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EXTREME GERRYMANDERING & THE 2018 MIDTERM

by Laura Royden, Michael Li, and Yuriy Rudensky

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EXECUTIVE SUMMARY

The 2018 elections will test the grip of modern gerrymandering. Voters appear poised to speak loudly. Early indications point to an exceptional wave election. But will that voice translate into electoral results?

While Americans have had wave elections before, one complicating new factor this decade is the pervasiveness of extreme gerrymandering in the drawing of congressional maps. Both parties gerrymander when they can but the practice has been worsened by increasingly sophisticated data and map-drawing techniques. The U.S. Supreme Court considers two partisan gerrymandering cases this year, but rulings will come too late to likely affect the 2018 elections. Instead, Americans in key states will vote again under gerrymandered maps that thus far have proven highly resistant to change.

This comprehensive study poses a stark warning to both courts and the public. What looks to be one of the most important recent midterm elections may turn out, in fact, to show how effectively extreme gerrymandering distorts American democracy and blunts the public's voice.

Because of maps designed to favor Republicans, Democrats would need to win by a nearly unprecedented nationwide margin in 2018 to gain control of the House of Representatives. To attain a bare majority, Democrats would likely have to win the national popular vote by nearly 11 points. Neither Democrats nor Republicans have won by such an overwhelming margin in decades. Even a strong blue wave would crash against a wall of gerrymandered maps.

This high barrier to a Democratic majority is at odds with early polls showing Democrats with a significant advantage in the generic congressional ballot. As of mid-March, Democrats hold an average lead of slightly more than nine percentage points, 32-34.¹ Based on historical election results, a lead of this magnitude should net Democrats around 30 additional seats — comfortably more than the 24 they need to retake control of the U.S. House of Representatives.² Because of gerrymandering, however, that is no longer the case.³ Even the court-ordered redrawing of Pennsylvania's congressional map will only improve Democrats' chances slightly.⁴

As the table on the next page shows, the disparities are sobering. This decade, gerrymandering has helped Republicans. In the future, it may help Democrats. Although this report focuses on Democrats, its warnings apply with equal force to Republicans.

Projected Democratic Seat Gain in U.S. House

Democrats Win National Popular Vote by	Historical Expectation of Democratic Seat Gain (Abramowitz) ⁱ	Brennan Center Projection of Democratic Seat Gain — with New PA Map (Royden) ⁱⁱ
+2	19	5
+4	23	7
+6	27*	13
+8	30	15
+10	34	21
+11	36	28**
+12	38	31
+14	42	41
+16	46	56

* Projected four-seat Democratic majority

** Projected five-seat Democratic majority

To be sure, Democrats might carry some districts they are not projected to win. The March 13, 2018 special election in PA-18 is a recent example. But surprise results under remarkable political circumstances should not obscure the more fundamental lesson of this decade’s maps — gerrymandering matters and it matters a lot. Even if 2018 proves to be an unusual year in a greater than normal number of districts, and produces a surprise surplus of Democratic wins, the effects of gerrymandering will return with a vengeance if 2020 looks more like 2012, 2014, or 2016.

Individual states paint an even clearer picture. As gerrymanders become ever more sophisticated, generic ballot leads no longer effectively predict how many seats a party might pick up. Some state maps are carefully designed to withstand significant electoral swings while others respond more nimbly to shifting political preferences. Thus, even if 2018 sees a fairly consistent — and even sizable — national shift in favor of Democrats that is replicated in the states, the party’s seat yield is likely to vary significantly between gerrymandered and non-gerrymandered states. While seat turnover in non-gerrymandered states might be close to the number predicted by historic data, gerrymandered states will see lower rates of change or, perhaps, even no change at all.

Political scientists call the relationship between the votes a party gets in a state and how many seats it picks up “responsiveness.” In a highly responsive map, a party steadily increases its seats as it increases

its share of the vote. That is how most assume a democracy should function. A non-responsive map would be the reverse: one in which a party can increase its vote share by 10 or even 20 percent without gaining a single extra seat. A handful of states have non-responsive maps that are especially stark:

- In **Michigan**, even if Democrats win five seats with 38.38 percent of the statewide vote, they are not projected to compete for a sixth seat until their statewide vote share reaches 54.89 percent, an increase of 16.51 percentage points.
- In **North Carolina**, even if Democrats win three seats with 29.66 percent of the statewide vote, they are not projected to compete for a fourth seat until their statewide vote share reaches 52.78 percent, an increase of 23.12 percentage points.
- In **Ohio**, even if Democrats win four seats with around 26.07 percent of the statewide vote, they are not projected to compete for a fifth seat until their statewide vote share reaches 54.71 percent, an increase of 28.64 percentage points.
- In **Texas**, even if Democrats win 11 seats with around 31.92 percent of the statewide vote, and because of court-made modifications to the map, compete for a twelfth seat at around 41.07 percent of the vote, they will not compete for a thirteenth seat until their statewide vote share reaches 51.15 percent, an increase of 10.08 percentage points.

The disparity is even greater when looking at the vote share needed to win a bare majority of the congressional delegations of highly gerrymandered states.

This study is the first to gauge the magnitude of change necessary on a state-by-state basis to flip seats under current congressional maps and the first to visualize the responsiveness of maps, highlighting the stark differences between gerrymandered and non-gerrymandered states.

It also illustrates the need for clear legal boundaries in the age of computerized gerrymandering. Although gerrymandering has long been a feature of American political life, this decade's maps durably lock in advantages for both parties with unprecedented precision. Even when an election sees massive changes in the votes a party receives, there can be zero change in the number of seats that party can expect to win. An effectively gerrymandered state's congressional delegation can remain completely static unless confronted with a true tsunami in favor of one party.

This state of affairs turns on its head the Framers' notion that frequent elections would ensure Congress was a "miniature, an exact portrait" of the people as a whole. While much of the focus in partisan gerrymandering litigation has been on measuring the degree of bias, even more troubling is the lack of responsiveness in this decade's maps. Regardless of the 2018 midterms' outcome, this report's findings serve as a wake-up call: Courts must act to rein in extreme partisan gerrymandering or 2021's redistricting will see even more unresponsive, durable, and undemocratic congressional maps.

Key Findings:

- Gerrymandering will materially hamper the Democrats' efforts in the mid-terms. Their average generic ballot lead, as of March 20, 2018, was 9.4 points. But while a roughly 5.4-point lead in 2006 netted Democrats a total of 31 new seats, a comparably sized lead today is projected to give them only 12 seats. This is barely half the number of seats that Democrats need to retake a majority in 2018.
- The lack of responsiveness to electoral shifts is driven in substantial part by a handful of large

states where maps were drawn under single-party control. In the battleground states of **Michigan** and **Ohio**, for example, even if Democrats match their exceptional performance in 2006 and 2008 — the best Democratic years in two decades in both those states — they are not projected to win a single additional seat under the current maps.

Other states with high rates of partisan bias (**North Carolina** and **Texas**) have equally unresponsive maps. Putting even a few seats in play would require Democrats to win a larger share of the vote than they have all decade.

Projected Democratic Seat Gain in Highly Gerrymandered States

State — Delegation Split After 2016 Election	2016 Democratic Vote Share	Extra GOP Seats Attributable to Partisan Bias ¹	Projected Statewide Popular Vote for Democrats to Put One Additional Seat in Play (Royden)	Projected Statewide Popular Vote for Democrats to Have Chance of Winning Majority of Seats (Royden)
<i>Michigan</i> 9R 5D	49.44%	2-3	54.89% (+5.45 points)	57.60% (+8.16 points)
<i>North Carolina</i> 10R 3D	46.68%	3	52.78% (+5.1 points)	55.08% (+7.4 points)
<i>Ohio</i> 12R 4D	41.83%	2-4	54.71% (+12.88 points)	56.53% (+14.7 points)
<i>Texas</i> 25R 11D	42.29%	1-2	41.07% (-- points)	53.62% (+11.33 points)

The situation would have been even worse for Democrats had the congressional map in **Pennsylvania** not been redrawn in early 2018 by the Pennsylvania Supreme Court. Under the state’s 2011 congressional map, Democrats would not have been projected to win 6 of 13 seats unless they matched their 2008 performance level and would not be projected to win a majority of seats unless they won 57.07 percent of the statewide vote (a 14-point statewide margin).

- Democratic gerrymanders in states like **Maryland** are equally durable. In the past decade, Republicans have won between 31.25 percent (2008) and 41.86 percent (2014) of the statewide vote. But, as a result of an aggressive redraw of Maryland’s congressional map after the 2010 Census, they will win only 1 out of 8 congressional districts at those rates of performance. Only when Republicans win 45 percent of the vote do they win a third of congressional districts.
- By contrast, maps drawn by independent commissions, courts, and split-control legislatures not only had lower levels of partisan bias but are significantly more responsive to electoral swings (i.e., have a high number of seats that could change parties). **California**’s commission-drawn congressional map and **New York**’s special-master drawn congressional map are among the most responsive in the country.
- Maps in many states show signs of “faux competitiveness.” While seats on these maps might look relatively competitive on paper, in reality, they are positioned outside of a state’s historic election outcome range. Flipping these seats would require extraordinary circumstances, such as an unprecedented, large wave election.

- In many states, lack of responsiveness to statewide electoral swings appears to be driven at least in part, and often in significant part, by adverse treatment of communities of color.
 - In **Texas**, for example, the fracturing (cracking) of sizeable Latino, African-American, and Asian-American communities in the Dallas-Fort Worth and Houston regions accounts for a large portion of the non-responsiveness in both the state's 2011 legislatively drawn plan and its 2013 court-modified plan.
 - Likewise, the concentration (packing) of African-American voters in **Virginia** into just two congressional districts enabled map-drawers to create additional safe Republican districts. When a special master redrew the map to undo the packing of African-American voters, it also significantly improved responsiveness.

ANALYSIS

I. OVERVIEW: MEASURING RESPONSIVENESS

In *Extreme Maps* — a report the Brennan Center published in 2017 — we examined how skewed this decade’s congressional maps were in terms of favoring one party over the other.⁵ We found that a handful of states, where Republicans had sole control of the map-drawing process, were responsible for giving Republicans an advantage of 16-17 seats, on average, in the U.S. House.⁶ We also found evidence of Democratic gerrymandering in states like Maryland — though the levels of Democratic gerrymandering were much lower, in part, because Democrats controlled redistricting in fewer states. By contrast, our study shows much lower and often negligible rates of bias in congressional maps drawn by commissions (regardless of the type of commission) and courts, as well as those drawn under split political control.⁷

In this report, we test the durability of the partisan bias that we identified in *Extreme Maps* — and gauge just how much vote share Democrats would have to win to pick up additional seats in each state. While *Extreme Maps* looked at the partisan bias of each state’s congressional map, this report looks at how “locked in” that bias is — in political science terms, how responsive each state’s map is to electoral shifts.

Examining U.S. House elections on a state-level for electoral responsiveness helps provide a more nuanced look at likely electoral outcomes given gerrymandering. The charts in the report and Appendix 1 illustrate in a vivid and easily discernible manner how gerrymandering and redistricting choices contribute to, and exacerbate, partisan over- and underperformance.

A. Responsive Maps: How Fair Maps Reflect Shifts in Voter Preference

In political science terms, a responsive map is one that allows a political party to win more seats as it wins more votes. If a map is perfectly responsive, a party progressively wins more seats as it wins a progressively larger share of the statewide vote. This allows changes in voter preference at the polls (e.g., voter input) to lead to changes in a legislature’s composition (e.g., electoral outcome).

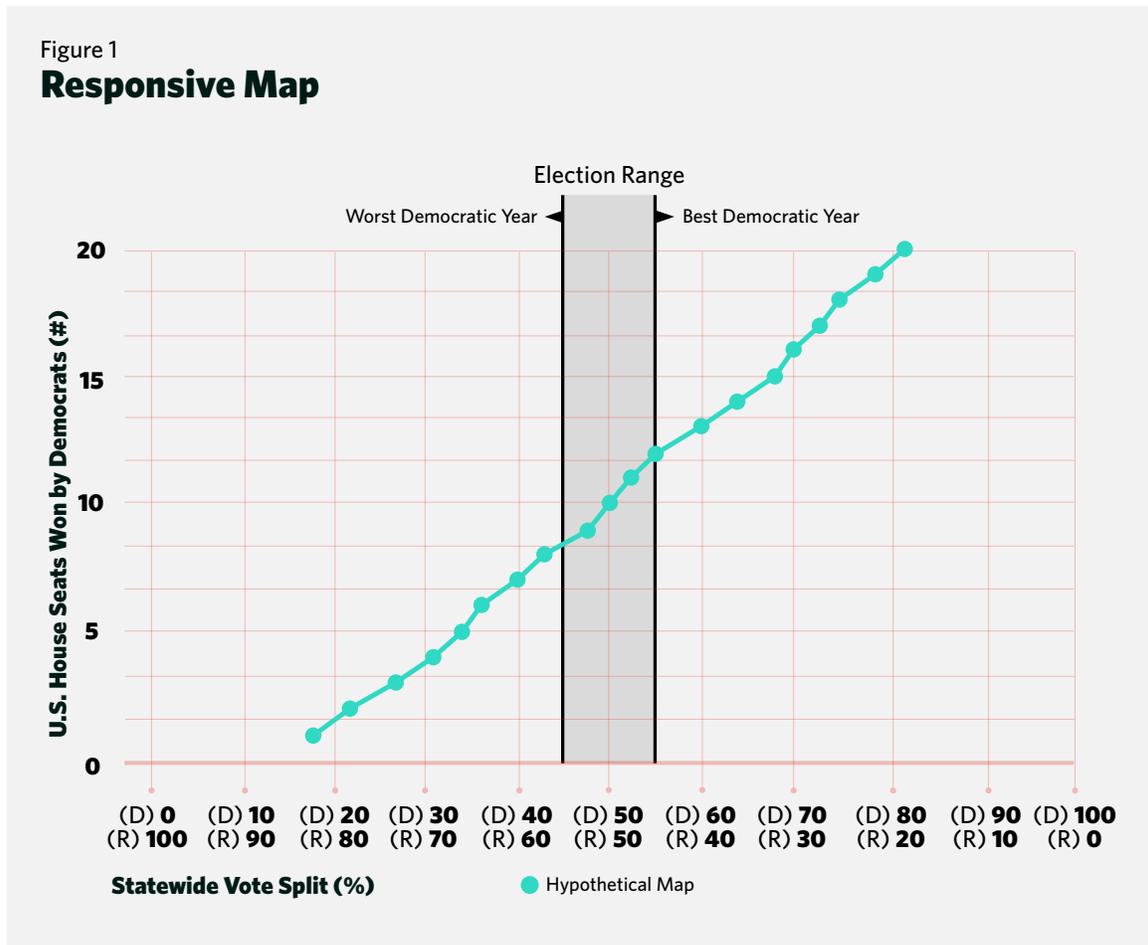
As political scientists have long observed, American congressional maps — at least in the absence of manipulation — have a high, and predictably constant, degree of responsiveness.⁸ For each percentage point increase in a party’s vote share, a party should, under normal circumstances, expect to gain around two seats at a national level. Thus, a two-point increase in vote share should yield a gain of four seats, and a three-point increase in vote share should increase a party’s seat share by around six.

In reality, responsiveness varies greatly by state. One way to test the responsiveness of a map is to look at a map’s seats-to-votes curve, plotting out the points at which a party is expected to win an additional seat.

This can be done because of another long-observed facet of American elections: that state-level vote share and district-level vote share move reliably in tandem in the majority of districts.⁹ Thus, if, in the last election, a party won 52 percent of the statewide vote and 47 percent of the vote in District A and the party’s statewide vote share in the next election increases by 3 points, we can predict that the party’s vote share in District A also will increase by around 3 points. This consistent relationship between statewide and district-level vote share allows us to calculate what the statewide vote share would likely need to be in order for a party to win any district that it does not currently control. In

turn, because we know what each party's statewide vote share was for past elections, we can make assessments of how easy or difficult it will be for a party to win additional seats under different election scenarios. To be sure, factors like the quality of candidates and campaigns, the advantage of incumbency, and other district-specific factors can impact results in any given race, particularly in races just on the border of the model's projections. In an extreme case, a party might even win a district well outside the bounds of what the model projects, especially if enthusiasm among one party's voters, donors, and volunteers collapses drastically while rising dramatically among the opposing party's supporters. But in the vast majority of contests, as gerrymanderers know well and count on in constructing gerrymandered maps, how a party does will be driven by things that are not district specific. In short, the national and state level political environment typically matter much more.

Based on political scientists' observation of American elections since the late 1940s, a responsive map in the United States would be expected to yield a fairly steady, smooth, often S-shaped curve that approximately follows a 2:1 seats-to-votes ratio.¹⁰



To illustrate, the graph above (Figure 1) shows a hypothetical state with 20 house districts and a highly responsive map. As the statewide Democratic vote share increases along the x-axis, the expected number of seats won by Democrats, as represented by the points, increases as well. The curve is smooth and the slope is relatively constant, meaning there is a fair partisan alignment of voters in each district. No districts are clumped at either extreme of the chart. Reading from left-to-right,

Democrats win their first district at roughly 20 percent of the overall vote share. Reading from right-to-left, the Republicans would likewise win their first seat with approximately 20-percent of the vote share. If the curve is extended to (0 percent, 0 seats) and (100 percent, 20 seats), the S-shape becomes visible. The same is true, of course, in inverse, for Republicans. As Republicans win more votes, they also win more seats.

B. Non-Responsive Maps: How Gerrymandering Alters the Expected Distribution of Seats

By contrast, a non-responsive map is one where an increasing level of support for a party does not result in a regular, corresponding increase in the number of seats won.

Generally, an unresponsive map allows a party (or, in certain cases, both parties) to gain a handful of seats with very little statewide vote share but makes it exceedingly difficult for them to gain additional seats unless the party wins a historically unprecedented share of the vote.

There are many reasons why a map might be non-responsive. In a small number of cases, a lack of responsiveness is attributable to adherence to neutral and legitimate redistricting criteria, such as keeping communities of interest together or following naturally occurring or political boundaries. However, in the overwhelming number of cases, non-responsiveness is driven by map-drawers' desire to secure a partisan gain or protect incumbents.

