# The Worst Partisan Gerrymanders in U.S. State Legislatures

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## Executive Summary

• The worst U.S. state legislative partisan gerrymanders are the following: 1. Virginia; 2. Wisconsin; 3. Pennsylvania; 4. Michigan; 5. North Carolina; 6. Ohio; 7. Nevada; 8 (tie). Arkansas; 8 (tie) Oklahoma; 9. Kentucky; 10. Tennessee.

• These states were classified as the worst U.S state legislative partisan gerrymanders based on analyses of the statewide popular vote in 2017 or 2018 state legislative elections and the partisan composition of the state legislative chambers in 2019.

• Criteria used to establish the worst gerrymandered states required that the state legislative lines were drawn by a state legislature or by a partisan-leaning politician committee. The other criteria assessed if the states had (1) minority rule in their state legislatures; (2) extremely disproportional outcomes where the popular vote was less than 59.9% total for one party yet the party in power yielded more than 15 percentage points more in legislative seats following the 2018 elections; or (3) both minority rule and extremely disproportional popular vote-seat outcomes.

• 59 million Americans live under minority rule in their U.S. state legislatures following the 2018 elections. Minority rule is defined as the party with the minority of votes in the most recent election nevertheless controlling the majority of seats in the state legislature subsequent to that election. Six U.S. state legislatures were drawn by legislatures or partisan-leaning committees that resulted in minority rule following the 2018 elections. These states are Michigan, North Carolina, Ohio, Pennsylvania, Virginia, and Wisconsin.

• Many states have disproportional gaps between the percentage of the statewide popular vote received in state legislative elections and the percentage of seats the party won. There are six states with extremely large differences of 15 percentage points or more between the statewide popular vote won and the percentage of seats won in the legislature. These states are Arkansas, Kentucky, Nevada, Oklahoma, Tennessee, and Wisconsin. 27 million Americans live in these states.

• Partisan redistricting is not limited to these states identified in the top 10 worst partisan gerrymanders. These are simply the most egregious examples, circa 2019, drawn by legislatures or partisan-leaning committees earlier in the decade.

• These data and analyses are new and have never been presented. Most work classifying partisan redistricting has examined congressional districts. Data for all U.S. state legislatures for the percentage of statewide popular vote for each party and the percentage of seats for each party are presented in this report's appendix.

Which U.S. states have the worst state legislative partisan gerrymanders? Partisan gerrymandering is defined as a political party in a legislature or partisan institution redrawing legislative district lines in order to favor their own party in the subsequent election rounds. We examine all U.S. state legislatures that held elections in 2017 or 2018 to determine the top 10 worst state legislative gerrymanders in the country. This ranking of the worst gerrymanders is determined by examining state legislatures with minority rule, which means the party with the majority of seats in the legislature received a minority of the statewide vote in the previous election; and by examining those states with extreme levels of disproportionality between the percentage of legislative seats and the statewide vote in 2018.

In most U.S. states, state legislators redraw their state legislative district lines. Typically, this process occurs following the U.S. census every ten years. Self-interested legislators who seek reelection have long attempted to draw their own districts to protect their personal reelection chances and to improve the electoral odds of their political party.[1] In 2011-12, when most states engaged in redistricting, a number of legislatures or legislative committees were controlled by one political party. This presented the opportunity for some of the most extreme partisan gerrymanders that sought to protect the political parties that controlled the districting process.

In 2019, the U.S. Supreme Court ruled that states – and not the federal courts – would be the venue for remedies to partisan gerrymandering. Given this, we collect these original data on the 2017 and 2018 state legislative elections and compare them to the seats in these state legislatures. These classifications and identifications of the worst partisan gerrymanders, as well as these new original data on partisan composition of the statewide popular vote and legislative seat shares, are likely to be of interest to scholars, lawyers, and practitioners.[2]

<u>The worst states for legislative partisan gerrymanders after the 2018 elections</u>

The following states are the top 10 worst legislative partisan gerrymanders as of 2019.  To qualify for the list of worst partisan gerrymanders, the state legislative redistricting must have been done by a legislature or partisan politician committee and had one or both of the following: (1) one or both state legislative chambers had minority rule following the 2018 elections; and/or (2) the percentage of the party's seats was extremely disproportional to the statewide partisan popular vote.[3]

1. Virginia
2. Wisconsin
3. Pennsylvania
4. Michigan
5. North Carolina
6. Ohio
7. Nevada
8 (tie). Arkansas
8 (tie). Oklahoma
9. Kentucky
10. Tennessee

<u>Partisan Gerrymandering and Minority Rule</u>

In a surprisingly large number of U.S. states, minority rule occurs.  Minority rule is defined as the party with the minority of votes in the most recent election nevertheless controlling the majority of seats in the state legislature subsequent to that election.  In minority rule states, the state legislative popular vote does not match the partisan control of the state legislative chamber.

