**By Ethan Helfman**

Our current House reapportionment system is horribly outdated. In 1929, a law was enacted that limited the number of Representatives in the House to 435. Why? Because, at the time, there wasn't physically enough space to allocate any more Representatives. With the advent of telecommunications and instant messaging, this spatial limitation shouldn't get in the way of representation for the American people. A Representative should not have to physically be in the House in order to cast a vote on a bill when they can vote from their house or office. The American people are entering a new age of interconnectedness, and with the coming of that new age, we must adapt our government to better represent the people.

**What is apportionment?**

Apportionment is the system in which representatives are doled out to the states. In the current system, enacted under the Reapportionment Act of 1929, the House size is static at 435 representatives. Before this act, the number of representatives increased after every census, which is still unsustainable with America's growing population.

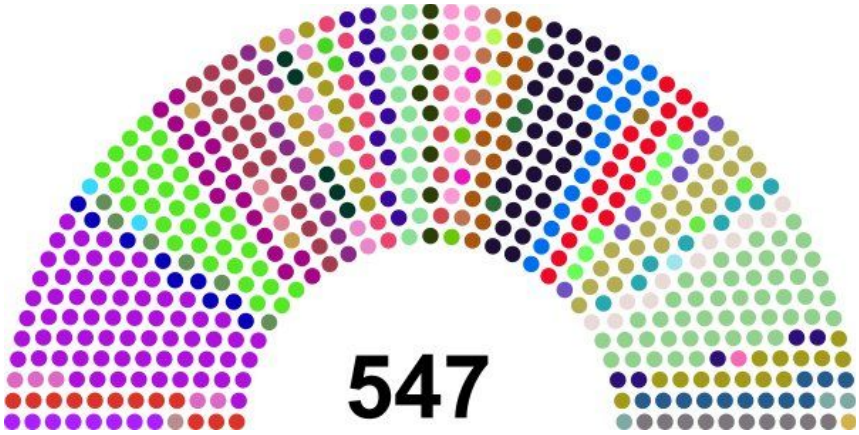
In the status quo, Representatives are given out to the states after every census. If a state loses population, such as Michigan in 2010, or if it fails to grow as fast as other states, it may lose a seat. Inversely, if a state grows at a faster rate, it may gain one or two seats, as Texas did in 2010.

There are two popular alternatives to the current apportionment system - the Wyoming rule, and expanding the size of the House. Replacing this outdated system is needed, but both alternatives have their pros and cons.

**First, the Wyoming method**

The Wyoming method determines that each representative in the House must represent a district with population roughly equal to the district with the smallest population, in this case, Wyoming, with a population of ~586k as of 2015. To determine the number of representatives for a given state, the population of the state is divided by the population of Wyoming.

In this instance, the House would grow larger, approximately to 547 Representatives, but this number would be subject to change after every census, depending on the population growth of Wyoming and if it remains the smallest state.




- Alabama: 8 seats
- Alaska: 1 seat
- Arizona: 12 seats
- Arkansas: 5 seats
- California: 67 seats
- Colorado: 9 seats
- Connecticut: 6 seats
- Delaware: 2 seats
- Florida: 35 seats
- Georgia: 18 seats
- Hawaii: 2 seats
- Idaho: 3 seats
- Illinois: 22 seats
- Indiana: 11 seats
- Iowa: 5 seats
- Kansas: 5 seats
- Kentucky: 8 seats
- Louisiana: 8 seats
- Maine: 2 seats
- Maryland: 10 seats
- Massachusetts: 12 seats
- Michigan: 17 seats
- Minnesota: 9 seats
- Mississippi: 5 seats
- Missouri: 10 seats
- Montana: 2 seats
- Nebraska: 3 seats
- Nevada: 5 seats
- New Hampshire: 2 seats
- New Jersey: 15 seats
- New Mexico: 4 seats
- New York: 34 seats
- North Carolina: 17 seats
- North Dakota: 1 seat
- Ohio: 20 seats
- Oklahoma: 7 seats
- Oregon: 7 seats
- Pennsylvania: 22 seats
- Rhode Island: 2 seats
- South Carolina: 8 seats
- South Dakota: 1 seat
- Tennessee: 11 seats
- Texas: 48 seats
- Utah: 5 seats
- Vermont: 1 seat
- Virginia: 14 seats
- Washington: 12 seats
- West Virginia: 3 seats
- Wisconsin: 10 seats
- Wyoming: 1 seat

The apportionment of representatives also affects the Presidency. Since the president is elected by the Electoral College (EC), not the popular vote, as we can see in 5 presidential elections, including 2000 and 2016, the method of apportionment matters. The number of electoral votes a state gets is determined by the number of senators plus number of representatives.