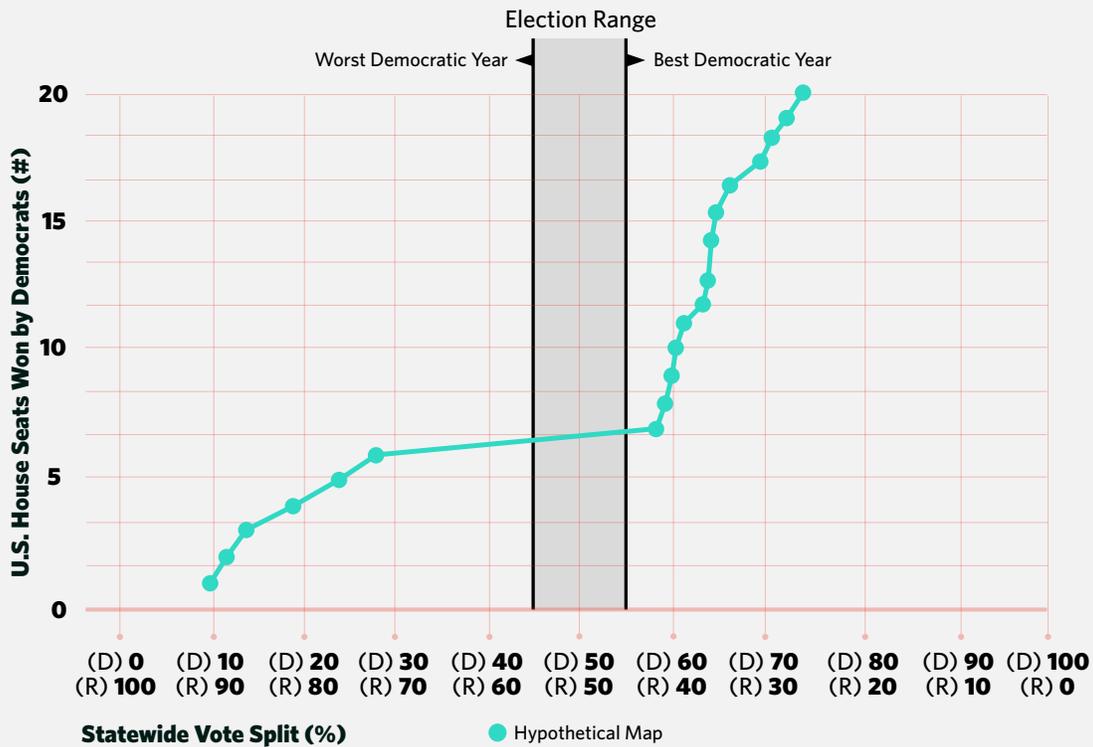
By limiting seat gains within certain commonly occurring vote share bands (i.e., the actual range of election outcomes), gerrymanders destroy the expected responsiveness of a map by making it harder for the opposing party to win seats, resulting in an observable and often vividly noticeable effect on the normal seats-to-votes distribution.

As the illustrative examples on the following pages show, the result is deeply undemocratic — and visibly so.

1. Gerrymandering Favoring a Single Party

Figure 2

Non-responsive Single-Party Gerrymander



The chart above (Figure 2) shows the distribution of seats in a hypothetical state where there has been an extreme partisan gerrymander. On the left side, Democrats pick up six seats before reaching 30 percent of the statewide vote share. These six districts have been packed overwhelmingly full of Democratic supporters and there is a notable absence of equally concentrated Republican districts on the other side of the chart. To pick up additional seats under this map, Democrats must increase their vote share to more than 57 percent statewide. The noticeable gap in the curve represents a severe stagnation in the composition of the congressional delegation: Democrats win the same number of seats at a 27 percent vote share as they do at a 55 percent vote share. On the other hand, in a super-wave year, a significant number of districts would go Democratic with comparatively modest gains beyond the 60 percent threshold: Democrats would pick up the remaining 14 districts by increasing their vote share from 60 to 75 percent.

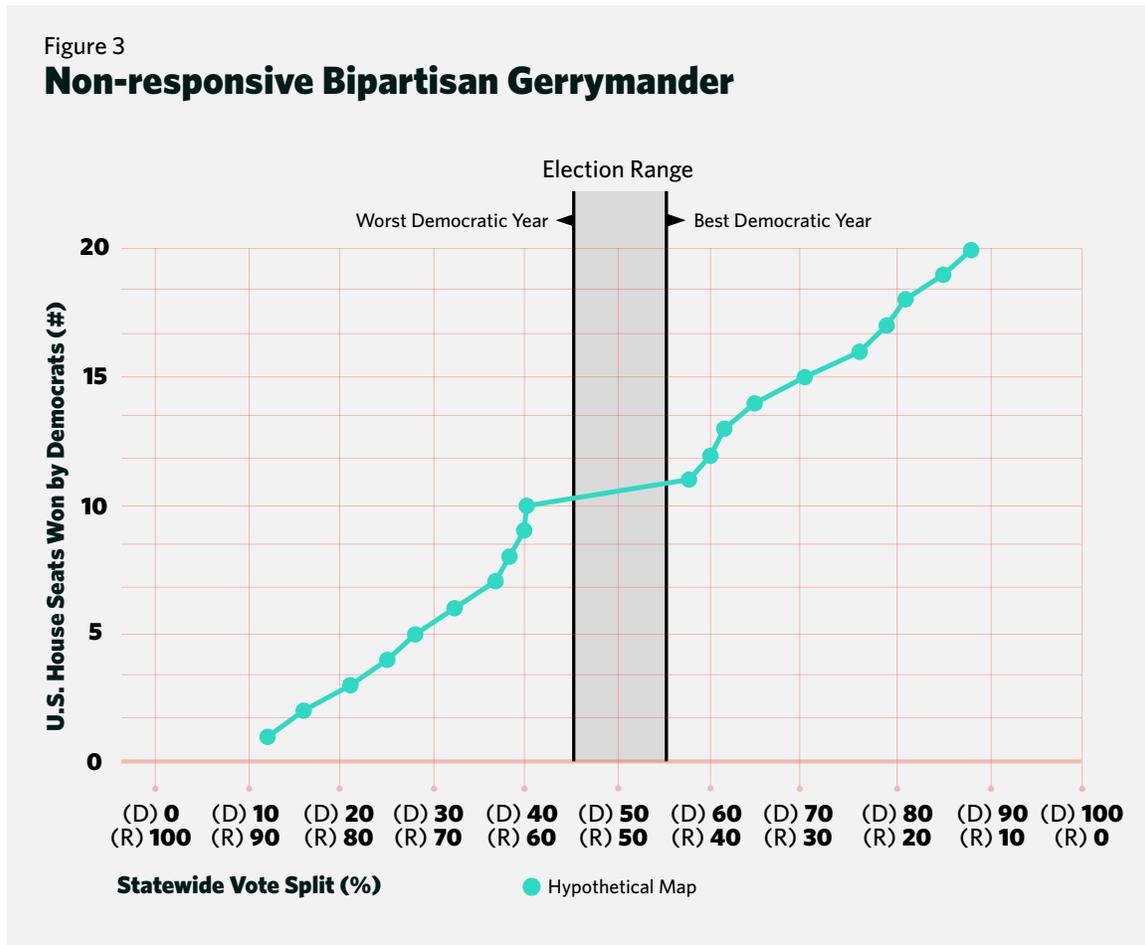
Figure 2 illustrates both tools of extreme partisan gerrymanders — packing, which overwhelmingly concentrates the opposing party’s voters into a handful of districts (seen on the left side of the chart), and cracking (seen on the right side of the chart), which wastes an opposing party’s votes by dividing its voters across the remaining districts in a way that makes it near impossible for them to constitute a majority. Cracking, in particular, can lead to “faux competition” — districts that may seem close and competitive from election results, but have been designed to be reliable, narrow wins for the gerrymandering party.

The increased use of data technology in the redistricting process allows gerrymanderers to deploy these tools with increasing precision, efficiently allocating voters among districts to craft maps with surgically cracked districts clustered just out of reach of the opposing party. That is precisely why there are two clumps of districts. It is also why with an even split of the statewide vote share, Republicans enjoy a 14 to 6 advantage.

Of course, if an electoral wave is large enough, the gerrymander seawall can be breached. That is precisely what happens in the hypothetical scenario above should Democrats cross 60 percent of the statewide vote threshold. Whether a gerrymander can be overwhelmed, however, should not be a barometer for a map's responsiveness or the effect of a gerrymander — the unresponsiveness is still plainly visible and undesirable.

2. Bipartisan (or Incumbent Protection) Gerrymanders

Not all gerrymanders advantage just one party. Bipartisan or incumbent protection gerrymanders look slightly different, but still contain a plateau in responsiveness that generally covers the state's historic and projected partisan vote split.



The chart above (Figure 3) shows the distribution of seats in a hypothetical state where there has been a bipartisan gerrymander designed to protect incumbents of each party. There is a large gap in the

middle, but unlike the extreme partisan gerrymander, the two halves of the curve have relatively similar shapes. Both sides are smooth and steady curves similar to the responsive map, but they appear to have been pushed towards the ends of the chart creating safe districts for both parties, leaving a gap in the middle.

The difference in shape can be explained by analyzing the purpose of a bipartisan gerrymander. These gerrymanders protect both parties' incumbents from electoral waves, but do not award a party with a disproportionate share of seats.

Cracking and packing may still be used in a bipartisan gerrymander but are not as pronounced — the districts just need to be uncompetitive enough for the incumbent party to be reasonably protected from shifts in the electorate. While these charts may appear responsive at the extremes, the range of expected and historical two-party vote shares is typically firmly inside the plateau where there is no change to any seats thus yielding very little responsiveness.

C. Notes on Reading the Charts and Some Caveats

To examine the current level of responsiveness in this decade's congressional maps, we used election results from 2012, 2014, and 2016 to generate seats-to-votes curves for all states with more than six congressional seats.¹¹ This allowed us to conduct a uniform vote swing analysis to gauge the level of statewide support Democrats would have to win to pick up seats in each state given district boundaries and past electoral outcomes. As importantly, these seats-to-votes curves also allowed us to visualize the distribution of seats in each state and to flag tell-tale indicators of likely gerrymandering. Indeed, in Appendix 1, it is remarkably easy to spot states with high rates of bias. Not only is it difficult for a party (in this decade usually Democrats) to win additional seats, but it is easy to tell why — districts were carefully placed just outside the opposing party's reasonably anticipated vote share.

We focus on Democrats in this report for two reasons. First, Republicans controlled far more states than Democrats in the round of redistricting that took place after the 2010 Census and are accused of having been particularly aggressive in attempting to lock in an advantage through gerrymandering. Second, 2018 appears, at least at the time of writing, as if it will be an extraordinarily good year for Democrats electorally. Looking at how hard (or easy) it will be for Democrats to win the 24 seats they need to regain the U.S. House offers a chance to probe the extent of gerrymandering and its durability. Similar charts could be easily constructed, however, to gauge how easy or hard it is for Republicans to win seats absent a super wave.

There are a few final caveats. This study uses a state-level view to specifically examine the role of gerrymandering in widening the gap between mathematically expected seat-share and actual seat-share. But at this relatively early stage in the 2018 general election cycle, it does not attempt to factor qualitative, district-specific factors, such as incumbency, the presence of third-party or independent candidates, shifting demographics, differing levels of movement toward (or against) the parties in subgroups of voters (e.g., white college educated women versus non-college educated women), turnout, or scandalous behavior by one or more candidates. All of these could have an impact on the actual number of seats each party wins. This year, a large and growing number of retirements, in particular, could make it somewhat easier for Democrats to win a majority than the model predicts. An especially strong wave, likewise, could produce "winner's bonus" by depressing turnout, volunteering, and fundraising among Republicans while increasing it among Democrats, enabling Democrats to pick up seats normally out of reach. For that reason, this model can and should be supplemented with additional information from other sources and models as they become available.

For the reasons above, the model also should not be used to predict which exact districts Democrats will win. While the data points in each curve represent individual districts, this study aims to assess the impact of map-drawing on responsiveness broadly in states. It is possible that Democrats win districts that the model projects they are unlikely to win and, conversely, they could lose races in districts that the model suggests that they should easily win.

However, while district-specific dynamics could, and likely will, have an impact in individual races, it remains true that it will be significantly harder for Democrats, in the aggregate, to win a majority than at any point in modern American history.

II. CASE STUDIES: RESPONSIVENESS IN THE CONGRESSIONAL MAPS OF 2010 REDISTRICTING CYCLE

This report provides short case studies, looking at the seats-to-votes curves for Pennsylvania, Maryland, California, New York, Texas, Virginia, and North Carolina. These states were chosen for specific reasons. Pennsylvania is a notable Republican gerrymander. Maryland is a notable Democratic gerrymander. California is a notable example of an incumbent protection gerrymander that was remedied by an independent redistricting commission. New York is a notably responsive map drawn by a court in a state where non-responsiveness in past maps had been previously justified by political geography (e.g., the heavy concentration of Democrats in New York City). Texas, Virginia, and North Carolina are notable examples of how race factors into gerrymandering — and, conversely, how improving minority representation results in maps that are also far more responsive to electoral swings.

Each state's curve was analyzed for the responsiveness characteristics discussed in this section. Specifically, we looked at whether there is a single, consistent rate of change along the curve; whether the curve includes a significant plateau; whether there is an equal distribution of homogenous (or extreme) Democratic and Republican districts; and whether an even split in vote share results in a relatively even allocation of congressional seats. We then augmented these descriptive observations with state-specific demographic and other narrative elements to complete the analysis.

Appendix 1 contains a responsiveness analysis for each of the 26 states with six or more congressional districts, which collectively account for 85 percent of congressional seats in the current U.S. House.

Appendix 2 looks at how many congressional seats could be in play in each state under different election scenarios ranging from a modestly improved year for Democrats to a Democratic tsunami.

Maps Drawn Under Single-Party Control

Maps produced under sole Democratic and Republican party control are markedly less responsive to electoral swings than maps drawn using more neutral processes and often show tell-tale evidence of manipulation.

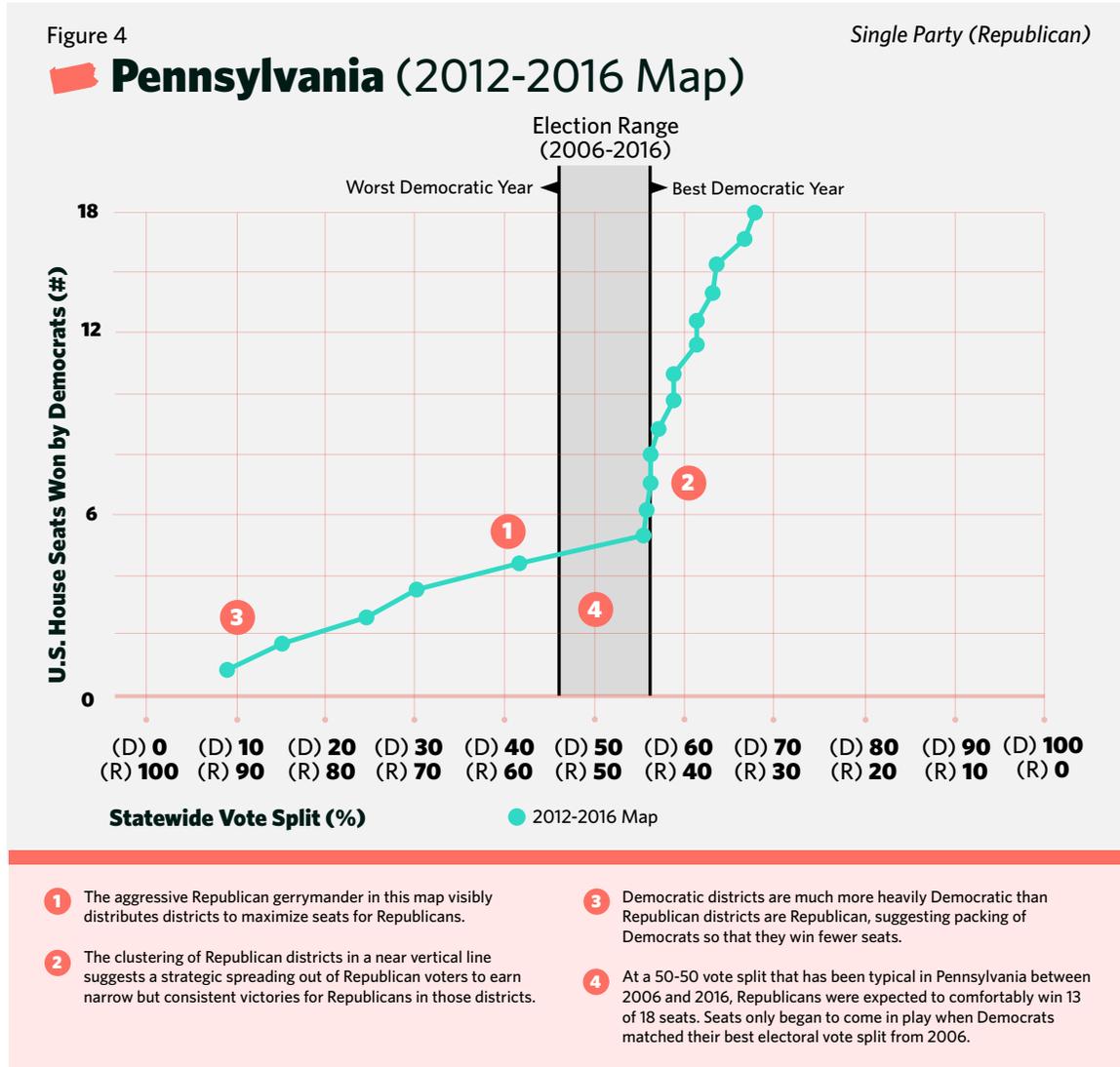
Case Study: Pennsylvania

With majorities in both houses of the Pennsylvania General Assembly and control of the governor's office, Republicans had unilateral control over the 2010 congressional redistricting.¹² The resulting map, which the Pennsylvania Supreme Court recently deemed to be an unconstitutional partisan gerrymander, provided Republicans with a secure 13 to 5 advantage in the state's congressional delegation over the first three elections of the decade. It is also decidedly not responsive, with Democrats needing to win a historically large share of the vote to gain any additional seats.