*Minority rule in state legislative lower chambers.* Following the 2018 elections, five state houses with districts drawn by legislators or partisan-leaning committees reveal some of the most egregious gerrymanders in the United States because they allowed governance via minority rule: Michigan, North Carolina, Pennsylvania, Virginia, and Wisconsin (see table 1).[4]  In four of these state houses elected in 2018, a minority of voters chose the party that nevertheless won the majority of the legislative seats.  A fifth state, Virginia holds their state legislative elections in odd-

numbered years, and elected its state house in 2017.  Virginia also had a political party control its state house that was chosen by a minority of voters.

The governing party of these partisan gerrymandered legislatures has significant control over legislative rules and public policy outcomes, yet received less than 50% of the vote from those citizens who chose to turn out in 2018.  In all five of these states, Democratic candidates for state house received a majority of the statewide popular vote.[5]  Because of the way that the district lines were drawn in these states, the Republican party won more seats than Democrats.  There were no state houses where the Republican party received a majority of the vote in 2018, but where the Democratic party won a majority of the legislative seats.

Table 1: Minority Rule in U.S. State Legislative Lower Chambers

| State | Statewide popular vote for governing party in 2018 (%) | Party's seats in the state house after 2018 (%) |
|---|---|---|
| Virginia | 44.5%* | 51.0% |
| Wisconsin | 44.7% | 64.6% |
| Pennsylvania | 45.6% | 54.2% |
| Michigan | 47.4% | 52.7% |
| North Carolina | 48.2% | 54.2% |

*Virginia holds odd-year state legislative elections, and the election results in the second column are from 2017.

As shown in Table 1, the differences between the vote of the majority and the legislative seat outcomes are striking.  Of all states in the country, Virginia is the state with the lowest popular vote share for the party (44.5%) that won a majority of the seats (51%).  Just after Virginia is Wisconsin, which had one of the most extreme partisan gerrymanders for its state house.  In Wisconsin, only 44.7% of the state's voters chose a Republican in 2018 state house elections, yet the Republican party won a whopping 64.6% of the state house seats.[6]  Both the Virginia and Wisconsin plans were drawn earlier by Republican-controlled state legislatures.[7]  A federal court in January 2019 put in place a new map for the 2019 Virginia state legislative elections.[8]

Similarly, in Pennsylvania, 45.6% of the state's voters chose a Republican candidate in 2018, yet 54.2% of the legislative seats in the state house were held by Republicans following the 2018 election. This map was drawn by a legislative committee composed of three Republicans and two Democrats.[9]

Two other states' legislative-drawn maps resulted in minority rule with legislators controlling the state house even when a majority of voters chose the other party in the 2018 elections. In Michigan, 47.4% of its states' voters picked Republican state house candidates in 2018, yet 52.7% of the state house seats remained in Republican control following the election. In North Carolina, only 48.2% of the voters chose the governing party, though this party ended up with 54.2% of the legislative seats, enough to control the outcome.

The Michigan state legislative maps were drawn by the Republican-controlled Michigan state legislature.[10] In Michigan, in 2018, voters approved a ballot proposition, backed by a number of redistricting reform advocates such as Governor Arnold Schwarzenegger (R-CA) and "Voters Not Politicians" spokesperson Katie Fahey, that would redraw legislative lines via independent commission. Thus, the Michigan legislature will no longer be able to redraw its own district lines for the 2022 cycle. North Carolina's legislative districts, whether drawn by Democratic legislators or Republican legislators, have regularly been subject to litigation.[11] In the most recent 2012 redistricting cycle, North Carolina's legislative lines were drawn by a Republican-controlled state legislature.[12] North Carolina's state legislative districts remain in litigation as of 2019 in the case *Common Cause v Lewis.*

*Minority rule in state legislative upper chambers.* We also examined the upper chambers of each state legislature for the possibility of minority rule following the 2018 elections. While not all state upper chambers were up for election in 2018, 42 states held elections for their state senates. In addition, most state senates have staggered terms with approximately half of their state

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senate membership being elected in 2018 and the other half being elected in the previous election period. In those cases where the entire state senate was elected in 2018, we compared the overall popular vote for the state senate by party in the entire state to the percentage of seats in the entire state senate. In those cases where only part of the state senate was elected in 2018, due to staggered terms, we compared the overall popular vote in all the state senate districts up for election to the percentage of seats won by each party in just those districts up for election in 2018.