To show the differences in electoral votes in normal presidential elections versus the electoral votes (EV), I recalculated the results of the 2000 and 2016 elections.

| 2000 EV | 2000 EV Adjusted | 2016 EV | 2016 EV Adjusted |
|---|---|---|---|
| 271 Bush Wins | 324 | 304 Trump Wins | 385 Trump Wins |

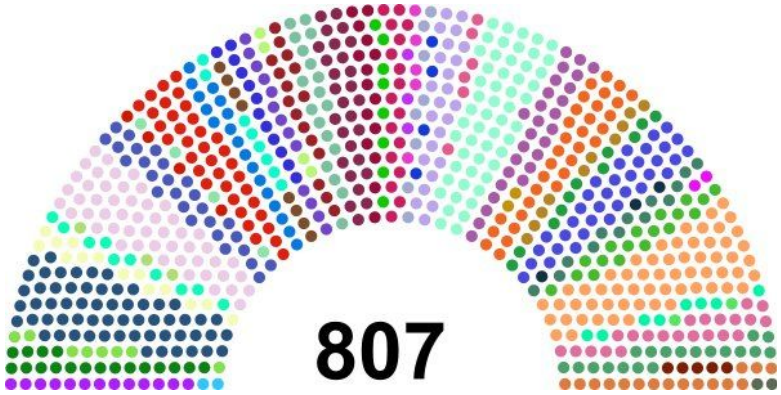
| | | | |
|---|---|---|---|
| 266 | 325 Gore Wins | 227 | 263 |

The distribution of EVs would still allow the election of a person without winning the popular vote, but it would be harder - one would have to lose multiple states while winning the popular vote. However, in the EVs, there would still be an unequal distribution due to the fact that each state automatically gets two votes  plus the number of representatives, so the vote of someone in Wyoming would still matter more than someone in California, but the difference in voting power would be a bit more equal.

**Expanding the House**

According to voxeu.org, the optimal number of representatives for the US is 807 to most accurately represent every person. Calculating the representatives per state, we see the most increases in representatives in New York, Ohio, Illinois, and Texas, which would about keep the current partisan balance of the House.

One benefit of this method is that a legislature can only gerrymander so much. If you increase the number of districts per state, a redistricting commision can only draw so many districts without having to draw swing or districts of other parties. There would still be gerrymandering, but it would be much harder to perfectly gerrymander.




Alabama: 13 seats
Alaska: 2 seats
Arizona: 18 seats
Arkansas: 8 seats
California: 60 seats
Colorado: 14 seats
Connecticut: 10 seats
Delaware: 3 seats
Florida: 52 seats
Georgia: 27 seats
Hawaii: 4 seats
Idaho: 4 seats
Illinois: 36 seats
Indiana: 18 seats
Iowa: 8 seats
Kansas: 8 seats
Kentucky: 12 seats
Louisiana: 13 seats
Maine: 4 seats
Maryland: 16 seats
Massachusetts: 18 seats
Michigan: 28 seats
Minnesota: 15 seats
Mississippi: 8 seats
Missouri: 17 seats
Montana: 3 seats
Nebraska: 5 seats
Nevada: 8 seats
New Hampshire: 4 seats
New Jersey: 24 seats

New Mexico: 6 seats
New York: 54 seats
North Carolina: 27 seats
North Dakota: 2 seats
Ohio: 32 seats
Oklahoma: 10 seats
Oregon: 11 seats
Pennsylvania: 35 seats
Rhode Island: 3 seats
South Carolina: 13 seats
South Dakota: 2 seats
Tennessee: 18 seats
Texas: 60 seats
Utah: 8 seats
Vermont: 2 seats
Virginia: 22 seats
Washington: 19 seats
West Virginia: 5 seats
Wisconsin: 16 seats
Wyoming: 2 seats

This apportionment method results in about one representative for every 400k people. This is a notable improvement from the current 740k people per representative, Still, this doesn't create a huge change in the electoral college. In the 2000 and 2016 elections, both Gore and Clinton would still lose even while winning the popular vote. And, in Clinton's case, the difference in electoral votes actually increases compared to the status quo.

| 2000 EV | 2000 EV Adjusted | 2016 EV | 2016 EV Adjusted |
|---|---|---|---|
| 271 | 472 | 304 | 530 |
| 266 | 438 | 227 | 380 |

**What should happen**

While revamping the apportionment system would lead to better representation in the federal government, it is not a fix-all cure to our problems. While both methods may equalize representation in each state, and ensure more representation in Washington, they have their own problems in the Electoral College, and in gerrymandering. It seems that a total ground-up approach is needed in order to assure fair representation in the House and Electoral College.