This skewed result is at odds with Pennsylvania's status as one of the most competitive states in the nation. Indeed, in statewide races, Democrats and Republicans have jockeyed for favor without any decisive advantage in recent decades. Since 1994, there have been three Democratic and three Republican governors. Over that span, Pennsylvania voters have tended to favor Republican candidates for the United States Senate, who have won six out of eight elections, and Democratic candidates for president, who have won five out of six contests.

This competitiveness also is reflected in the party's vote share in congressional races. In recent years,

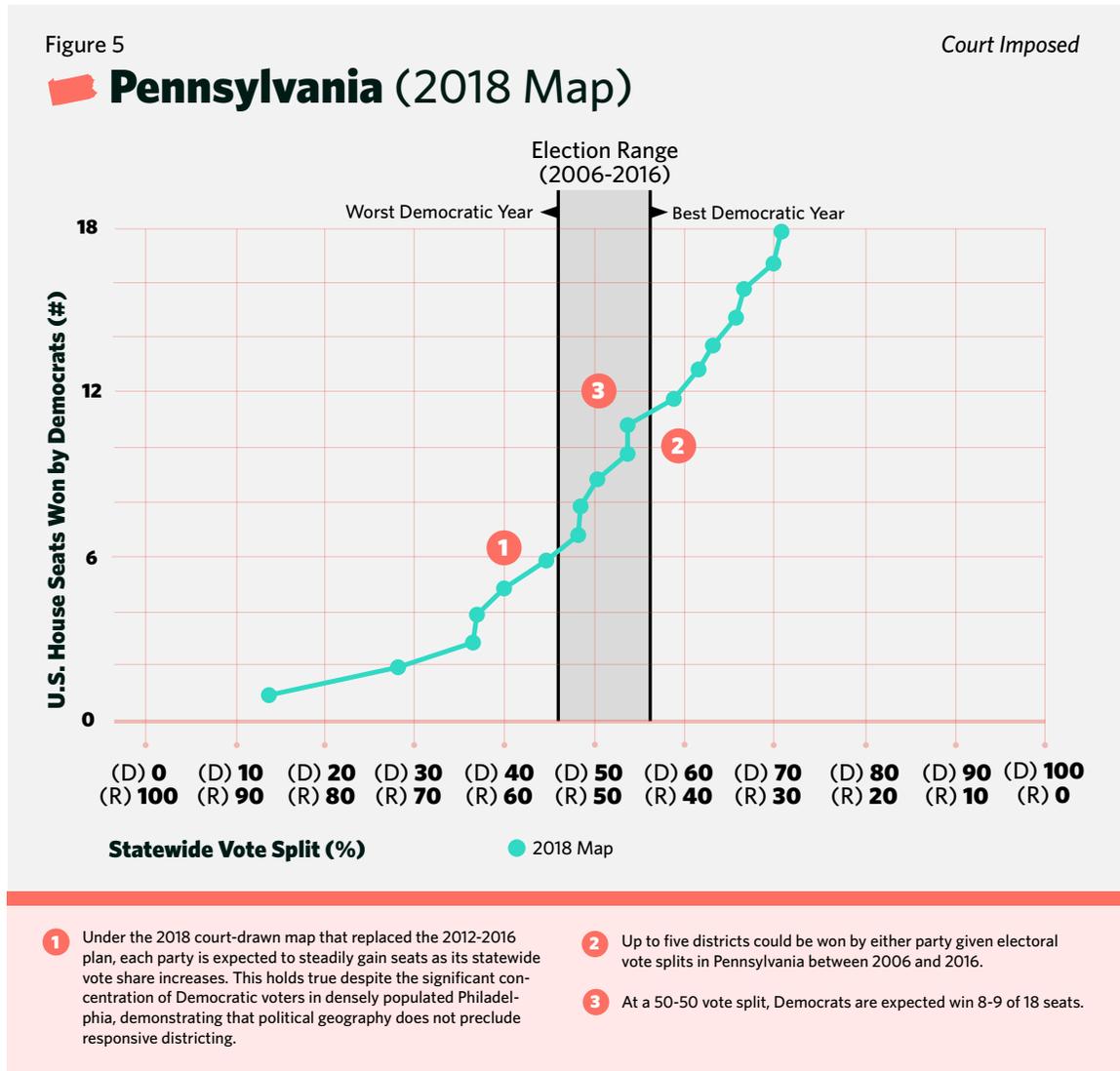
Democrats have won somewhere between 48 and 56 percent of the statewide congressional vote share. But these significant electoral swings had little impact on the outcome under the congressional map drawn by Pennsylvania Republicans in 2011. Indeed, unless Democrats reach 2006 levels of support — when they won 56.13 percent of the congressional vote — they were not projected to garner any additional seats under the now invalidated map.



The distribution of seats under the struck down map (Figure 4) bears many of the hallmarks of a particularly aggressive seat-maximizing gerrymander. No fewer than seven of the districts won by Republicans from 2012 to 2016 cluster between 55 and 59 percent of the Democratic vote share. This is highly indicative of an artful spreading out of Republican voters to win as many seats as possible — particularly given that Democratic vote share in more recent elections has been consistently lower and has only exceeded 56 percent in the 2006 Democratic wave election. Indeed, in the more recent elections between 2010 and 2016, Democratic vote share in Pennsylvania has been between 46.60 and 50.76 percent, making all of the districts in that range safely Republican.

While Republican voters were tactfully spread to maximize their voting strength, the congressional map does the opposite with their Democratic counterparts. Two of the districts expected to be won by Democrats are won with just 9.02 and 15.15 percent of the statewide vote. These are among the most Democratic districts in the country. As a comparison, in California, Democrats are not expected to win any seats unless they secure 22 percent of the statewide vote. In Pennsylvania, they are projected to win three with just over 24 percent.¹³ This dense packing of Pennsylvania Democrats into a few districts, without similarly packed Republican districts, leaves fewer Democratic voters to be split among the other, more competitive districts.

The result, of course, is a remarkably unresponsive map. Democrats are projected to win their first four districts with just 30 percent of the statewide vote. At 41 percent, they are expected to win their fifth. It takes more than 55 percent of the statewide total to project Democrats winning six congressional seats or one third of the Pennsylvania delegation. In other words, the composition of Pennsylvania's congressional delegation remains static even with a 14-point swing in favor of Democrats.

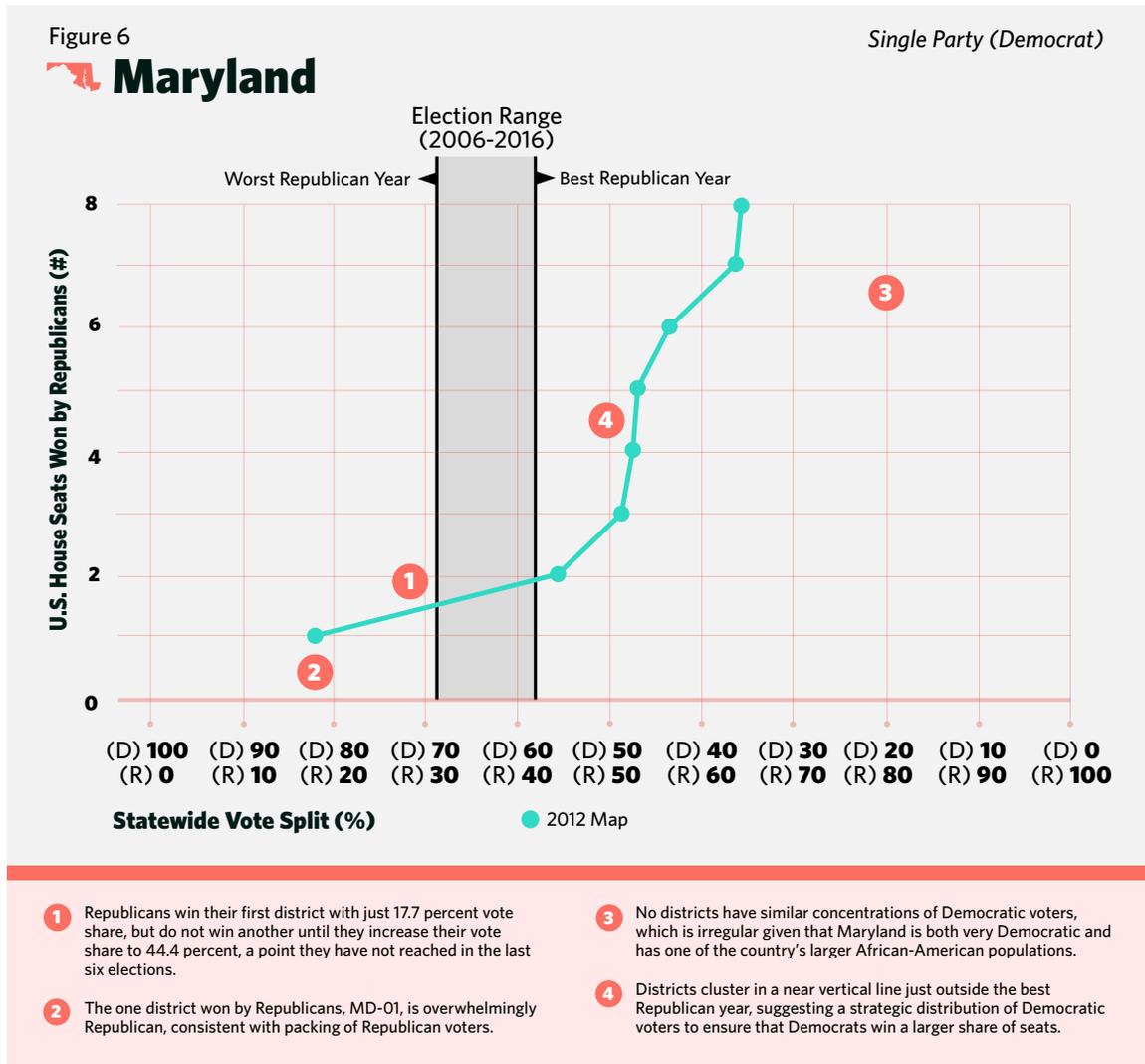


These manipulations allow a state that regularly returns even splits for Democrats and Republicans to send a delegation that is over 70 percent Republican to Congress. By contrast, the replacement map drawn with guidance from a special master and ordered into effect for the 2018 election (Figure 5) is much more responsive.¹⁴ As a party wins more votes, it wins more seats. At least five seats are located in the band representing Pennsylvania’s recent vote share splits.

Case Study: Maryland

If Pennsylvania is an example of an aggressive Republican gerrymander, Maryland’s 2011 congressional map is its Democratic counterpart.

In Maryland, Democrats had supermajorities in both houses of the legislature, plus held the governor’s office, during the 2010 congressional redistricting.¹⁵ This allowed Maryland Democrats to follow a similar playbook to that of Pennsylvania Republicans. The resulting map all but guarantees Democrats seven out of eight districts (up from six before redrawing of the maps) even during strong Republican years like the wave election of 2014. It is also the subject of a partisan gerrymandering



lawsuit that reached the Supreme Court.¹⁶

Overall, Maryland is a decisively Democratic state. Maryland's residents are among the best educated in the nation and have among the highest median incomes.¹⁷ The population is largely clustered in dense metropolitan areas around Baltimore and greater-Washington, D.C. Maryland also has a very large African-American population, comprising more than 30 percent of residents.¹⁸

Given this demographic profile, it is no surprise that Democrats, who have historically won between 58 and 69 percent of the statewide congressional vote, hold a significant partisan advantage. Nonetheless, the Maryland map's lack of responsiveness indicates that this electoral dominance comes, in part, from a concerted effort to keep certain districts well beyond the reach of Republicans.

Like the gerrymander in Pennsylvania, Maryland's map does not respond to the usual shifts in partisan preference (Figure 6). There are no competitive seats, even during wave election years. And, under a hypothetical scenario where Democrats and Republicans evenly split the statewide vote, Democrats are still expected to win six contests and the Republicans two. Such outcomes are possible thanks to the efficient distribution of Democratic voters among seven districts and the efficient packing of Republican voters into one.

Under this map, Democrats must receive over 35 percent of the statewide vote to be expected to win a single seat, while Republicans need less than 20 percent. Put differently, the most Republican district — Maryland's 1st Congressional District — is more densely Republican than the most Democratic district is Democratic. This is highly suspect considering the overwhelming statewide partisan advantage held by Democrats, the state's large African-American population, and the presence of urban centers with dense concentrations of Democratic voters. Such a result, as it turns out, is only possible because of surgical line drawing to place the heavily Republican suburbs of Harford and Baltimore into the district.¹⁹

Maps Drawn by Independent Redistricting Commissions

The two congressional maps drawn this decade by independent commissions — in California and Arizona — are considerably more responsive than those drawn under single party control, even in the instance where the commission was forbidden from considering political outcomes.

Case Study: California

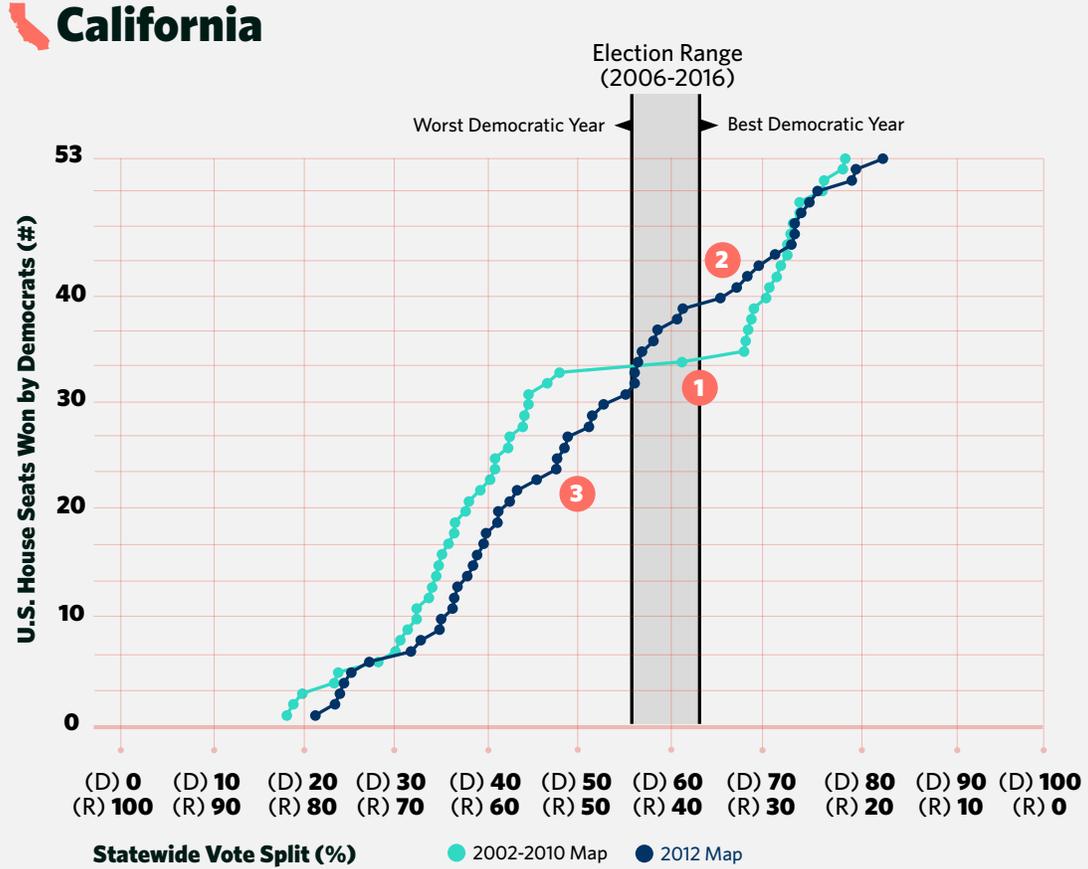
In 2008, California voters approved Proposition 11, a constitutional amendment that dramatically changed the state's map-drawing process. Instead of the legislature drawing maps, voters created a 14-member independent commission to draw California's districts starting with the 2010 cycle. The result was a much more responsive map.

The chart on the next page (Figure 7) compares California's current congressional plan (in effect 2012 to present) with the plan from the previous decade (used from 2002 to 2010). The 2012 plan (districts plotted in dark blue) was drawn by a citizen commission with support from Republican, Democratic, and independent members. The 2002 plan (plotted in light blue) was an infamous bipartisan gerrymander drawn by the legislature to protect incumbents.²⁰

Because the 2002 plan was designed to have safe districts for both parties, almost all districts are clustered at either end of the statewide vote share spectrum — either strongly Democratic (the left-

Figure 7

Independent Commission



1 The bipartisan gerrymander in the 2002-2010 map had districts clustered on either side of the statewide vote split range suggesting a strategic choice to split turf between the parties and better protect incumbents.

2 The independent commission drawn 2012 map is much more responsive to electoral swings, with seats steadily increasing with increasing vote share across the curve.

3 At a 50-50 vote split, under the 2002-2010 bipartisan gerrymander, Democrats were expected to win 33 of 53 seats or 62 percent of the districts. Under the 2012 commission drawn map, they should win 27-28 of 53 seats or just over half.

most 33 districts) or strongly Republican (the right-most 18 districts). This plan is not responsive to changes in voters' preferences. While Democrats are expected to win 33 of the 53 seats with just 47 percent of the statewide vote, they must win 66 percent of the statewide vote to add two seats.

Conversely, under the 2002 plan, Republicans were expected to win 18 seats when they received 34 percent of the statewide vote. But, to add an additional district to that projection, they had to increase the vote share to 40 percent. To get to 20 expected seats, the Republican vote share had to top 53 percent statewide. Under this legislatively drawn plan, only one seat fell within the historic range of statewide election results so that it would be competitive. This district was originally drawn to be a safe Republican seat but unexpectedly changed hands halfway through the decade due to shifting politics. Every other district was safe — a prototypical example of a bipartisan, incumbent-protecting gerrymander. Republicans and Democrats in the legislatures settled on turf and carved up the state accordingly.