Four states have redistricting maps drawn by legislatures or partisan-leaning committees that produced minority rule in their state senate elections in 2018: Michigan, North Carolina, Ohio, and Pennsylvania. In the case of the Ohio state senate, 17 of its 33 state senate districts were on the ballot. Across the state in these 17 districts, 47.2% of the voters chose the party that won 58.8% of the seats. When the state senate redistricting occurred prior to 2012, a committee composed of four Republicans and one Democrat drew the state legislative lines.[13] Ohio recently changed the rules of its state legislative redistricting, which includes a provision that the "statewide proportion of districts [with a party]...must correspond closely to the statewide preferences of the voters of Ohio."[14] These new rules will be in effect for the 2022 redistricting cycle. But based on the map used for the 2018 elections, Ohio has one of the worst state legislative partisan gerrymanders in the country given the presence of minority rule.

Table 2: Minority Rule in U.S. State Legislative Upper Chambers

| State | Statewide popular vote for governing party in 2018 (%) | Party's seats won in the state senate after 2018 (%) |
|---|---|---|
| Pennsylvania | 45.5% | 52.0% |
| Ohio | 47.2% | 58.8% |
| Michigan | 47.8% | 57.9% |
| North Carolina | 49.0% | 58.0% |

In North Carolina and Michigan, the state senate elections revealed minority rule. As shown in Table 2, a minority of these states' voters chose Republican candidates for the state senate in 2018, but Republican state senate candidates won over 50 percent of the elections. In Pennsylvania, similarly, 45.5% of the vote went to the party that won 52.0% of the seats.

Three of these states have minority rule for both their state houses and their state senates based on the 2018 elections: Michigan, North Carolina, and Pennsylvania. Republican-held legislatures in previous sessions drew the maps in Michigan and North Carolina; and a Republican-majority legislative committee that included party leaders drew the Pennsylvania map used in 2018. These legislators had incentives to redraw the lines to protect their own electoral interests and their party's electoral interests.

### Partisan Gerrymandering and What Minority Rule Means for Americans

When we consider minority rule in state house and state senate plans together, 6 states have minority rule in one or both of their legislative chambers thanks to partisan calculations made by legislative mapmakers: Michigan, North Carolina, Ohio, Pennsylvania, Virginia, and Wisconsin. The total population of these states is 59.2 million people.[15] This means that nearly 60 million Americans live under minority rule in their U.S. state legislatures following the 2018 elections.

These legislators make public policies. The party that controls the most seats in state legislatures is critical for determining outcomes.[16] When a party controls one or both chambers, policy outcomes are much more likely to be in line with the party's preferences and move in the ideological direction favored by the majority party.[17] In these instances of minority rule, partisan gerrymandering allows for legislatures to make decisions that may not reflect the public opinion and partisan leanings of their states as a whole.

<u>Gerrymanders in States with Disproportional Outcomes between Seats and Votes</u>

Not all partisan gerrymanders involve minority rule. In several states, partisan legislators or other partisan agents enacted plans that allow for many more legislative seats for the party than reflected in the statewide popular vote. The relationship between statewide vote proportions and legislative seat proportions has been studied extensively.[18] While the relationship between votes and seats is not linear, we should not expect massively disproportional statistical relationships between seats and votes in states in which partisan competition is high. When a party wins just over 50% of the statewide vote, scholarship suggests that the party will often win a similar or slightly higher proportion of legislative seats in a redistricting plan.[19] Given this, a simple measure of an extreme partisan gerrymander would be competitive statewide elections (where no party gets more than 59.9% of the statewide vote), yet where the winning party receives a dramatically higher proportion of the seats in the state legislative chamber.