**Electoral College**

The purpose of the Electoral College, expressed in the Federalist Papers No. 68, is that

*"The process of election affords a moral certainty, that the office of President will never fall to the lot of any man who is not in an eminent degree endowed with the requisite qualifications."*

In other words, the electoral college was meant to protect against inept and unqualified possible presidents. It is not, as some claim, as a check on the power of urban areas, or a way of giving smaller states more voting power.

The founding fathers did not foresee the possibility of losing the EC while winning the popular vote, as there were only 13 states, which decreased the chance of a EV\Popular vote disparity. The first election in which the winner lost the popular vote but won the EC was with Rutherford B. Hayes in 1876, 40 years after the last founding father died.

There are multiple problems with the Electoral College. First, the vote of someone living in Wyoming is worth roughly four times as much as someone living in California. This disproportion in voting power gives more power to smaller states in selecting the president. Second, the EC makes candidates focus on swing states in order to win. Most states' votes are predetermined, with solid red states such as Alabama and solid blue states such as California, so candidates don't have to campaign there to win. In the middle are the remaining swing states, such as Florida, Iowa, Ohio, Nevada, and the Rust Belt. There, candidates put most of their time and money into winning those states, pandering to them while ignoring the population of other states. This leads to the third point, voter disenfranchisement. If you're a Republican in California or a Democrat in Texas, your vote won't affect the outcome of the state. This leads to lower voter turnout in general, and less active participation in democracy. The only time your vote matters is if you live in a swing state, or when your state has started to trend in the opposite direction.

There are two solutions proposed to fix presidential elections, abolishing the electoral college, and splitting state votes.

**Abolishing the Electoral College**

This, in my opinion, is the best option. Allowing for the direct election of the President would create a more fair democracy. It wouldn't matter if you were a Democrat in a red state or a Republican in a blue state, because your vote would be worth the same. This would increase voter turnout, since a person's vote could actually make a difference, abolish swing states, force candidates to compete everywhere, and stop EV\popular vote(PV) disparities.

This could be done in two ways. The first way would be to introduce a constitutional amendment that abolishes the Electoral College and repeal the 12th amendment. This would be the harder route, as it requires either two-thirds of the House and Senate to vote on it, and three-fourths of the states to ratify it. And, if the Senate refuses to vote, it would require calling for a constitutional convention by three-fourths of the states, something that has never been done before. A slight majority of Americans do approve of this method, 19% of Republicans, 81% of Democrats, and breaking 49%-48% for abolishment overall.

The other option is the National Popular Vote Interstate Compact, and it is far easier to enact. It is a agreement by ten states and DC to have their state electors vote for the winner of the popular vote, regardless of if a candidate won in their state. Currently, states adding up to 165 Electoral Votes (EV) have signed the compact, so only 106 more EV are needed. The Compact goes into effect when the requisite 271 EV have been reached. At the moment, states adding up to 97 more EVs are considering the law in their current legislative sessions.

**Splitting State Votes**

The other proposal is to split a state's electoral votes depending on the results in each of its congressional districts, and award an additional two votes to whoever wins the state as a whole. Currently, two states have implemented this method, Nebraska and Maine. This system gives candidates a percentage of the electoral vote closer to their actual popular vote.

The main problem inherent in this system is gerrymandering, as a majority of districts in a state can be red, while the state as a whole can be less so. An example of this is North Carolina in 2016, where Trump got 49% of the vote, but Republicans won 77% of the congressional districts for the House. Another larger example is that Mitt Romney won 52% of districts in 2012 even after he lost the election by 4%.

**The House**

The purpose of the House is to provide proportional representation to each state depending on population. Yet, the House does not truly represent each state accurately. Due to gerrymandering in places such as North Carolina and Illinois, one party wins fewer seats than they ought to by looking at the state voting totals.