This is in sharp contrast to this decade's commission-drawn plan. The districts under the 2012 plan spread evenly from the most Democratic to most Republican. When Democrats win half of the statewide vote, they are projected to win about half of the seats, either 27 or 28 out of 53. Eight districts fall within the range of historic competitive elections. Most notably, an increase in statewide vote share for either party results in a corresponding increase in the number of districts won.

Of course, there are numerous Republican and Democratic seats that are not competitive. These are a function of California's political geography, which includes heavily Republican areas, such as the rural Central Valley, and heavily Democratic areas, such as central Los Angeles and San Francisco. It is virtually impossible to draw competitive districts in these areas without running afoul of other legitimate redistricting criteria. But the map as a whole is responsive to voter preference. This is why the responsiveness analysis, rather than one focusing on competitiveness alone, provides a better gauge of fairness. Under this measure, the independent redistricting commission's map is significantly fairer than the legislatively created effort it replaced.

Maps Drawn by Courts

Court-drawn maps this decade are markedly more responsive than maps drawn under single-party control. The responsiveness in court-drawn maps exists even in states like New York where a high percentage of the state's Democrats are densely concentrated in New York City.

Case Study: New York

As a result of reapportionment after the 2010 census, New York lost two congressional seats, reducing its representation in the House from 29 to 27.

In 2012, New York Democrats, who controlled the governor's mansion and state assembly, and Republicans, who controlled the state senate, were unable to agree on a congressional redistricting plan in time. As a result, a federal district court appointed a special master to draw a new map.²¹

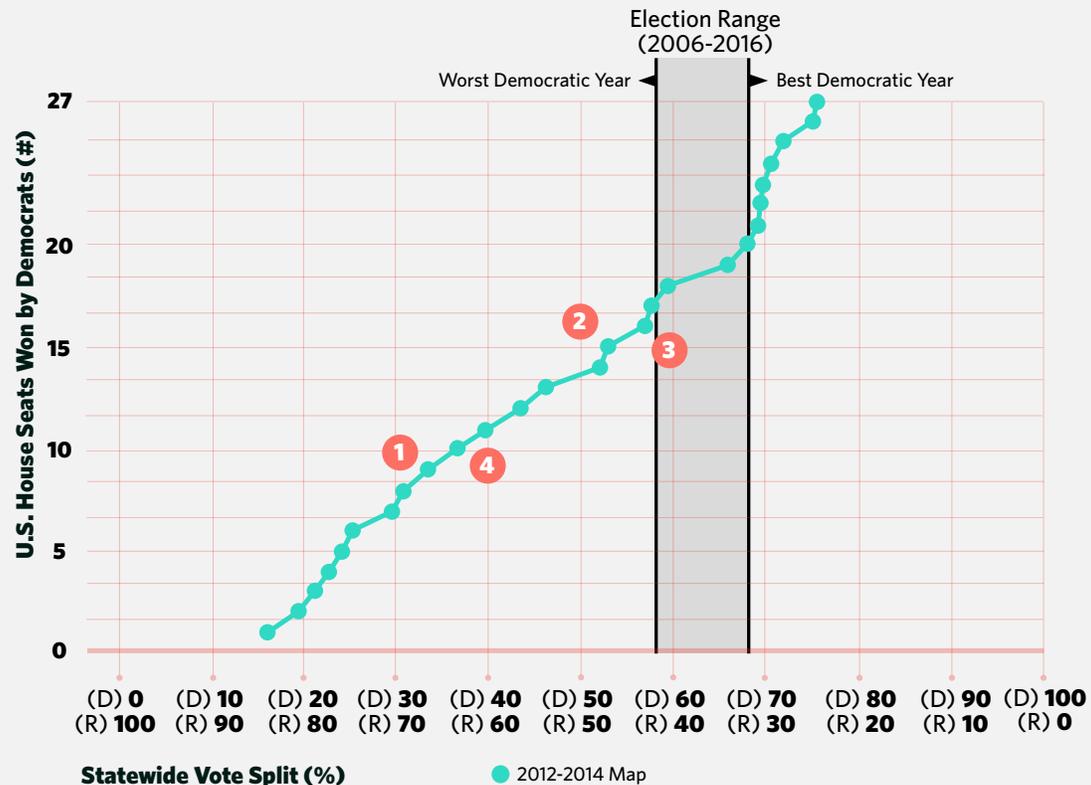
The court required that the map produced by the special master comply with "traditional principles" of compactness, contiguity, and respect for political subdivisions and to the extent possible preserve communities of interest.²² However, the court rejected recommendations of legislative leaders and did not require that the map preserve the cores of existing districts or protect incumbents.²³

The resulting map — drawn using the relatively strict criteria set by the court — is one of the most responsive of the decade (Figure 8), with Democrats and Republicans each steadily gaining seat share as their vote share increases (and vice versa).

Figure 8

Court Imposed

New York



- 1 The curve is responsive, showing that each party gains seats in rough proportion to its increase in vote share. This holds true despite the significant concentration of Democratic voters in densely populated New York City, demonstrating that political geography does not preclude responsive districting.
- 2 At a 50-50 vote split, Democrats should win 13-14 out of 27 seats.
- 3 If Democrats win 60 percent of the vote, they should win around 66 percent of the seats.
- 4 If Democrats win 40 percent of the vote, they should win around 41 percent of the seats.

Overall, the responsiveness of the New York map compares favorably to California’s commission-drawn map and contradicts the arguments that the large and dense concentration of Democrats in urban centers like New York City (or Philadelphia) makes it difficult to draw balanced maps. New York City is both overwhelmingly Democratic and represents almost half the state’s population. Yet the map is highly responsive to electoral swings. New York Republicans may not have much of a chance to win districts in New York City, but there are plenty of other places on the map where they can, and do, compete.

The New York map, indeed, has had a high number of competitive districts in each of the four elections since 2012, including 2018, where more than a quarter of New York congressional races were rated as competitive as of the end of February 2018.²⁴ Notably, this competitiveness exists despite the fact that 13 of 27 districts retained 70 percent or more of their population from the prior decade’s incumbent protection map.²⁵ It is possible that if more aggressive changes had been made to the 2002 map, the map could have been even more responsive.

III. HOW TREATMENT OF MINORITY COMMUNITIES AFFECTS RESPONSIVENESS

Congressional maps from Texas, Virginia, and North Carolina offer a vivid illustration of how weakening the political power of minority communities can be a key, and often essential, ingredient in gerrymandering — enabling map-drawers to easily and efficiently entrench an advantage for the political party in control of redistricting.

Conversely, maps drawn to end the adverse treatment of minority communities offer important lessons about how greater minority representation can move hand in hand with creating more responsive maps, even if the latter was not a goal. Maps in Virginia and Texas that unwound the adverse treatment of minority communities not only increased minority electoral opportunities — as expected — but also resulted in maps that are substantially more responsive to electoral swings — a benefit for all voters.

This stands in contrast to the experience of North Carolina, where a court threw out the state's congressional map for racial gerrymandering. Ordered to redraw the map, the state's Republican legislature publicly stated their intent to simply replace the racially gerrymandered map with “a political gerrymander.”²⁶ The result was a map that became only nominally more responsive to electoral swings and, at the same time, essentially locked in the discriminatory effect experienced by African-Americans under the old map.

Case Study: Texas

Between 2000 and 2010, Texas grew faster than any state in the country, adding nearly 4.3 million people and gaining four congressional seats as a result.²⁷ Minorities accounted for the overwhelming share of that population gain — with Latinos and African-Americans collectively making up 89 percent of the growth and Latinos themselves accounting for nearly two-thirds.²⁸

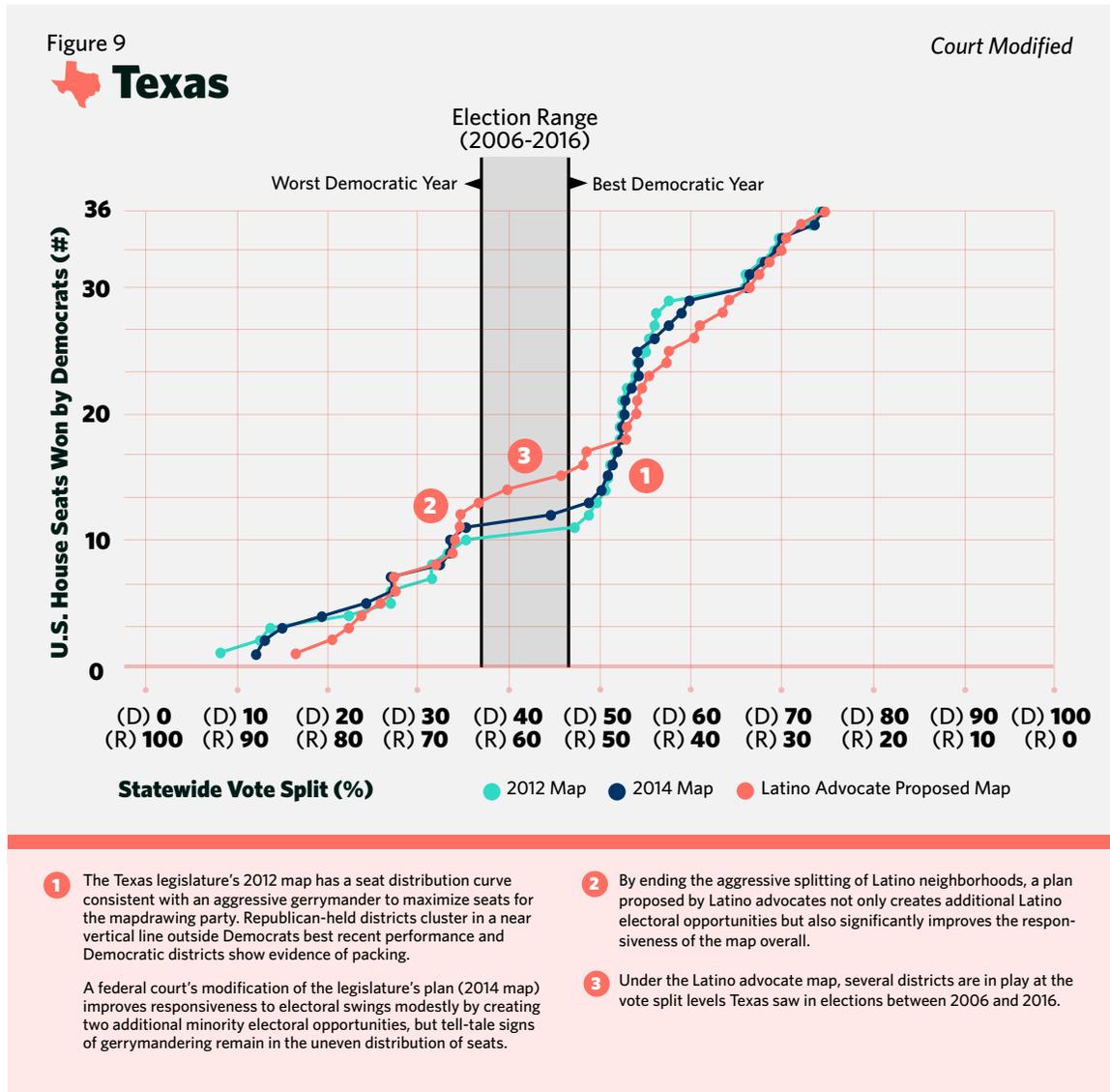
In Texas, minority groups challenged the congressional map drawn by the Texas legislature, contending that, despite the rapid growth in Texas' minority populations, the state had failed to create any additional districts where minorities could elect candidates of choice. The groups argued that Texas achieved this result by dividing Latino communities among a large number of districts, often joining urban Latino neighborhoods with larger suburban communities where white voters were an overwhelming majority with distinct, if not conflicting, political interests.²⁹

When the legislature adopted the map in 2011, Section 5 of the Voting Rights Act required Texas's plan to win approval from a federal court or the Department of Justice. Because Texas failed to do so in time for the 2012 election, a federal court partially redrew the map to remedy what it considered some of the more blatantly discriminatory features of the map. The most significant change was the creation of a new district in the Dallas-Fort Worth region that partially reunited Latino communities that had been divided among eight districts in the legislature's plan. The court's map also made modifications to a Latino-majority district in West Texas, that Latino groups contended the state had made significantly less likely to elect a Latino-preferred candidate.

Despite these judicially imposed changes, minority groups continued their challenges, contending that the court-drawn map (which the Texas legislature made permanent in 2013) did not go far enough in remedying discrimination against Latinos and African-Americans.

Minority groups offered alternative plans that would have gone significantly further than the court-drawn map in creating additional electoral opportunities for Latinos and African-Americans. A plan proposed by Latino plaintiffs, for example, would have more aggressively reunited minority communities in the Dallas-Fort Worth region by adding a Latino majority district and as well as an African-American plurality district to give the region three rather than two minority-controlled seats.³⁰ The plan also would have unwound the fracturing of minority communities in Houston and in South Texas.

From a responsiveness standpoint (Figure 9), the plan originally adopted by the Texas legislature bears many of the hallmarks of a seat-maximizing gerrymander drawn to favor one party. The map's Republican-controlled districts are won by relatively narrow margins, but nevertheless cluster safely beyond the band representing Democrats' best year in recent history, which was 2008. For Democrats to win more than one-third of seats under the 2011 Texas map, they would need to win close to half the vote.



By contrast, court-ordered modifications to the map — which reunited minority communities in Dallas and Fort Worth and improved the performance of a Latino district in West Texas — produced a map with greater responsiveness despite the fact that the changes were relatively modest.

Had courts (or Texas) been more aggressive in undoing the fragmenting of urban Latinos and the packing of African-Americans, the improvements in responsiveness would have been even greater — coming close to an ideal distribution. Indeed, the Latino plaintiffs' plan, by reuniting minority communities separated in both legislative and court-drawn maps, is highly responsive to electoral swings with the number of seats a party can expect to win being closely correlated to its vote share.

Case Study: Virginia and North Carolina

In contrast to Texas, where minorities were disadvantaged primarily through the strategic splitting apart of minority communities, in Virginia and North Carolina, minority voters were disadvantaged by packing them in only a few districts.

In both states, African-American voters challenged the congressional maps as racial gerrymanders, contending that lawmakers joined together disparate communities solely on the basis of race. And in both states, courts struck down the maps and ordered them redrawn for the 2016 election.

The remedial process in the two states diverged, however.

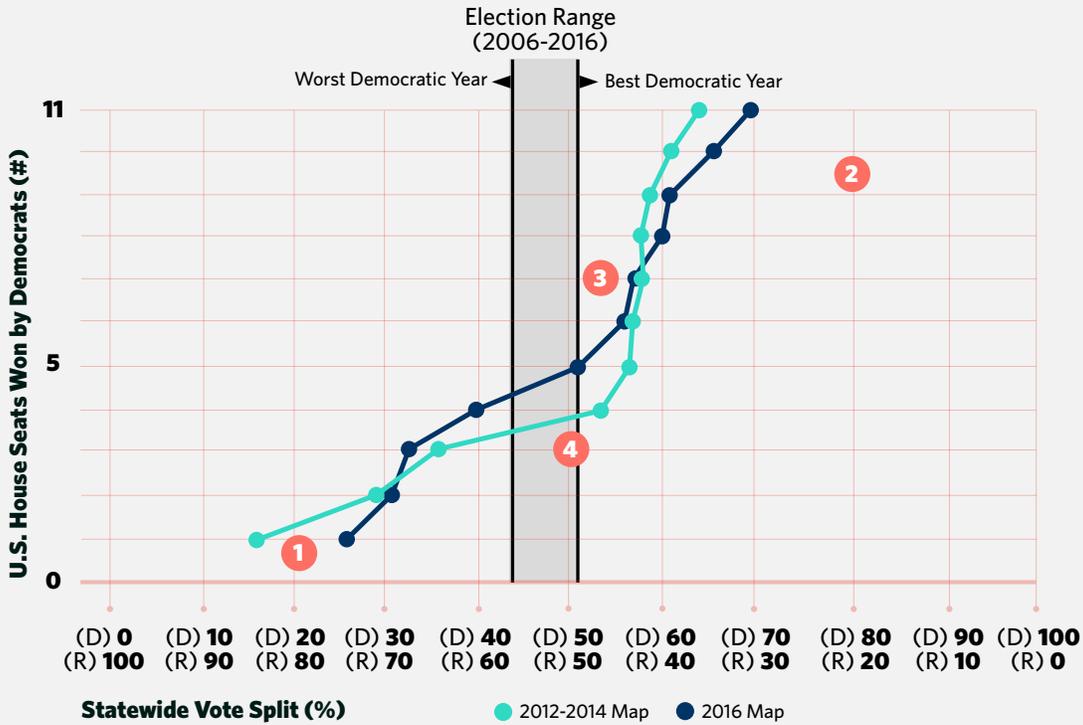
In Virginia, the Republican-controlled legislature and Democratic governor were unable to agree on a new map, and a court-appointed special master re-drew it.³¹ The special master's map undid the aggressive packing of African-Americans into a single district — placing African-Americans in central Virginia and African-Americans in coastal tidewater Virginia in separate districts.³² The result created two electoral opportunities for African-Americans where there had previously been one.

The unpacking of African-Americans in the new map significantly improved electoral responsiveness (Figure 10), giving Democrats a reasonable opportunity to win 5 out of 12 seats. Despite being significantly more responsive than the old map, the new map is not, however, as responsive as maps in California and New York. The continued clustering of a large number of seats outside the zone of competitiveness suggests uncured gerrymandering and that the packing of African-Americans was only one of the techniques used to maximize Republican seat share.