To determine the worst partisan gerrymanders based on disproportionality between statewide partisan votes and legislative partisan seat shares, we identify the following: (1) a state in which the majority party received 59.9% of the vote or less, thus suggesting the state has some modicum of partisan competition; (2) a state in which the majority legislative party received 15 percentage points or more seats relative to the statewide popular vote for the party; and (3) a legislature or a partisan-leaning politician committee conducted the redistricting earlier in the decade.[20]

The states that meet these criteria for extreme disproportionality in their state legislative gerrymanders based on the 2018 elections in either the state house or state senate are as follows: Arkansas, Kentucky, Nevada, Oklahoma, Tennessee, and Wisconsin. In all of these states, the statewide partisan competition was fairly high, yet the winning party received at least 15 percentage points more seats than the popular vote for the same party.

Table 3: Worst state house legislative gerrymanders, disproportional seats relative to votes

| | Statewide popular vote for governing party in 2018 (%) | Party's seats in the state house after 2018 (%) | %-point difference between party's state house seats and state house popular vote |
|---|---|---|---|
| Nevada | 51.3% | 69.0% | +17.7 D |
| Wisconsin | 44.7% | 64.6% | +19.9 R |
| Arkansas | 58.5% | 76.0% | +17.5 R |
| Oklahoma | 58.9% | 76.2% | +17.3 R |

In the state house elections in 2018, as shown in Table 3, Nevada had disproportionate partisan outcomes. The Democrats received 51.3% of the statewide vote, but won 69.0% of the legislative seats. This is a +17.7 Democratic gerrymander. In the Wisconsin state house, already highlighted earlier as a minority rule state, the Republicans received 19.9 percentage points more legislative seats than they did votes. In Nevada, when these districts were drawn by the state legislature earlier in the decade, the Democratic party controlled the legislature. In Wisconsin, the Republican party controlled the legislature when these district lines were drawn.

Two other states shown in Table 3 are Arkansas and Oklahoma. Arkansas has one of the most extreme partisan gerrymanders, as 58.5% of its voters chose Republican candidates for the state house, but Republicans won 76.0% of the seats. This is a +17.5 point Republican disproportionality difference. The Arkansas map was drawn by a three-member politician commission prior to the 2012 cycle.[21] Similar to Arkansas, Oklahoma has an extremely disproportionate partisan gerrymander. Republicans won 58.9 percent of the statewide popular vote, yet received 76.2% of the legislative seats in the Oklahoma state house (+17.3 point difference). The Oklahoma map was drawn by a Republican-controlled state legislature.[22]

Table 4 shows the state senate maps drawn by legislatures in partisan-competitive states, defined as the majority party receiving less than 59.9% of the popular vote, where the party

received 15 percentage points more of the seats than statewide votes. Two states fit these criteria for extreme partisan gerrymanders in state senates: Kentucky and Tennessee.  In Kentucky, only 57.9% of its state's voters chose the Republican candidates for state senate in 2018, but Republicans won 89.5% of the state senate seats up for election in 2018.  This is a very large gap of +31.6 percentage points in favor of the majority party.  In Tennessee, 58.9% of the voters chose the Republican state senate candidates in 2018, but the same party won 77.8% of the senate seats elected in 2018 (a +18.9 Republican difference advantage between votes and seats won).  State legislators themselves are responsible for redistricting state legislative lines in both Kentucky and Tennessee.[23]  Tennessee's map was drawn by a legislature controlled by the Republican party, allowing for the opportunity for a partisan gerrymander.

Table 4: Worst state senate legislative gerrymanders, disproportional seats relative to votes

| | Statewide popular vote for governing party in 2018 (%) | Party's seats in the state senate after 2018 (%) | %-point difference between party's state senate seats and state house popular vote |
|---|---|---|---|
| Kentucky | 57.9% | 89.5% | +31.6 R |
| Tennessee | 58.9% | 77.8% | +18.9 R |

The impact of extreme disproportionality in these six states (Arkansas, Kentucky, Nevada, Oklahoma, Tennessee, and Wisconsin) is meaningful.  About 27 million Americans live in these six states with extreme partisan gerrymandering as measured by very large disproportionality between the state popular vote for parties and the seats won by the majority party.

## What Policy Actions Can Be Taken?

This policy report has identified the worst U.S. state legislative gerrymanders in the 2018 elections. In June 2019, in *Rucho v. Common Cause* and *Lamone v. Benisek*, the U.S. Supreme Court ruled that litigation over partisan gerrymandering by the courts was to be left to the states.