Gerrymandering is the process of drawing congressional districts in order to give one party disproportionate power. And this is not a new thing - the term "gerrymandering" was coined in 1812! Still, nothing has been done about it because gerrymandering often favors the party in power, leaving no incentive to redraw the districts.

There are a variety of options for solving gerrymandering, some of which already implemented in California and Iowa. Then, there are the more far-fetched, but better options of revamping the voting system itself.

**Computer & Independent Commission Districts**

Under this method, district boundaries would be drawn by a commission composed of either people from both parties or people who do not belong to any party. Idaho, Washington, Iowa, California, and Arizona have all created these commissions. These allow for more competitive and fair districts. In many of these districts, Democrats and Republicans are nearly balanced, so that a Representative must care about his constituents to keep his seat. And, these districts are fairer and less partisan in general. For example, in Iowa (a republican-leaning swing state), the districts are D+1, R+1, R+1, and R+11, which means that 75% of their districts are competitive.

There is a lesser barrier to these voting commissions, as the Supreme Court ruled that they were constitutional in 2015. As well, in most states, they can be enacted with a simple ballot measure, shown by the California measure in 2008.

**Proportional Voting**

Under this system, each state votes for a party, and a party would get a share of Representatives proportional to the percentage of votes they received. For example, in the 2016 elections to the House in Texas, Republicans received 57.2% of the vote, followed by Democrats with 37%, and Libertarians with 4.2%. However, Republicans received 69% of seats (25), and Democrats captured the other 31% (11).

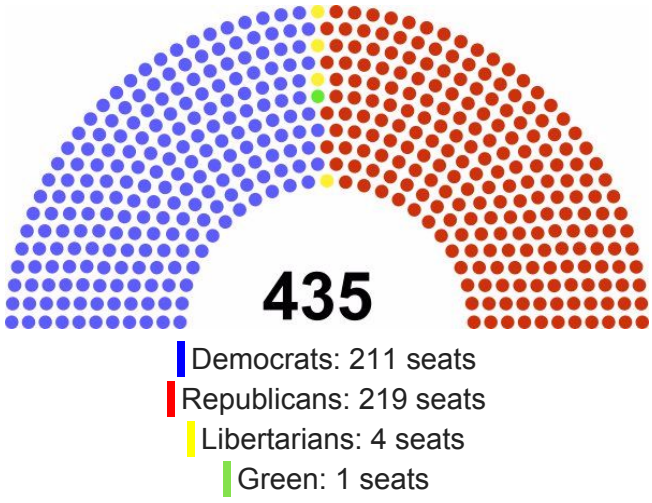
The benefits of proportional representation is increased representation of smaller parties, increased significance of one vote, and ending gerrymandering. Smaller parties would only have to achieve 0.23% of the national vote, or even less in state votes to achieve representation in the House. And, because of that small percentage needed to go into the House, a person's vote would matter more.

Under a proportional voting system, Republicans would receive 21 of the 36 Texas seats in the US House of Representatives, Democrats 13, and Libertarians 2. This system allows for seats for smaller parties and eliminates any possibility of gerrymandering.

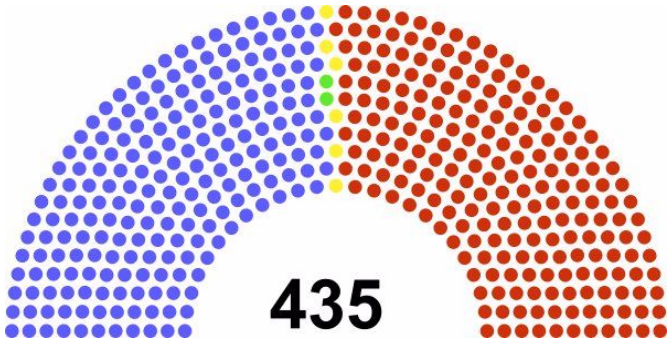
There are three main types of proportional representation, and two ways to organize the votes for proportional representation. The first two types of proportional representation are open list, where voters select the candidates from the parties they want elected, and closed list, where the parties decide which seats get candidates in Congress.

One way to organize votes is have each state vote for their Representatives per state, and the other way is to pool all votes nationally, and elect Representatives based on those percentages.