Figure 10

Court Modified

Virginia

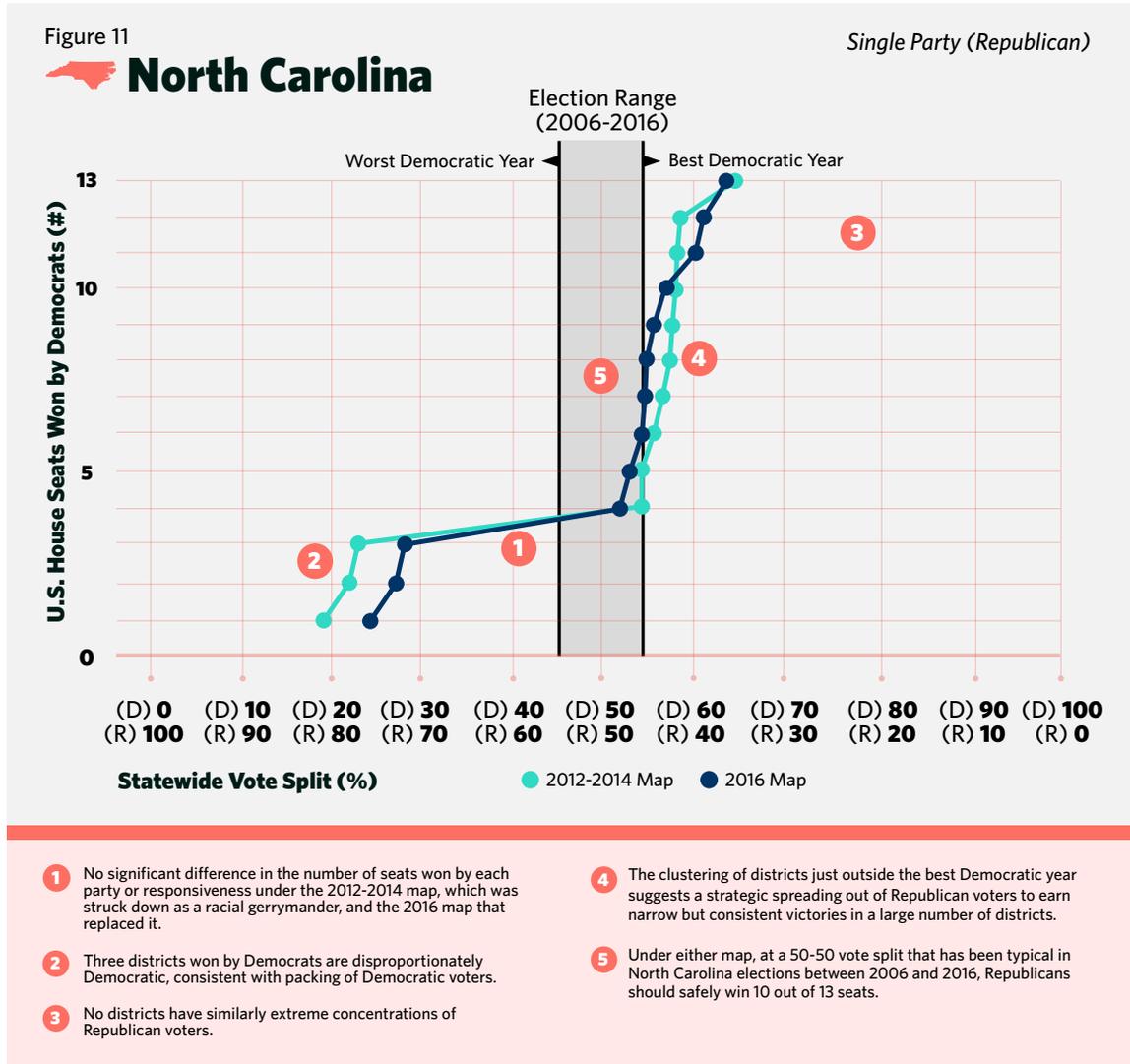


- 1 VA-3, the state's one African-American majority district under the 2012-2014 map, is much more Democratic than it is under the 2016 map because it packed overwhelmingly African-American voters into a single district.
- 2 There were no districts that had similar concentrations Republican voters, but after a federal court imposed the 2016 map there are now Republican counterparts to the most Democratic districts.
- 3 The clustering of districts in the 2012-2014 map outside the best Democratic year suggests a strategic spreading out of Republican voters to earn narrow but consistent victories for Republicans in a large number of districts. The 2016 plan made the map more responsive.
- 4 Under the 2012-2014 map, at a 50-50 vote split, Democrats were expected to win only 4 of 11 seats. Under the 2016 map, they should win 5 of 11 seats.

In contrast to Virginia, the North Carolina governor lacks the power to veto a redistricting bill.³³ As a result, when a court struck down the state's 2011 congressional map as a racial gerrymander, the leaders of North Carolina's Republican-controlled legislature announced that they would simply redraw the map as "a political gerrymander."³⁴ Republican lawmakers, in fact, went so far as to adopt written rules requiring that any map considered by the legislature contain at least 10 safe Republican districts out of 13.³⁵

After the legislature passed their "political gerrymander" map in a party-line vote in early 2016, the African-American plaintiffs in the racial gerrymandering case filed objections and asked that the trial court block the new map on the grounds that the legislature had not only failed to adequately undo racial gerrymandering in the old map, it had also created an unconstitutional partisan gerrymander.³⁶ The trial court, however, allowed the map to go into effect, overruling the racial gerrymandering objections and holding that it did not have sufficient information to decide the partisan gerrymandering claims.³⁷

From a responsiveness perspective (Figure 11), there is little difference between the North Carolina congressional map struck down as a racial gerrymander and its replacement.



Under the 2016 map, the two African-American controlled districts became slightly less Democratic as did the state's one non-minority controlled Democratic district — indicating that Democrats had been less ruthlessly packed. However, the new map, like the original, has notable signs of gerrymandering, with a significant number of Republican-won districts clustering just outside the 2006-2016 electoral boundary.

The degree to which both maps entrench Republicans is remarkable. Democrats do not gain a fourth seat until their vote share exceeds 52 percent, something that has happened in only one election out of the last six — the exceptional Obama wave election of 2008. While another wave election like 2008 might result in one or two competitive seats, in every other election of the past decade, Republicans could safely count on winning a 10 to 3 advantage in the state's congressional delegation under both the 2011 and 2016 maps. And, in order for more than two Republican seats to be at risk, an electoral wave unlike anything North Carolina has seen in recent history would be required.

METHODOLOGY

A. Data Sources

We obtained district-level election results compiled by Dave Wasserman at Cook Political Report in his National House Popular Vote Trackers.³⁸

For districts without both a Democrat and Republican running in the general election, we estimated the vote share both parties would have received in a contested two-party election based on the prior election's House results, the most recent district-level presidential results using totals calculated and compiled by Daily Kos Elections for both 2012 and 2016, and the winning candidate's incumbency status.³⁹

B. Calculations

All calculations were done using two-party vote shares and excluded third-party and independent candidate results.

We assessed responsiveness by conducting a uniform vote swing analysis — making the key assumption that individual district vote shares change in direct proportion with the statewide vote share — to derive the expected seats-to-votes curve for all possible statewide vote shares. Using algebra, we determined how much more or less Democratic each district is than the overall state, and the statewide vote share needed for each district to flip (assuming, for these purposes, that a district flips at 50 percent).

Charting these values gives us the shape of the curve. A maximally responsive map would yield a fairly steady, smooth curve — as Democrats gradually win a larger share of the statewide vote, they should likewise win gradually more seats. We expect gerrymandered curves to appear more piecewise, with large gaps and sudden steep increases where districts are clustered together in the chart. This indicates intentional cracking and packing, and helps visualize how gerrymanders can be designed to avoid responsiveness and entrench power.

C. Hypothetical Example

To illustrate, consider a hypothetical state with five districts, each with 20 voters.

District	Democratic Votes	Republican Votes	Democratic Vote Share
1	10	10	50%
2	15	5	75%
3	7	13	35%
4	12	8	60%
5	6	14	30%
<i>Total</i>	50	50	50%

Using a uniform vote swing analysis, we assume that the statewide vote changes in direct proportion

with district vote shares. So, in our hypothetical state, an extra 1 percent shift in favor of Democrats would lead to a statewide vote share of 51 percent and district-level vote shares of 51 percent, 76 percent, 36 percent, 61 percent, and 31 percent.

District	Democratic Vote Share	District Difference from Statewide (Statewide – District)	Statewide Vote Share Needed for District to Flip (50% – Difference)
1	50%	<i>EVEN</i>	50%
2	75%	25%	25%
3	35%	-15%	65%
4	60%	10%	40%
5	30%	-20%	70%
<i>Total</i>	50%		

The results in the last column tell us the statewide vote shares at which Democrats should be expected to win individual districts in our hypothetical state. In this case, we expect Democrats to win one district when they win 25 percent of the statewide vote, another when they win 40 percent, a third when they win 50 percent, a fourth when they win 65 percent, and a fifth when they win 70 percent of the overall statewide vote.

D. Caveats on Uniform Vote Swing

This study uses a uniform vote swing to examine responsiveness. This assumes that the statewide vote share moves in tandem with the vote share of all individual districts — as one increases, the others increase the same amount as well. This assumption is well-documented and defended in political science to predict broad electoral outcomes, as national factors strongly influence district-level results.⁴⁰ In the redistricting field, it is commonly used to test the sensitivity of proposed redistricting plans, and likely by map-drawers and gerrymanderers to assess the outcomes of potential plans.⁴¹

However, we caution against using the model to predict any individual race, as it does not take into account incumbency, candidate quality, local issues, electoral population shifts, scandals, or any other district-level factors. As a result, some districts — particularly those on the edge of predicted vote shares — are likely to be toss ups, and Democrats are likely to have an easier time winning some than others due to these aforementioned factors. The high number of retirements, in particular, makes it likely that Democrats could win slightly more districts than we predict, as more Democratic challengers will be facing fresh Republican candidates as well. A lack of Republican enthusiasm in a given district could, likewise, impact fundraising, volunteering, and turnout, possibly putting unexpected districts in play. These uncertainties are not reflected in our model, as we approach this issue from the perspective of map-drawers concerned about broad outcomes rather than that of election forecasters.

Finally, a uniform vote swing is less observable in heavily Republican or Democratic districts. A district that votes 95 percent Democratic in a state that is only 50 percent Democratic overall is unlikely to swing completely to 100 percent Democratic if the overall statewide vote share shifts to 55 percent. However, these districts are so far away from both the historical and potential two-party vote share range that the variation in swing for these districts has little to no impact on the model.

E. Note on Categorization of States

For purposes of this report, we placed states in one of the following categories based on their map-drawing process:

1. States whose maps were drawn under sole **Republican control**. These are mostly states where Republicans controlled both the state legislature and governorship and could pass a redistricting plan without any Democratic votes. States with Democratic governors are also included in this category if the Republican-controlled legislature had a veto-proof majority, as are states with a Republican-controlled legislature where the governor did not have veto power. These states are Alabama, Florida (2012, 2014), Georgia, Indiana, Louisiana, Michigan, North Carolina, Ohio, South Carolina, Tennessee, Virginia (2012, 2014), and Wisconsin. We also analyzed Pennsylvania as a map drawn under Republican control since that map was the one used in the 2012, 2014, and 2016 elections.
2. States whose maps were drawn under sole **Democratic control**. Democrats controlled both the state legislature and governorship and could pass a redistricting plan without any Democratic votes. These states are Illinois, Maryland, and Massachusetts.
3. States whose maps were drawn under **split control**, where the governor and legislatures were not all held by the same party. These states are Kentucky and Missouri.
4. States whose maps were drawn by an **independent commission**. These states are Arizona and California.
5. States whose maps were drawn by a **political appointee commission**. These commissions are separated from independent commissions because of the stronger partisan ties and roles of their members. These states are New Jersey and Washington.
6. States whose maps were **court-imposed**, which typically happens because of a legislative deadlock. This category includes states whose maps were chosen by a court or drawn by a court (or a court-appointed panel or special masters). These states are Colorado, Minnesota, and New York. For purposes of the election scenarios in Appendix 2, we also included Pennsylvania as a court-drawn map since the Pennsylvania Supreme Court has put a new map in place for the 2018 elections to replace the legislatively drawn map that it struck down as a partisan gerrymander.
7. States whose maps were **court-modified**, which typically results from a court decision overturning or changing part of a map but leaving the bulk of the map intact. These states are Florida (2016), Texas (2012, 2014, 2016), and Virginia (2016).

APPENDIX 1

A State-by-State Look at Electoral Responsiveness

Key to Charts: Democratic Vote Share

	2006	2008	2010	2012	2014	2016
Alabama	39.95%	44.57%	37.13%	39.45%	34.95%	36.75%
Arizona	48.83%	50.81%	44.15%	45.80%	44.57%	45.98%
California	59.03%	62.05%	56.09%	60.39%	57.82%	63.13%
Colorado	56.24%	55.97%	47.57%	51.52%	48.35%	49.52%
Florida	49.91%	49.78%	41.84%	49.43%	45.13%	47.35%
Georgia	44.65%	49.69%	42.72%	46.30%	42.12%	44.09%
Illinois	55.96%	60.02%	52.17%	55.41%	51.42%	55.17%
Indiana	49.41%	52.82%	41.13%	45.81%	38.90%	39.63%
Kentucky	43.70%	46.47%	37.49%	39.99%	36.42%	34.52%
Louisiana	39.21%	42.39%	33.84%	38.11%	36.09%	33.51%
Maryland	61.98%	68.75%	62.08%	65.46%	58.14%	62.97%
Massachusetts	71.69%	68.45%	62.16%	67.45%	63.61%	68.41%
Michigan	53.71%	54.44%	45.85%	52.73%	50.88%	49.44%
Minnesota	55.49%	60.13%	50.79%	56.32%	51.90%	51.80%
Missouri	48.60%	51.16%	42.32%	43.34%	37.99%	39.42%
New Jersey	56.11%	57.11%	49.27%	55.64%	51.03%	54.16%
New York	65.61%	67.01%	58.66%	65.04%	59.51%	61.72%
North Carolina	51.77%	54.68%	45.53%	50.93%	46.62%	46.68%
Ohio	52.67%	52.49%	43.97%	49.25%	41.94%	41.83%
Pennsylvania	56.13%	55.05%	48.09%	50.76%	46.60%	48.08%
South Carolina	44.08%	49.46%	41.91%	43.33%	40.59%	40.16%
Tennessee	51.85%	47.20%	36.18%	39.08%	35.73%	35.28%
Texas	45.17%	46.29%	36.71%	42.07%	39.53%	42.29%
Virginia	48.68%	50.56%	45.23%	49.04%	45.27%	48.32%
Washington	60.92%	59.20%	52.16%	54.44%	53.37%	54.66%
Wisconsin	53.58%	55.29%	44.60%	50.76%	47.20%	47.29%

Figure 1

Single Party (Republican)