Particularly in the case of state legislative redistricting, the action will now be in the states. There are a number of avenues lawyers and practitioners are pursuing regarding the reduction of partisan gerrymandering at the state level. The first of these is via state initiatives and referenda. In 2018, four states passed ballot propositions in the November elections (Colorado, Michigan, Missouri, and Utah) establishing redistricting commissions and creating nonpartisan standards of evaluation of redistricting plans.[24] These follow states like California, which passed its independent redistricting commission via ballot proposition and with the support of Governor Arnold Schwarzenegger in 2008 for state legislative districts and in 2010 for congressional districts.[25] Other states with ballot proposition opportunities are likely to pursue the citizen-initiative route by passing new policies similar to these earlier state reforms.

In other states, there are not ballot propositions for citizens at the state level. In these states, legislators themselves would have to vote to establish independent redistricting commissions or other reforms that would require more nonpartisan criteria in the creation of district lines. As legislators are self-interested reelection seekers, reformers will face more of an uphill battle persuading legislators to change the rules that benefit their personal reelections or their own parties. In New Hampshire, legislators in both parties have recently voted to create a commission in that state.[26] More research is needed to understand why and when legislators may be willing, if at all, to cede their authority to a commission or put additional restrictions on their mapmaking.

Political reformers interested in curbing partisan redistricting may also want to think of new and creative legal ideas that may be more palatable to legislators. While it is difficult to persuade legislators to change the laws to remove their direct influence over the redistricting process, a new policy idea would be to propose that minority rule following state legislative redistricting would trigger a new redistricting cycle. While such a law would not address disproportional majority

gerrymandering, such proposed legislation would set a minimum bar that legislatures do not draw maps that will yield a majority of seats being elected from a minority of voters.

While the federal courts have stepped away from the "political thicket" in *Rucho* and *Lamone*, litigation at the state level is ongoing against many districts and is likely to continue.[27] Many state laws in those states where a partisan-leaning legislature or a partisan-leaning politician commission is charged with redistricting still have other restrictions. Litigation within these states against the most extreme partisan gerrymanders may occur if violations of compactness, unnecessary splitting of municipal boundaries and communities of interest, and other restrictions are needlessly violated.[28] Legal opponents of partisan gerrymandering are likely to pursue these strategies in the future, taking a state-by-state approach to litigation against partisan gerrymanders with a focus on violations of legal restrictions written in state law.

The classification of the worst gerrymanders in the United States identifies those state legislative maps that have minority rule or have extreme disproportionality. These data are new and have never been presented previously. Most work classifying partisan redistricting has examined congressional districts, and those that have examined state legislative redistricting have focused on previous time periods. We present these data as a resource for scholars, lawyers, and practitioners who may find them impactful or useful.

Appendix I: The Statewide Popular Vote and Seats Won in the 2018 State House Elections

| State | % votes received statewide by Democratic party in 2017 or 2018 state house elections | % seats won by Democratic party after 2018 state house elections | %-point difference between party's state house seats and state house popular vote |
|---|---|---|---|
| Alabama | 36.2% | 26.7% | -9.5 |
| Alaska | 40.6% | 47.5% | +6.9 |
| Arizona | 49.0% | 48.3% | -0.7 |
| Arkansas | 38.8% | 24.0% | -14.8 |
| California | 66.8% | 76.3% | +9.5 |
| Colorado | 54.8% | 63.1% | +8.3 |
| Connecticut | 52.9% | 60.9% | +8.0 |
| Delaware | 59.1% | 63.4% | +4.3 |
| Florida | 42.3% | 39.2% | -3.1 |
| Georgia | 45.5% | 41.1% | -4.4 |
| Hawaii | 60.3% | 90.2% | +29.9 |
| Idaho | 29.6% | 20.0% | -9.6 |
| Illinois | 59.6% | 62.7% | +3.1 |
| Indiana | 44.8% | 33.0% | -11.8 |
| Iowa | 52.8% | 46.0% | -6.8 |
| Kansas | 40.0% | 32.0% | -8.0 |
| Kentucky | 45.8% | 39.0% | -6.8 |
| Maine | 52.7% | 58.9% | +6.2 |
| Maryland | 66.3% | 69.5% | +3.2 |
| Massachusetts | 73.9% | 79.4% | +5.5 |
| Michigan | 52.1% | 47.3% | -4.8 |
| Minnesota | 54.4% | 56.0% | +1.6 |
| Missouri | 43.7% | 28.8% | -14.9 |
| Montana | 44.8% | 42.0% | -2.8 |
| Nevada | 51.3% | 69.0% | +17.7 |
| New Hampshire | 53.0% | 58.5% | +5.5 |
| New Jersey | 58.1% | 67.5% | +9.4 |
| New Mexico | 57.9% | 65.7% | +7.8 |
| New York | 61.9% | 71.3% | +9.4 |
| North Carolina | 50.5% | 45.8% | -4.7 |
| North Dakota | 34.2% | 22.9% | -11.3 |
| Ohio | 48.1% | 38.4% | -9.7 |
| Oklahoma | 40.2% | 23.8% | -16.4 |
| Oregon | 57.2% | 63.3% | +6.1 |
| Pennsylvania | 53.8% | 45.8% | -8.0 |
| Rhode Island | 71.6% | 88.0% | +16.4 |
| South Carolina | 39.0% | 35.5% | -3.5 |
| South Dakota | 37.3% | 15.7% | -21.6 |
| Tennessee | 39.3% | 26.3% | -13.0 |
| Texas | 46.6% | 44.7% | -1.9 |
| Utah | 33.6% | 22.7% | -10.9 |
| Virginia | 53.9% | 49.0% | -4.9 |
| Vermont | 63.5% | 63.3% | -0.2 |
| Washington | 59.3% | 58.2% | -1.1 |
| Wisconsin | 53.0% | 35.4% | -17.6 |
| West Virginia | 47.8% | 41.0% | -6.8 |
| Wyoming | 20.5% | 15.0% | -5.5 |