**State**




**National**




Democrats: 211 seats
Republicans: 216 seats
Libertarians: 6 seats
Green: 2 seats

While smaller parties gain seats in both; however, the smaller parties would gain seats in later Congresses, as countries with proportional representation tend to have many parties. For example, Israel has 10 parties with only 120 seats in their parliament. An example with a larger country is Brazil, with 26 parties and 513 seats in their parliament. Under a system like this, if no single party gains a majority of seats, they can ally with another party or parties to gain enough seats to have a working majority. A system like this allows for a diversity of opinions in government, and larger representation for minority issues.

Another proportional voting system is the Single Transferable Vote system. In this system, constituents rank as many candidates as they want. To get elected, the quota would be number of votes cast divided by one more than the number of available seats plus one . So, in Texas, a candidate would have to win (8,528,526/(36 + 1)) + 1 = 230501 votes, or ~2.7%.

To get elected, a candidate would have to reach the 230501 vote quota of first choice votes. Every vote over the quota would be treated as if the #2 choice became the #1 choice, and distributed to candidates according to the percentages of second choices on the ballots for the first choice. If no one hits the quota after that, the person with the least #1 votes is eliminated, and his votes are distributed according to the #2 votes on each ballot. This process would be repeated until 36 representatives are elected.

| Candidate | Preference |
|---|---|
| John Woah | 2 |
| John J.J. Schmitt | |

| | |
|---|---|
| Mary Jane | 1 |
| P. Parker | 3 |

In the STV system, a ballot would look similar to this. If 3 candidates are elected, each one would have to receive 25%+1 percent of the vote to be elected. For the example below, we assume 20 total votes.

Quota = (20/3+1) + 1 = 6 votes to win

In the first round, John Woah received the quota of votes, so he was immediately elected. Mary Jane received the quote too, and the one vote she received over the quota went to the voters' most common second choice. John J.J. Schmitt and P. Parker did not hit the quota, so they went into the second round of voting.

In the second round of voting, John J,J. Schmitt got the spillover vote from Mary Jane, determined by (votes for x preference/total votes for Mary Jane) * excess votes , and hit the quota to be elected. P. Parker did not hit the quota of 6, and therefore was not elected.

| Candidate | John Woah | John J.J. Schmitt | Mary Jane | P. Parker |
|---|---|---|---|---|
| Round 1 | \|\|\|\|\|\| | \|\|\|\|\| | \|\|\|\|\|\|\| | \|\| |
| Round 2 | Elected | \|\|\|\|\|\| | Elected | \|\| |
| Round 3 | Elected | Elected | Elected | Lost Election |

Since there are no ballots that reflect this system in the US, I can't create a theoretical map of representatives. Benefits of this method are decreased significance of political parties

Implementing these voting systems is relatively easy, all it takes is an act of Congress or a state legislature. In the current Congress, Donald Beyer (VA-8) already introduced a bill (H.R. 3057: Fair Representation Act). The reason a bill like this has never been passed is solely due to lack of political will. Politicians in red states could potentially lose their seats to a blue challenger, politicians in blue states could lose to a red challenger, and both could lose to a third-party challenger.

**Conclusion**

America needed electoral reform yesterday, but implementing it today would be a good start. Bills to solve the issues I have described are currently in Congress or state legislatures (a complete list is at the bottom).

Further, we must lobby and vote for people who want to implement these electoral reforms, Democrat or Republican. To have a fair, functional, and representative democracy, each and every one of us must work for it.

**Bills - incomplete**

| Bill | Government Body | Purpose |
|---|---|---|
| H.R. 3057 | US House | Redistricting, Proportional Representation |
| Alaska H.B. 175 | Alaska House | EC - interstate compact |
| H.J.Res 19 | US House | Abolish the EC |
| Georgia HB 351 | Georgia House | EC - interstate compact |
| Kansas HB 2024 | Kansas House | EC - interstate compact |
| Minnesota HF 042 | Minnesota House | EC - interstate compact |
| North Carolina SB 440 | NC House | EC - interstate compact |
| Ohio HB 25 | Ohio House | EC- interstate compact |
| Pennsylvania HB 189 | Pennsylvania House | EC - interstate compact |
| South Carolina H 3173 | SC House | EC - interstate compact |
| Pennsylvania HB ?? | Pennsylvania House | Anti - gerrymandering bill |

The calculations I used to create this article can be found here -> https://docs.google.com/spreadsheets/d/1yPqm9t_URw2KRMtlyykmsp6yykZVX752u5N6ugA5XFI/edit?usp=sharing