Alabama

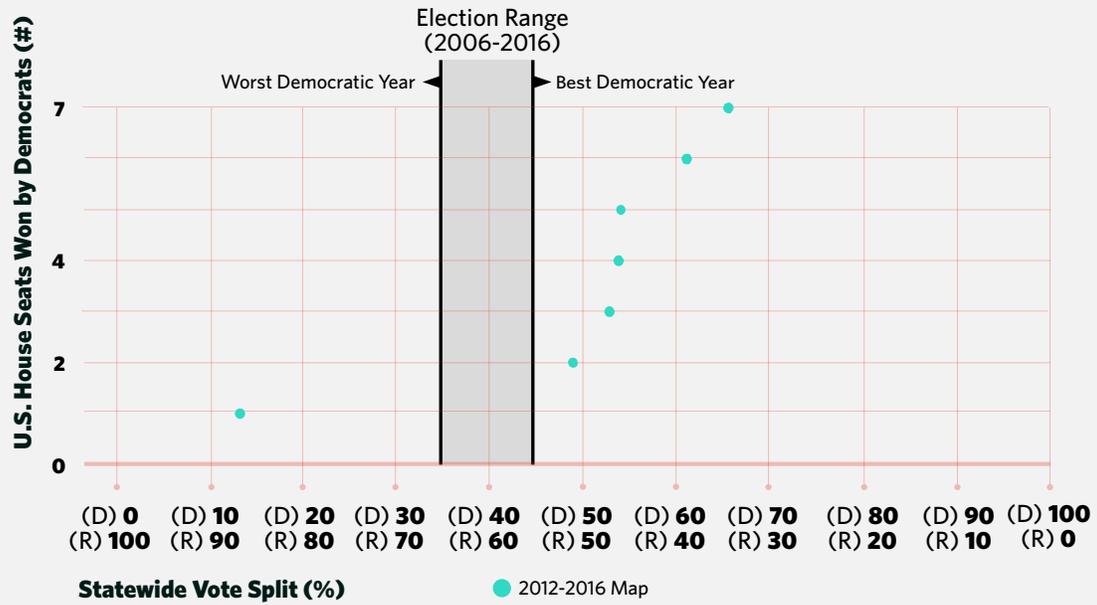


Figure 2

Independent Commission

Arizona

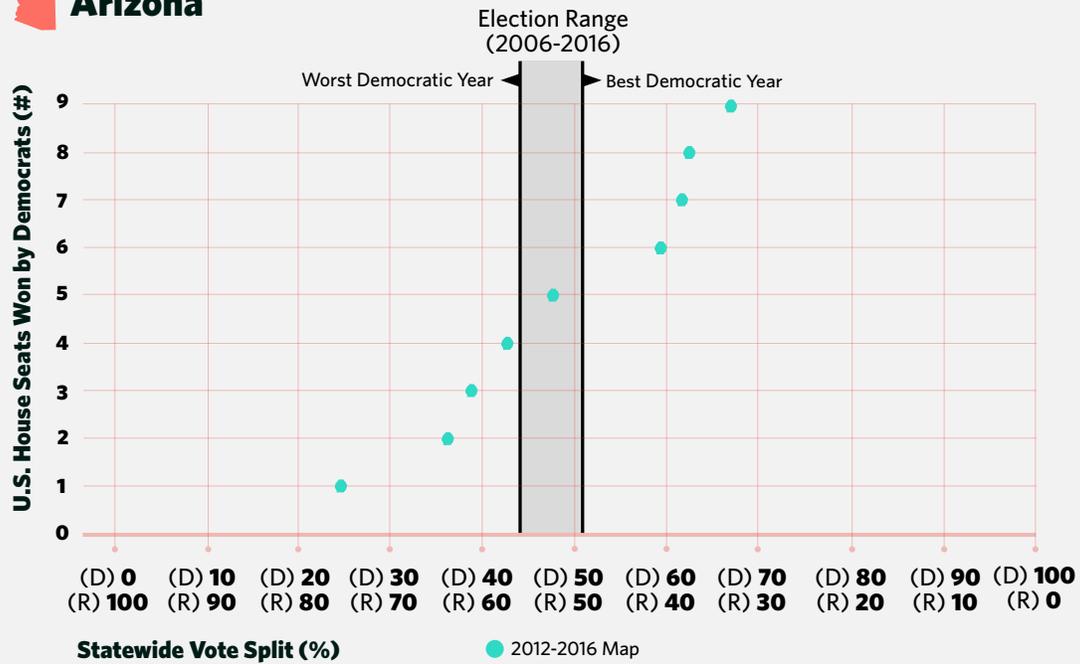


Figure 4

Independent Commission

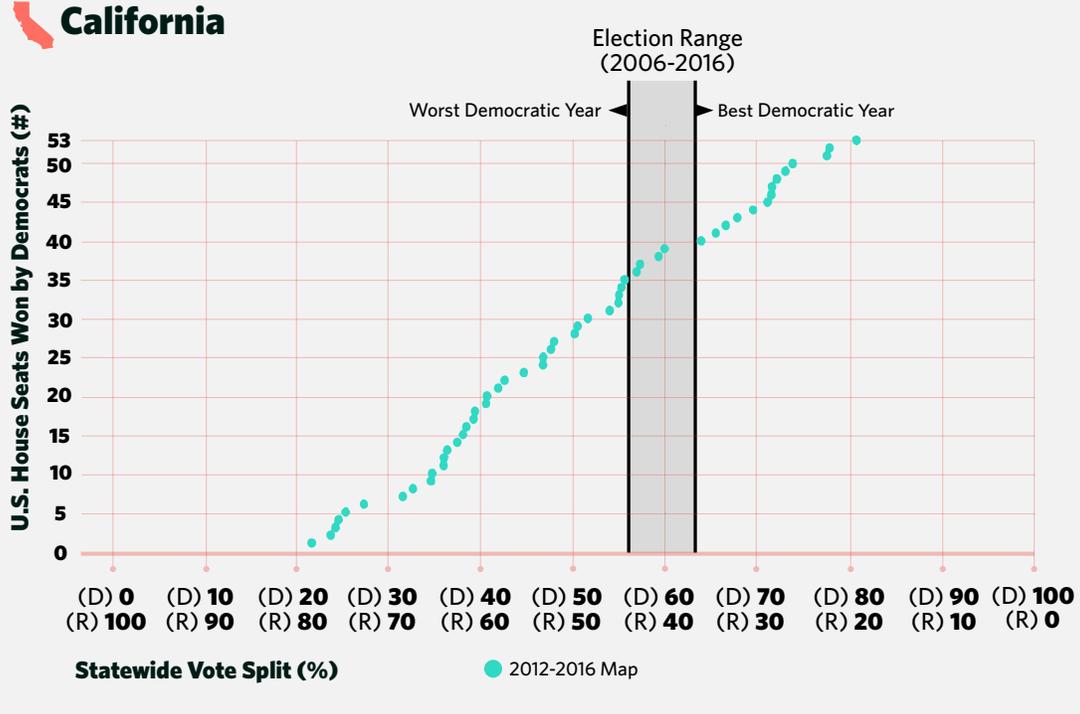


Figure 5

Court Imposed

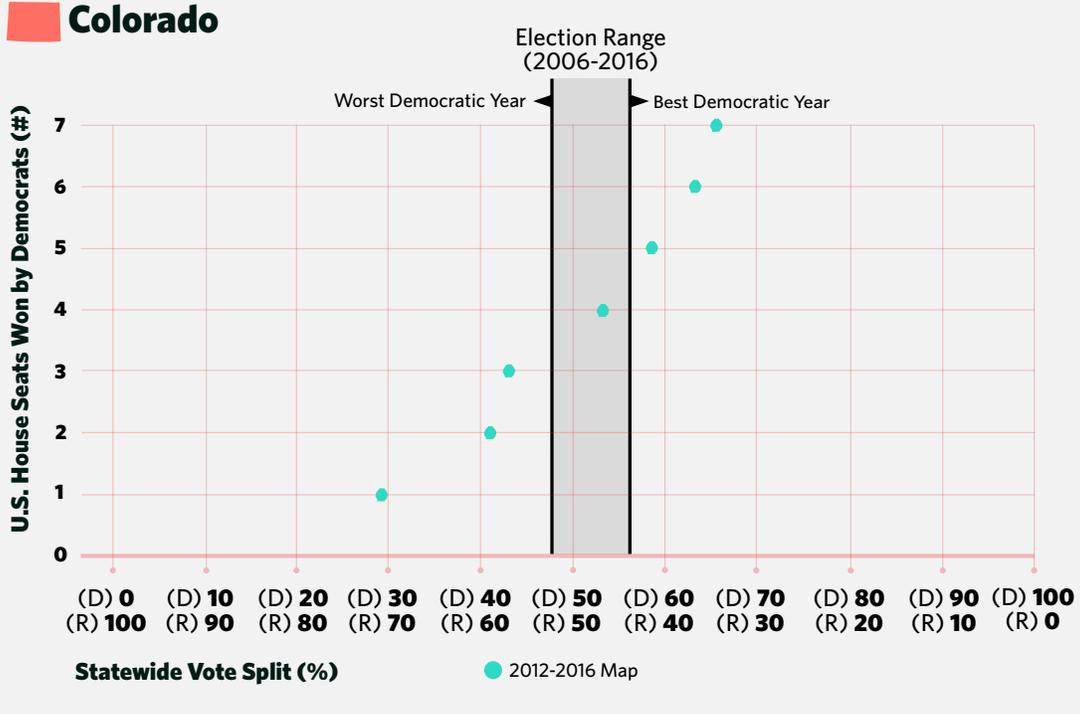


Figure 6

Court Modified

Florida

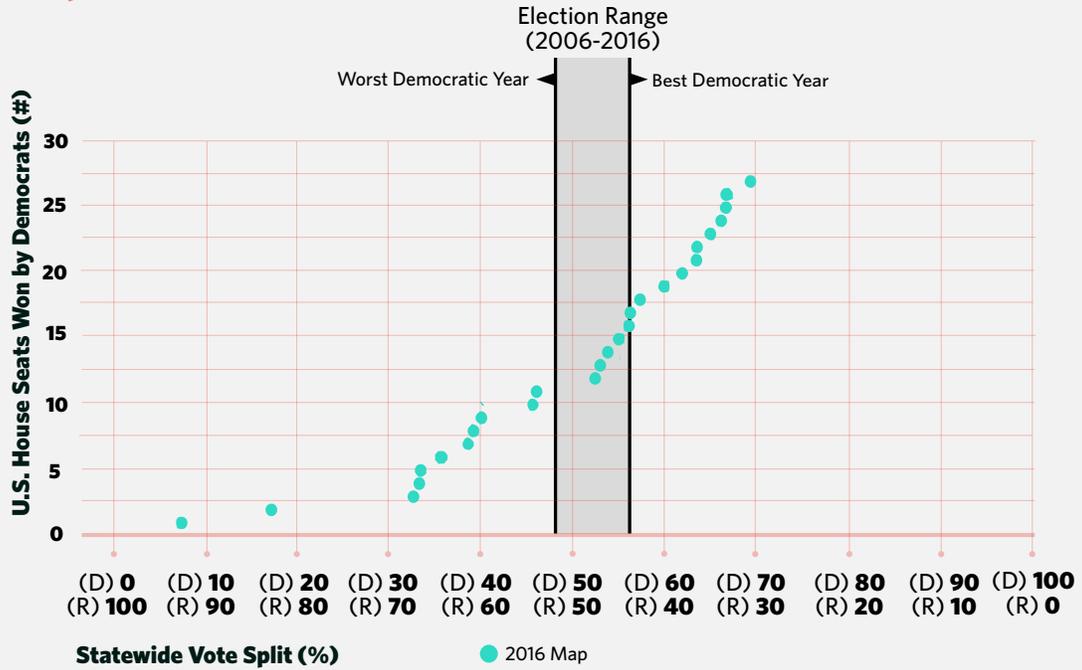


Figure 7

Single Party (Republican)

Georgia

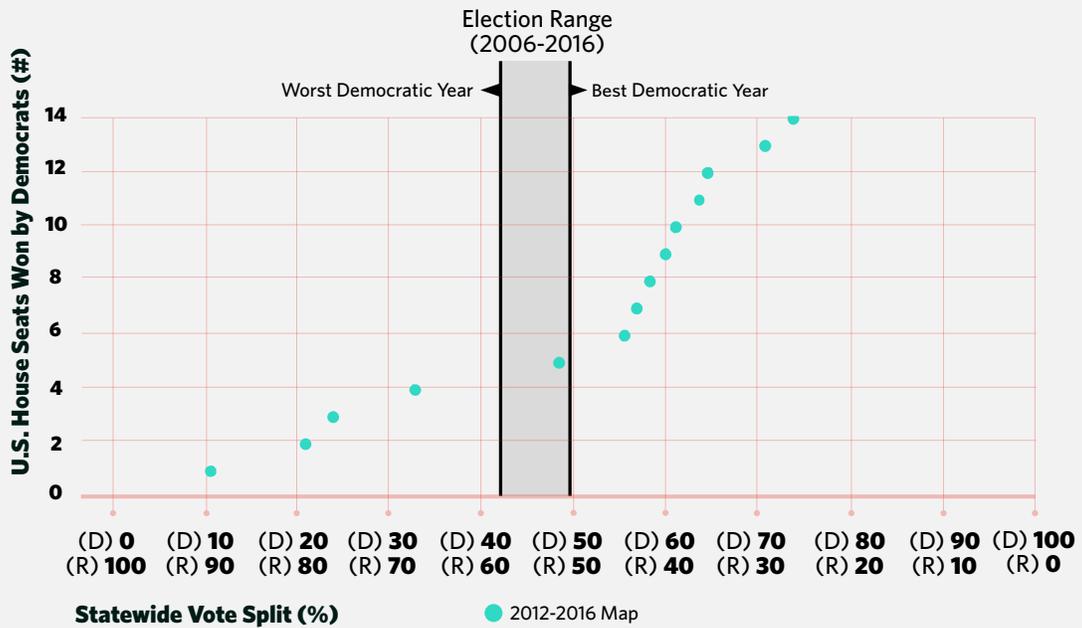


Figure 8

Single Party (Democrat)

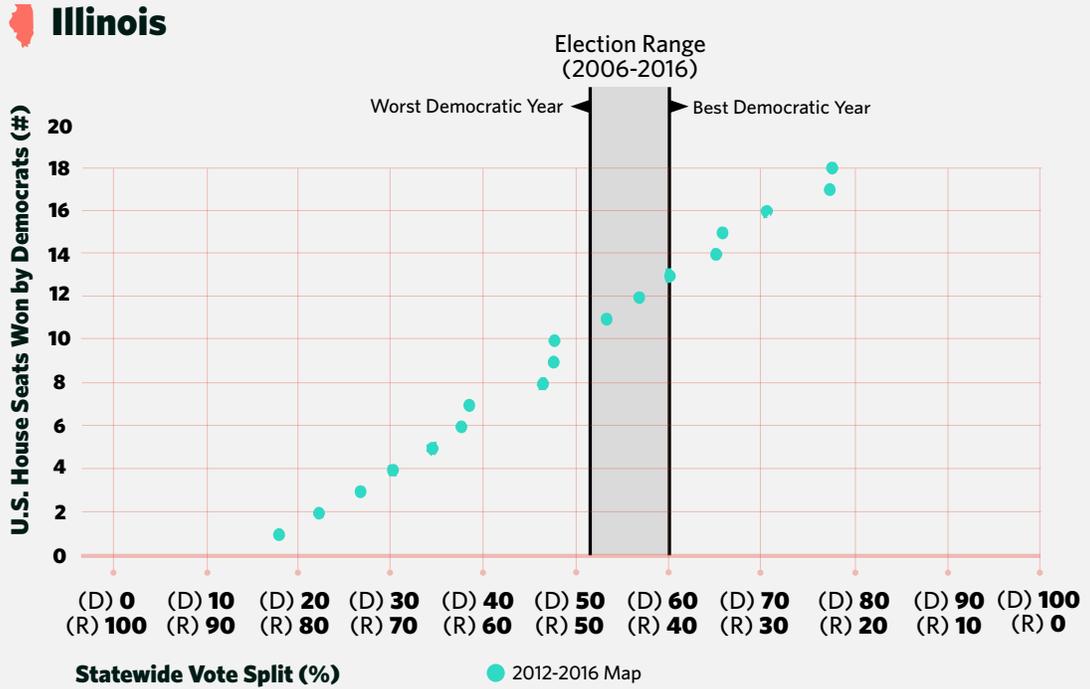


Figure 9

Single Party (Republican)

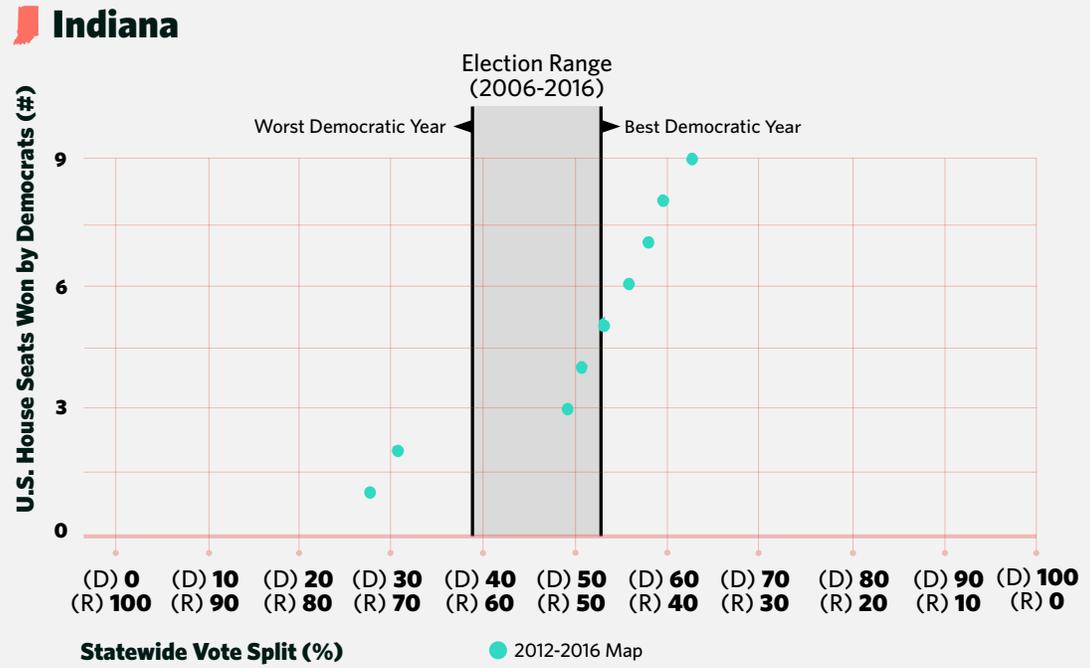


Figure 10

Split Control

Kentucky

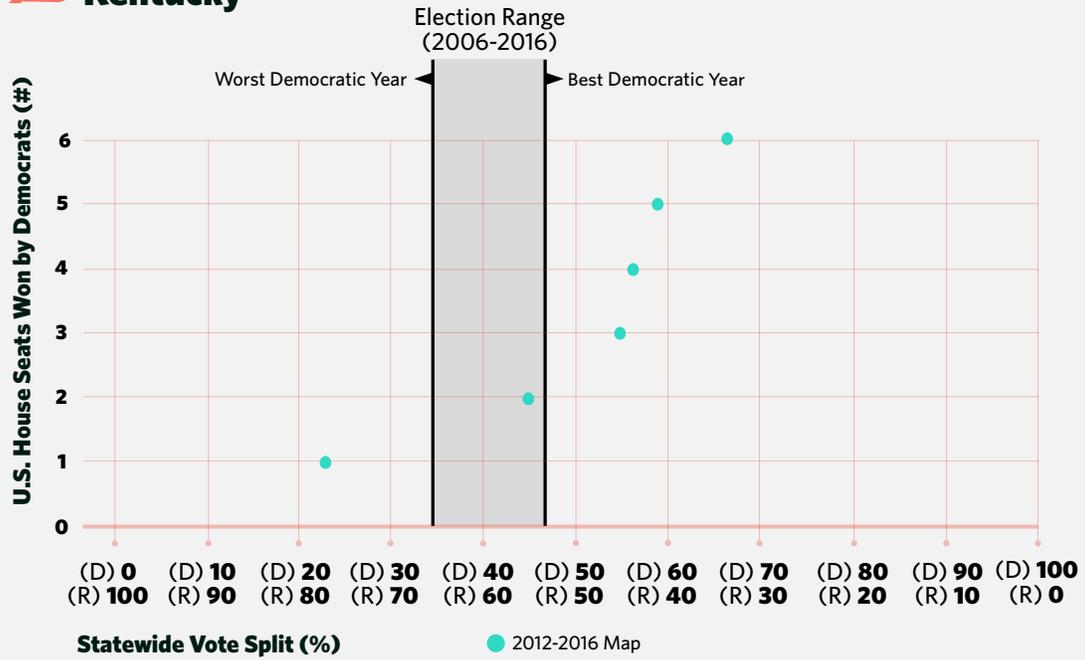


Figure 10

Single Party (Republican)