Note: If state is not displayed, there were no 2018 state senate elections or it is Nebraska (no parties in legislature).

Appendix II: The Statewide Popular Vote and Seats Won in the 2018 State Senate Elections

| State | % votes received statewide by Democratic party in 2017 or 2018 state senate elections | % seats won by Democratic party after 2018 state senate elections | %-point difference between party's state house seats and state senate popular vote |
|---|---|---|---|
| Alabama | 34.7% | 22.9% | -11.8 |
| Alaska | 41.8% | 40.0% | -1.8 |
| Arizona | 49.6% | 43.3% | -6.3 |
| Arkansas | 32.5% | 27.8% | -4.7 |
| California | 64.9% | 70.0% | +5.1 |
| Colorado | 50.3% | 52.9% | +2.6 |
| Connecticut | 53.1% | 66.7% | +13.6 |
| Delaware | 57.9% | 60.0% | +2.1 |
| Florida | 45.7% | 31.8% | -13.9 |
| Georgia | 45.6% | 37.5% | -8.1 |
| Hawaii | 69.2% | 92.3% | -23.1 |
| Idaho | 30.6% | 20.0% | -10.6 |
| Illinois | 57.5% | 61.5% | +4.0 |
| Indiana | 34.3% | 16.0% | -18.3 |
| Iowa | 54.0% | 48.0% | -6.0 |
| Kentucky | 40.3% | 10.5% | -29.8 |
| Maine | 55.9% | 60.0% | +4.1 |
| Maryland | 64.5% | 68.1% | +3.6 |
| Massachusetts | 76.3% | 85.0% | + 8.7 |
| Michigan | 50.5% | 42.1% | -8.4 |
| Missouri | 40.9% | 17.6% | -23.3 |
| Montana | 42.5% | 44.0% | +1.5 |
| Nevada | 49.9% | 54.5% | +4.6 |
| New Hampshire | 53.8% | 58.3% | +4.5 |
| New Jersey | 59.1% | 65.0% | +5.9 |
| New York | 55.6% | 63.5% | +7.9 |
| North Carolina | 50.1% | 42.0% | -8.1 |
| North Dakota | 36.3% | 25.0% | -11.3 |
| Ohio | 52.5% | 41.2% | -11.3 |
| Oklahoma | 39.3% | 29.2% | -10.1 |
| Oregon | 59.6% | 64.7% | +5.1 |
| Pennsylvania | 53.8% | 48.0% | -5.8 |
| Rhode Island | 70.4% | 86.8% | +16.4 |
| South Dakota | 36.2% | 14.3% | -21.9 |
| Tennessee | 40.3% | 22.2% | -18.1 |
| Texas | 46.3% | 33.3% | -13.0 |
| Utah | 38.2% | 33.3% | -4.9 |
| Vermont | 73.7% | 73.3% | -0.4 |
| Washington | 64.5% | 68.0% | +3.5 |
| Wisconsin | 46.9% | 35.3% | -11.6 |
| West Virginia | 44.1% | 47.1% | +3.0 |
| Wyoming | 24.7% | 13.3% | -11.4 |

Note: If state is not displayed, there were no 2018 state senate elections or it is Nebraska (no upper chamber).

