties, Blue and Red, to create a map of voters randomly inside a square. The only condition to follow is that the percentage of Blue and Red voters that should be on the map is based on a parameter defined by the user. Then we create the districts randomly. The condition for a district is that it should be a continuous area.

Next, the gerrymandering algorithm is executed to make one party, Blue or Red, win. For this purpose, we are considering two techniques: cracking and packing. First, we try the cracking technique, and if we are out of cracking combinations, we try the packing technique.

For the cracking technique, assuming that we want to make the Red party win. We need to have at least one district where the Red party is winning with a margin of more than 1 (otherwise, we cannot crack the district). We make two lists: one with the Red winning districts, sorted from the most number of Red voters to the least, and the second with the Red losing district, sorted from the least number of Red voters to the most. Then, we work with the first winning district and the first losing district in that list and try to modify the districts to move one Red voter from the winning district to the losing district and one Blue voter in a reverse way. This move is only possible if the algorithm keeps the districts grouped and if the change does not make the winning district lose. We keep trying this technique for the other winning and losing districts until the Red Party is the winner or if the algorithm finds no more moves.



The packing technique is used if the previous technique does not make the Red party win. This consists of working with the losing district list only and trying to move a voter from the district with the least number of Red voters to another losing district with more Red voters grouped and make the Red party win in this district.



If none of the techniques described work, our algorithm indicates that making the Red team win was impossible. For instance, it will say, “Too many iterations,” raising an exception. Our algorithm does not go over all the possibilities of gerrymandering for two reasons: 1) We want an algorithm that runs fast; 2) We lack time to improve the code.

Creating a map of 36 voters (6 rows * 6 columns) with 55% of Blue voters and 45% of Red voters and considering four districts. Our initial map indicates that there is a tie between Red and Blue.

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R(3) R(4) B(4) R(4) R(4) R(4)

Tie, B:2 R:2

If the user indicates that they want to make the Red party win, we apply our gerrymandering algorithm and make the Red party win.

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R(3) R(4) B(4) R(4) R(4) R(4)

Red wins, B:1 R:3

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