Louisiana

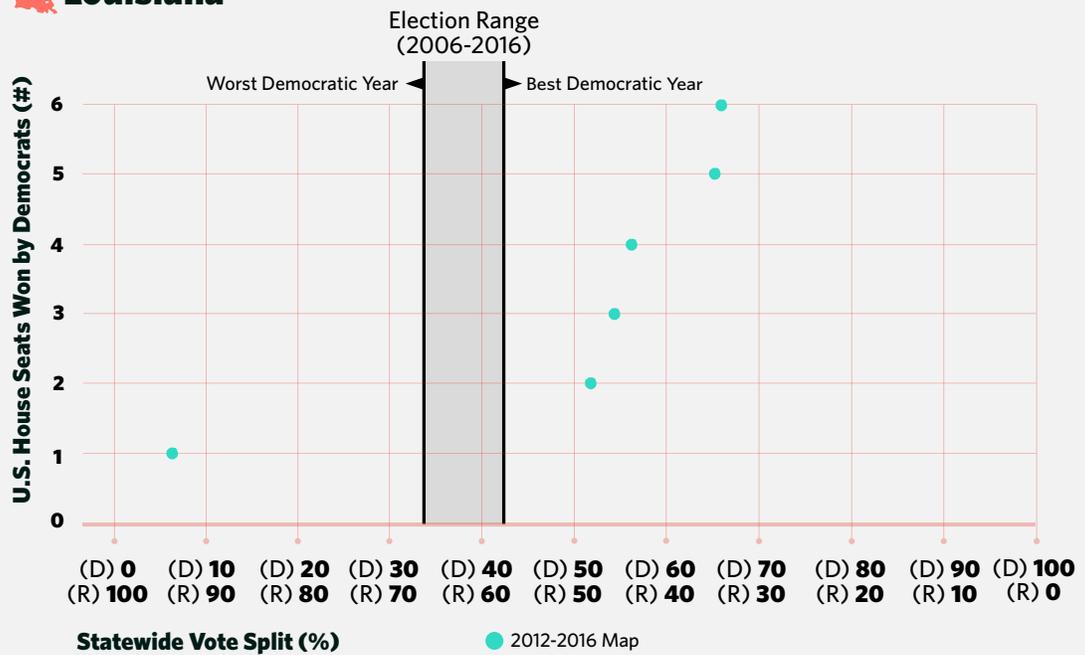


Figure 12

Single Party (Democrat)

Maryland

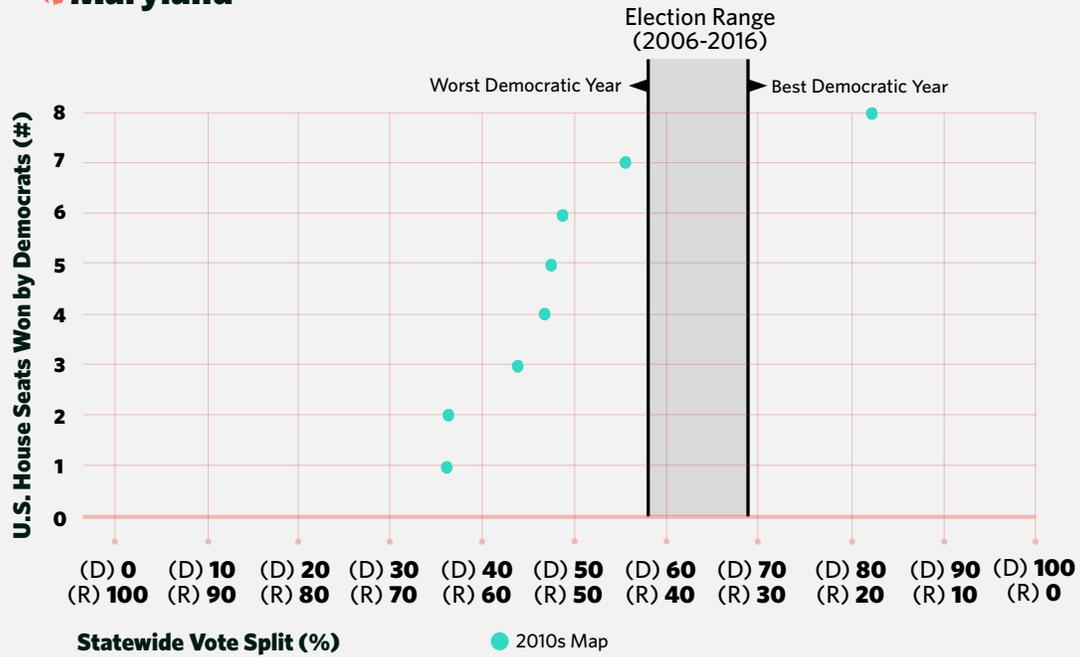


Figure 13

Single Party (Democrat)

Massachusetts

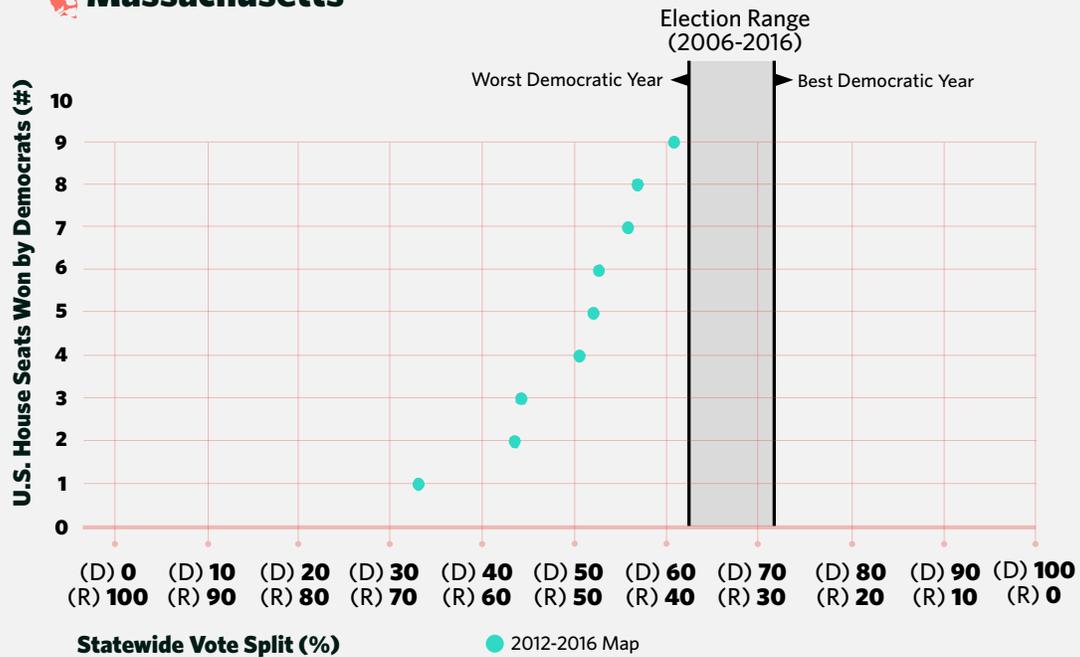


Figure 14

Single Party (Republican)

Michigan

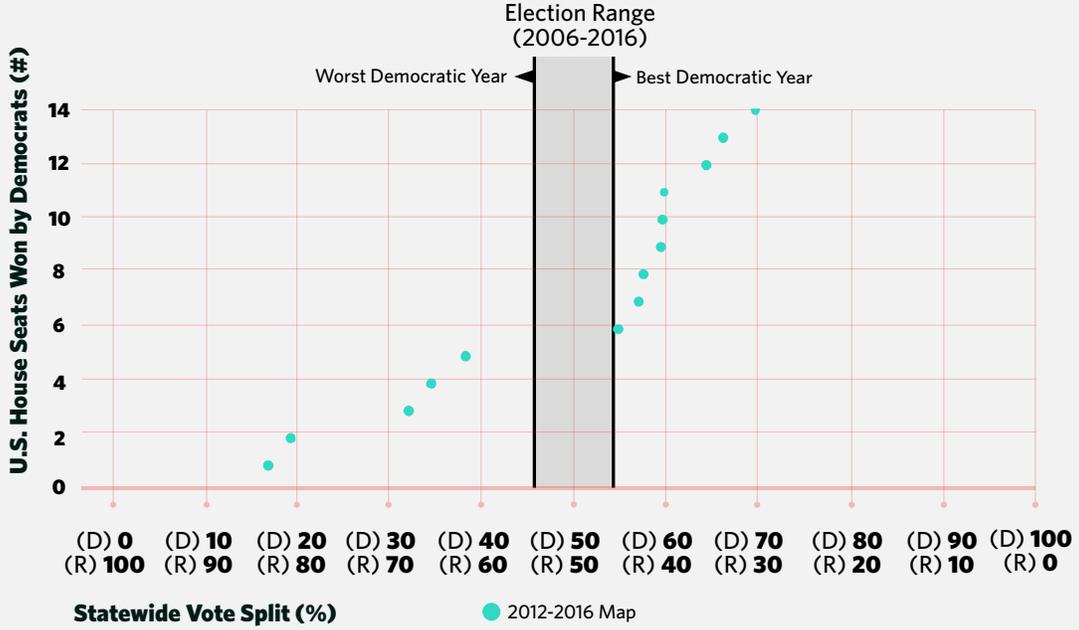


Figure 15

Court Imposed

Minnesota

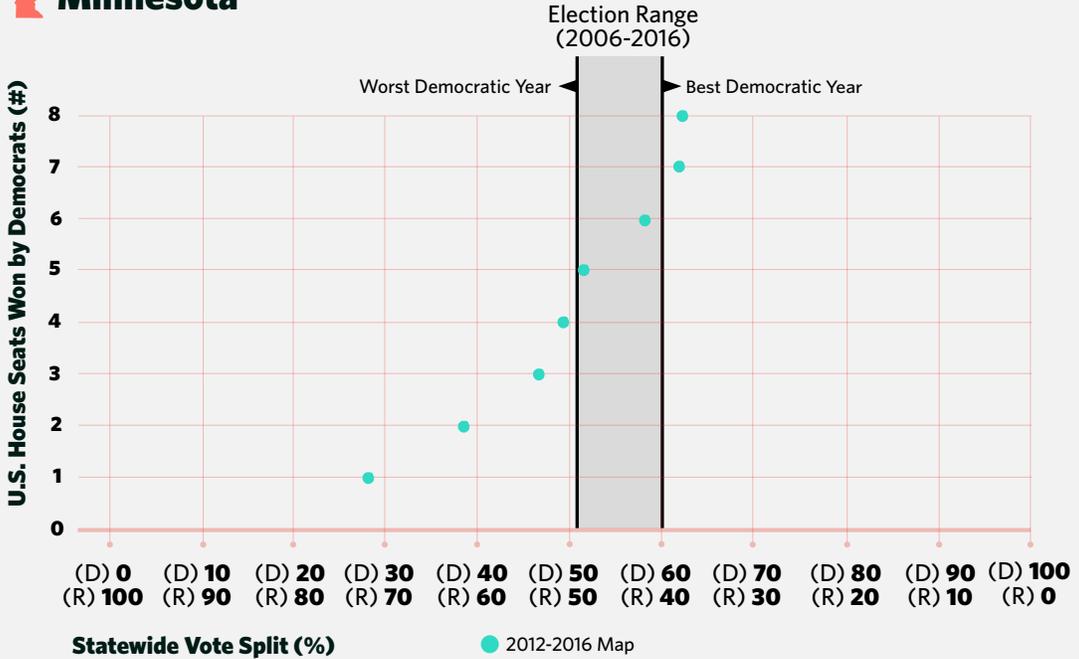


Figure 16

Split Control



Missouri

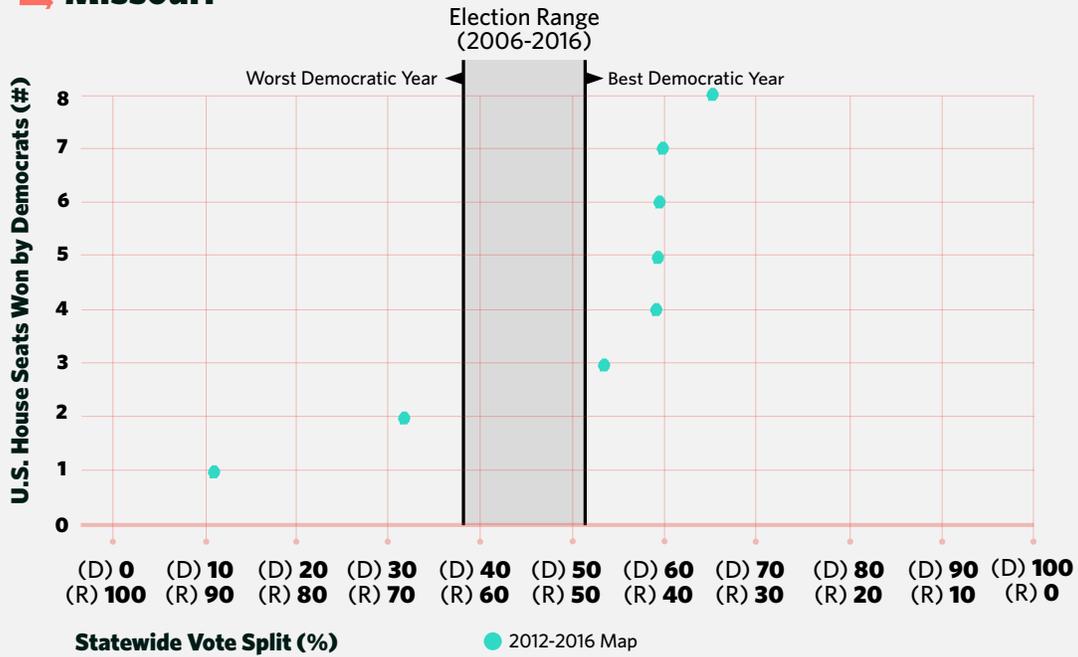


Figure 17

Political Appointee Commission



New Jersey

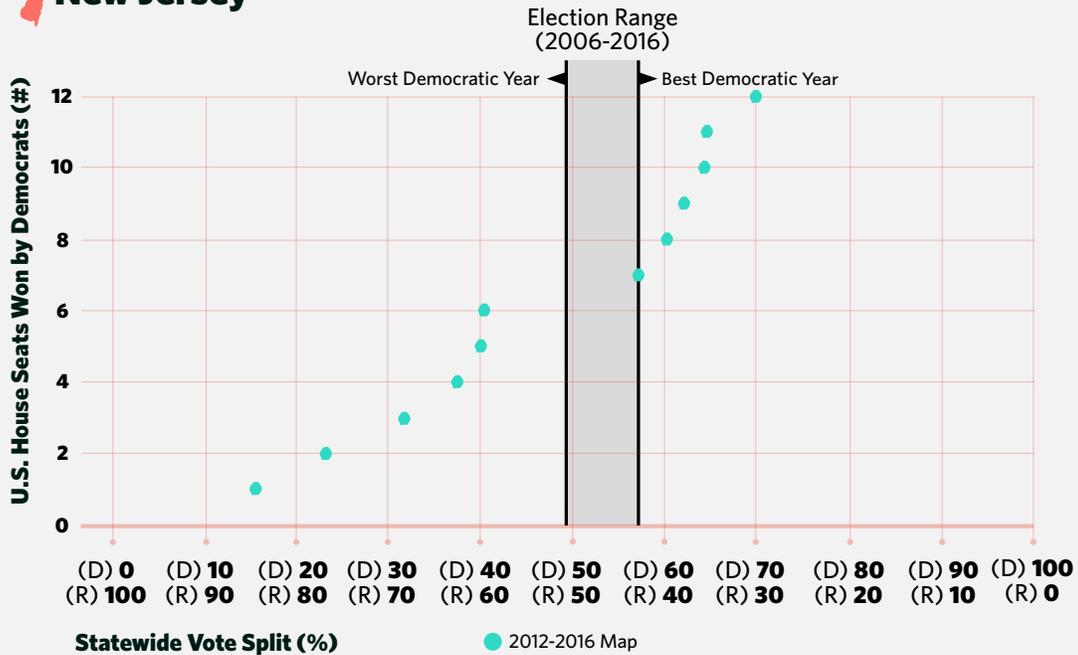


Figure 18

Court Imposed

New York

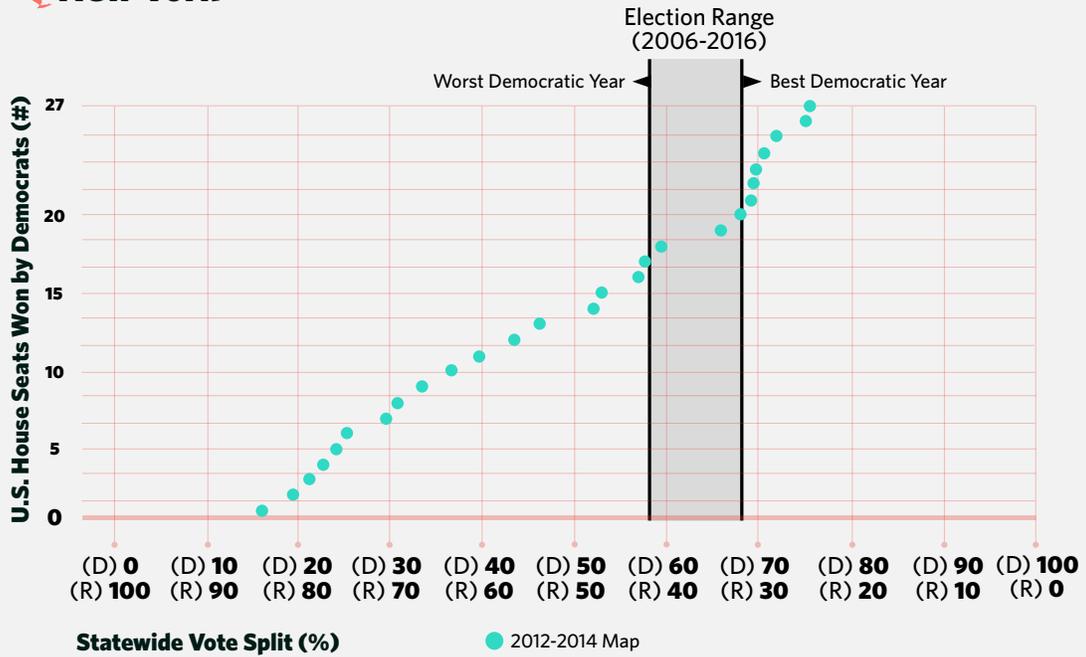


Figure 19

Single Party (Republican)