[1] Yoshinaka, Antoine and Chad Murphy. 2010. "The Paradox of Redistricting." *Political Research Quarterly* 62:435-47.

[2] The data and analyses presented here were conducted by the authors.  To construct our dataset and compute the statewide partisan vote, the authors used the Carl Klarner dataset.  To compute the percentage of seats won after 2018, the authors used the NCSL partisan composition dataset for those legislative chambers where 100% of seats were up for election in the 2017 or 2018 elections.  To compute the percentage of seats won in many state senate chambers and one state house chamber (North Dakota), in which the full membership was not up for election, the authors calculated the percentage of seats won by each political party in 2018 by consulting each state's Secretary of State web site, Elections Division web site, or other data sources.

[3] The criteria for disproportionality are detailed later in this report, but also include only those states in which the party with the most seats won in 2018 received less than 59.9% of the vote.  States ranked at the top have the most disparate levels of minority rule in one or both chambers; and states ranked in the lower top 10 have the most disproportional popular-vote-to-seats-won differences.  States with disproportional state house maps are ranked above those states with disproportional state senate maps as the state house maps covered the entire electorate and all districts; while only some of the senate districts were up for election in 2018.

[4] Iowa is not displayed in Table 1, though it also had a minority of its voters choose the Republican state house candidates in 2018 (see appendix). It is not displayed because Iowa's map is not drawn by legislators, and only legislative-drawn or partisan politician commission-drawn plans are considered for inclusion in the list of worst gerrymanders. Iowa's redistricting process starts with nonpartisan Legislative Services Agency (LSA) staff who draw up the district plans following specific criteria such as preserving county lines.  The legislature then approves or declines the map produced by these LSA staff.  More research should be conducted on the decisions that went into the 2011 redistricting in Iowa at the LSA staff level as well as the legislator decision-making stage to determine ways that such a disproportionate map may be avoided in future redistricting cycles.  Iowa is also not displayed in Table 2, which examines state senates, as it was not drawn by a legislature or partisan-leaning committee. For more on the Iowa redistricting process for state legislative and congressional districts, see Hagle, Timothy M. 2013. "Redistricting in Iowa 2011." In William J. Miller and Jeremy D. Walling, eds., The Political Battle over Congressional Redistricting. Lanham: Lexington Books.

[5] In another state, West Virginia, both Republicans and Democrats received a minority of the vote.  Republicans received 49.7% of the vote in West Virginia in 2018 state house elections, while Democrats received 47.8% of the vote.  Republicans had 59% of the seats after the 2018 elections in the West Virginia state house, and Democrats 41%. Because neither party had a majority of the popular vote in the 2018 elections, West Virginia is not included in Table 1.

[6] Elections prior to 2018 under Wisconsin's state house map have been highlighted by other scholars as one of the worst partisan gerrymanders in the country and in litigation.  For instance, see Nicholas Stephanopoulos and Eric McGhee, 2015. "Partisan Gerrymandering and the Efficiency Gap." *SSRN* <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2457468>.

[7] Levitt, Justin. "All About Redistricting: Virginia." < http://redistricting.lls.edu/states-VA.php>; Levitt, Justin. "All About Redistricting: Wisconsin." <http://redistricting.lls.edu/states-WI.php>.

[8] Wisconsin's assembly map was litigated substantially, though the U.S. Supreme Court ultimately allowed the assembly map to persist on standing grounds in *Gill v. Whitford* (2018).  The U.S. Supreme Court ruled on *Whitford* prior to the 2019 U.S. Supreme Court decisions of *Rucho v. Common Cause* and *Lamone v. Benisek*, where partisan gerrymandering claims were held as not justiciable by the U.S. Supreme Court.

[9] The committee was composed of the two Republican leaders of the Pennsylvania state house and senate; the two Democratic leaders of the Pennsylvania state house and senate, and a former judge and "staunch lifelong Republican," Stephen McEwen. See "Reapportionment Chair Named: Let the Games Begin!" *Philadelphia Public*

*Record* 21 April 2011. <http://www.phillyrecord.com/2011/04/reapportionment-chair-named-let-the-games-beginq/>.

[10] Levitt, Justin. "All About Redistricting: Michigan." <http://redistricting.lls.edu/states-MI.php>.

[11] Grose, Christian R. 2011. *Congress in Black and White: Race and Representation in Washington and at Home.* New York: Cambridge University Press.

[12] Levitt, Justin. "All About Redistricting: North Carolina." <http://redistricting.lls.edu/states-NC.php>.

[13] Levitt, Justin. "All About Redistricting: Ohio." <http://redistricting.lls.edu/states-OH.php>.

[14] Wendel, Emily E. "Ohio Legislative Service Commission: Final Analysis, Am. Sub. H.J.R. 12." <https://www.lsc.ohio.gov/documents/gaDocuments/analyses130/14-hjr12-130.pdf>.

[15] U.S. Census, Population Estimates, July 2018.

[16] Cox, Gary W. and Mathew D. McCubbins. 2005. *Setting the Agenda*. New York: Cambridge University Press.

[17] Caughey, Devin, Yiqing Xu, and Christopher Warshaw. 2017. "Incremental Democracy: The Policy Effects of Partisan Control of State Government." *Journal of Politics* 79:1342-58.

[18] Tufte, Edward R. 1973. "The Relationship Between Seats and Votes in Two-party Systems." *American Political Science Review* 67: 540-54.

[19] Abramowitz, Alan I. 1983. "Partisan Redistricting and the 1982 Congressional Elections." *Journal of Politics* 45:767-70; Gelman, Andrew and Gary King. 1994. "A Unified Method of Evaluating Electoral Systems and Redistricting Plans." *American Journal of Political Science* 38:514-54; Grofman, Bernard. 1983. "Measures of Bias and Proportionality in Seats-votes Relationships." *Political Methodology* 9:295-327; Niemi, Richard G. and Laura R. Winsky. 1992. "The Persistence of Partisan Redistricting Effects in Congressional Elections in the 1970s and 1980s." *Journal of Politics* 54:565-72; Tufte, Edward R. 1973. "The Relationship Between Seats and Votes in Two-party Systems." *American Political Science Review* 67: 540-54.

[20] One state not displayed in Tables 3 or 4 is Missouri. As shown in the appendix, it has disproportionate votes-to-seats outcomes in 2018 as well, but the process in Missouri for state legislative lines is not one driven exclusively by a partisan legislature or partisan commission. For this reason, Missouri is not listed here, but is displayed in the appendix showing all states' votes and seats proportions based on the 2018 elections. In 2018, via ballot proposition, voters approved a measure requiring the consideration of the efficiency gap, another measure of seats-votes disproportionality, when drawing district lines for the 2022 redistricting cycle.

[21] Levitt, Justin. "All About Redistricting: Arkansas." < http://redistricting.lls.edu/states-AR.php> .

[22] Levitt, Justin. "All About Redistricting: Oklahoma." < http://redistricting.lls.edu/states-OK.php>.

[23] Levitt, Justin. "All About Redistricting: Kentucky." < http://redistricting.lls.edu/states-KY.php>; Levitt, Justin. "All About Redistricting: Tennessee." <http://redistricting.lls.edu/states-TN.php>.

[24] Grose, Christian R. 2018. "Rapid Assessment of the Redistricting Reform Ballot Initiatives." *USC Schwarzenegger Institute Report.* < http://schwarzeneggerinstitute.com/institute-in-action/article/schwarzenegger-institute-academic-director-christian-grose-analyzes-redistr>.

[25] Grose, Christian R. 2014. "The Adoption of Electoral Reforms and Ideological Change in the California State Legislature." *USC Schwarzenegger Institute Report*; Sadhwani, Sara and Jane Junn. 2018. "Structuring Good Representation: Institutional Design and Elections in California." *PS: Political Science and Politics* 51:318-22.

[26] Rogers, Josh. "Senate Committee Backs Independent Redistricting Commission in New Hampshire." *New Hampshire Public Radio*. < https://www.nhpr.org/post/senate-committee-backs-independent-redistricting-commission-nh#stream/0>.

[27] Peterson, Jordan Carr. 2019. "The Mask of Neutrality: Judicial Partisan Calculation and Legislative Redistricting." *Law and Policy*. < https://onlinelibrary.wiley.com/doi/abs/10.1111/lapo.12132>.

[28] Edwards, Barry, Michael Crespin, Ryan D. Williamson, and Maxwell Palmer. 2017. "Institutional Control of Redistricting and the Geography of Representation." *Journal of Politics* 79:722-26.