North Carolina

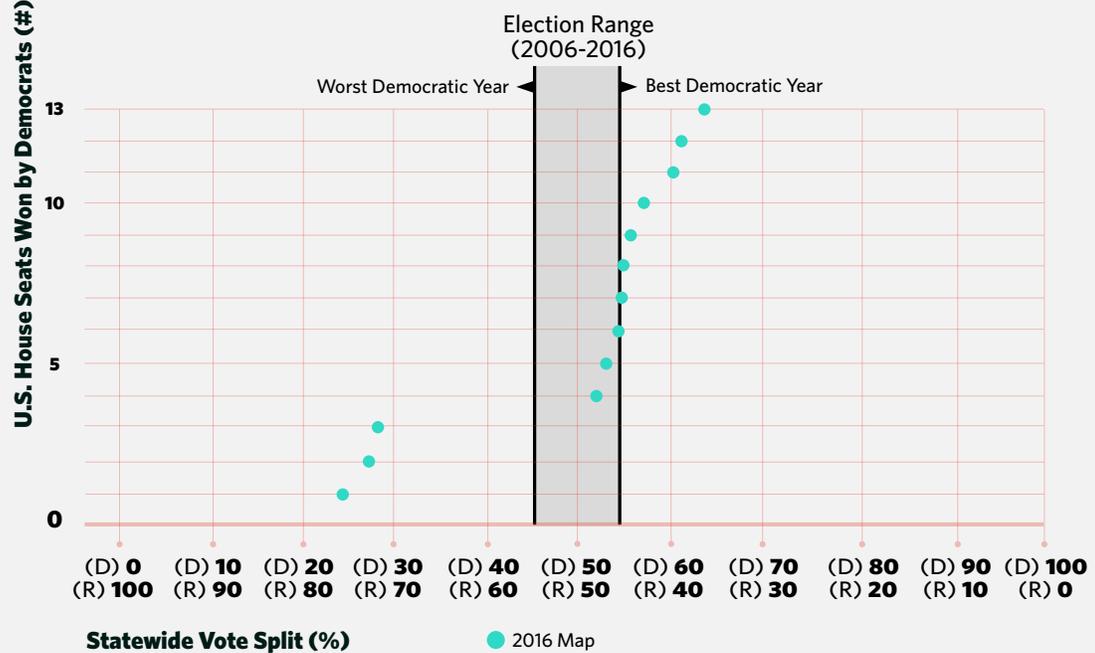


Figure 20

Single Party (Republican)

Ohio

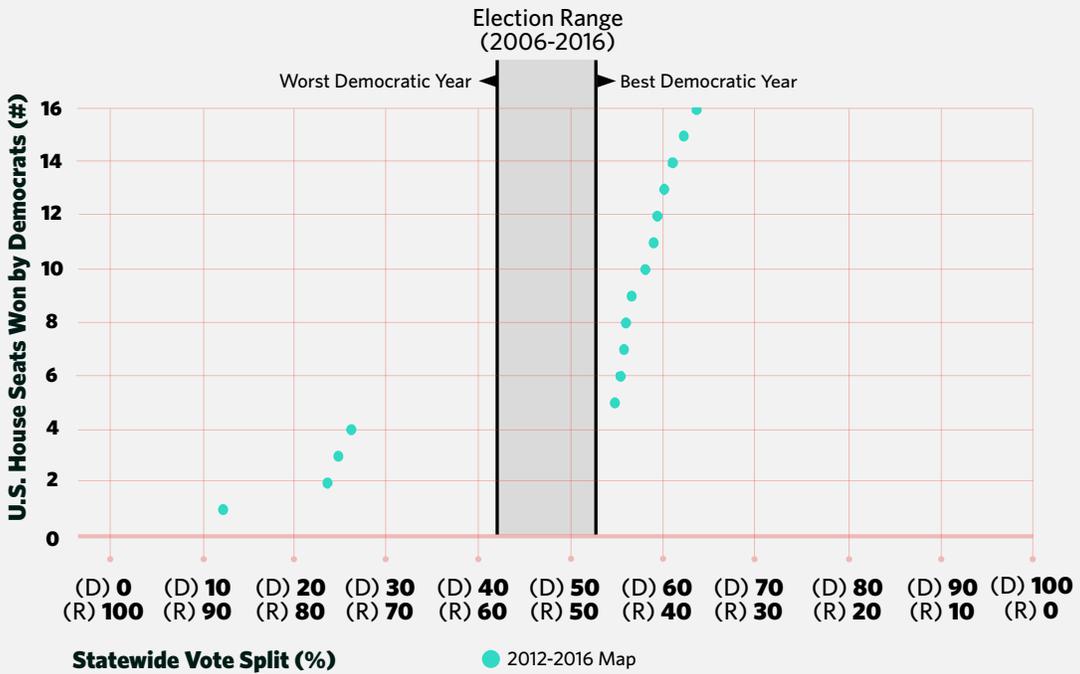


Figure 21

Court Imposed

Pennsylvania

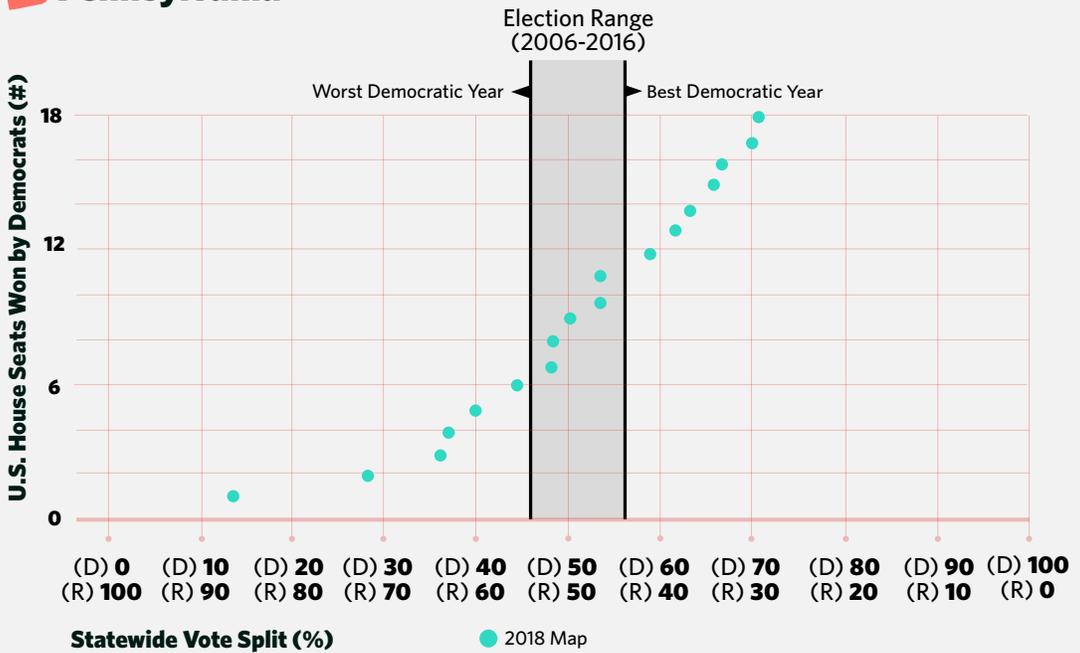


Figure 22

Single Party (Republican)

South Carolina

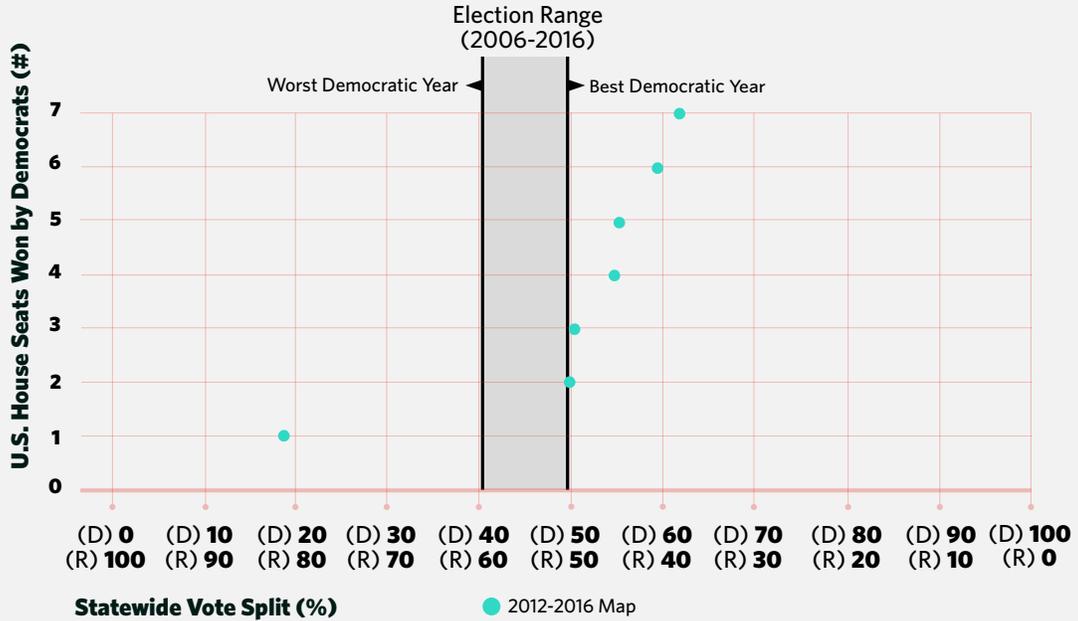


Figure 23

Single Party (Republican)

Tennessee

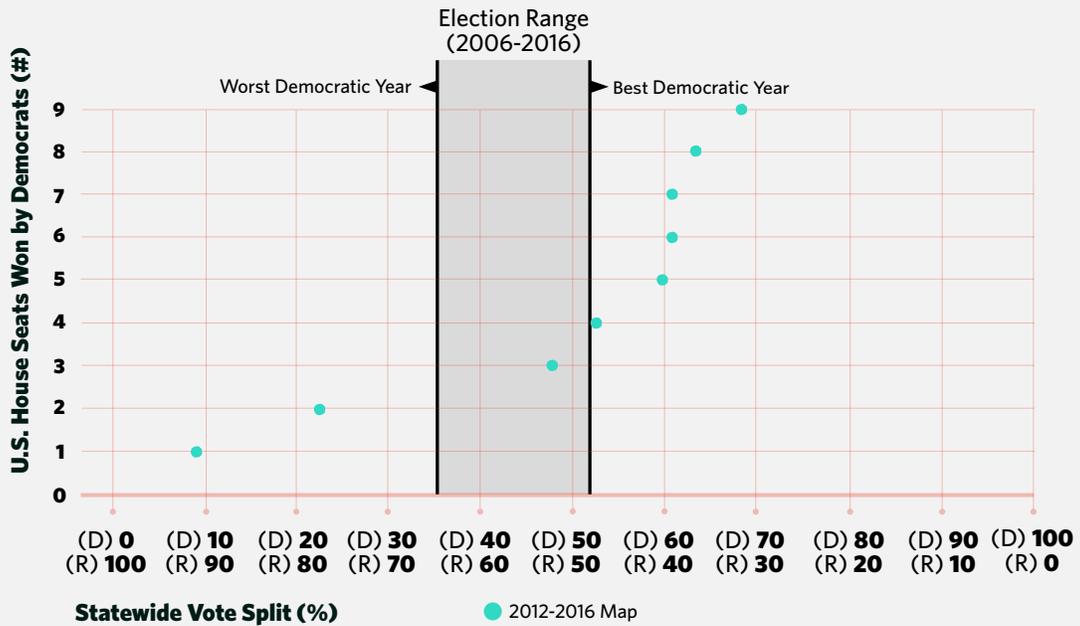


Figure 24

Court Modified

Texas

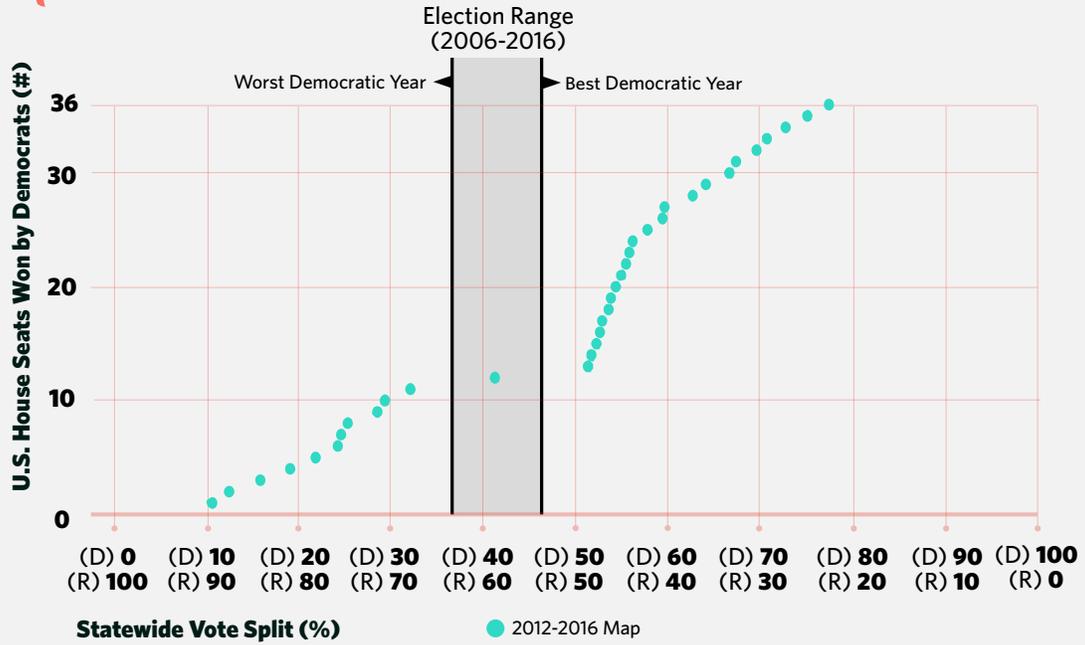


Figure 25

Court Modified

Virginia

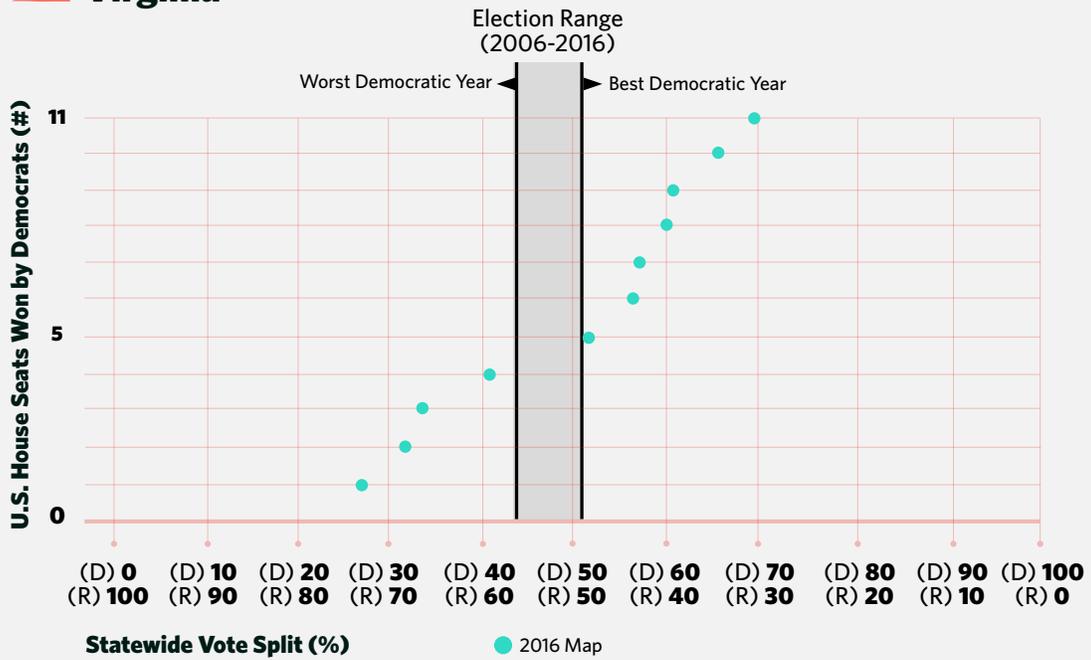


Figure 26

Political Appointee Commission

Washington

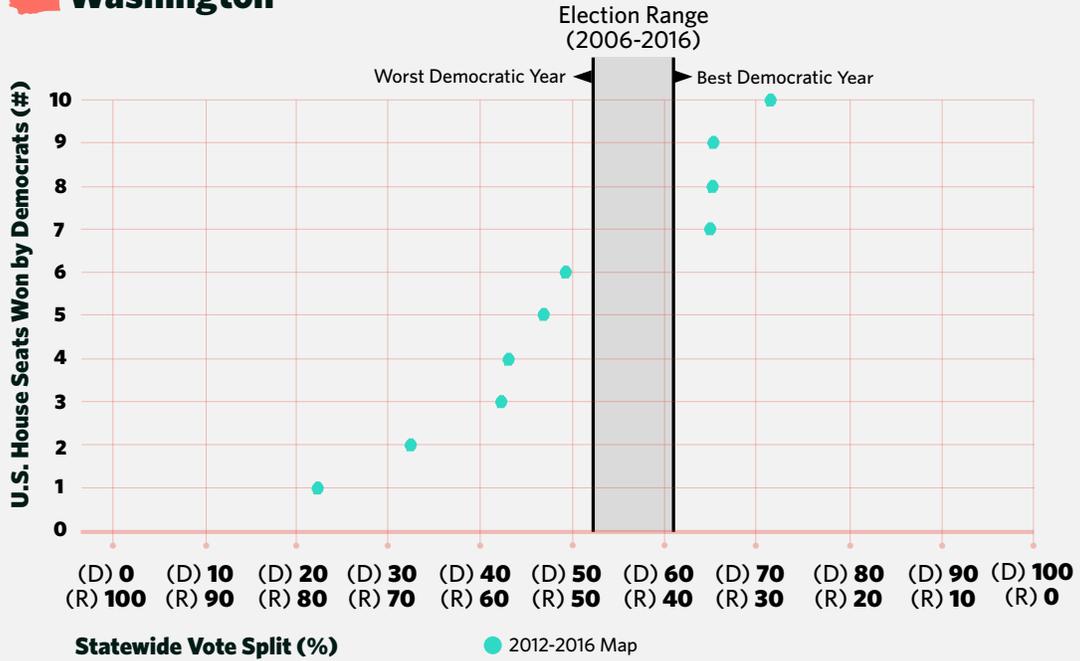
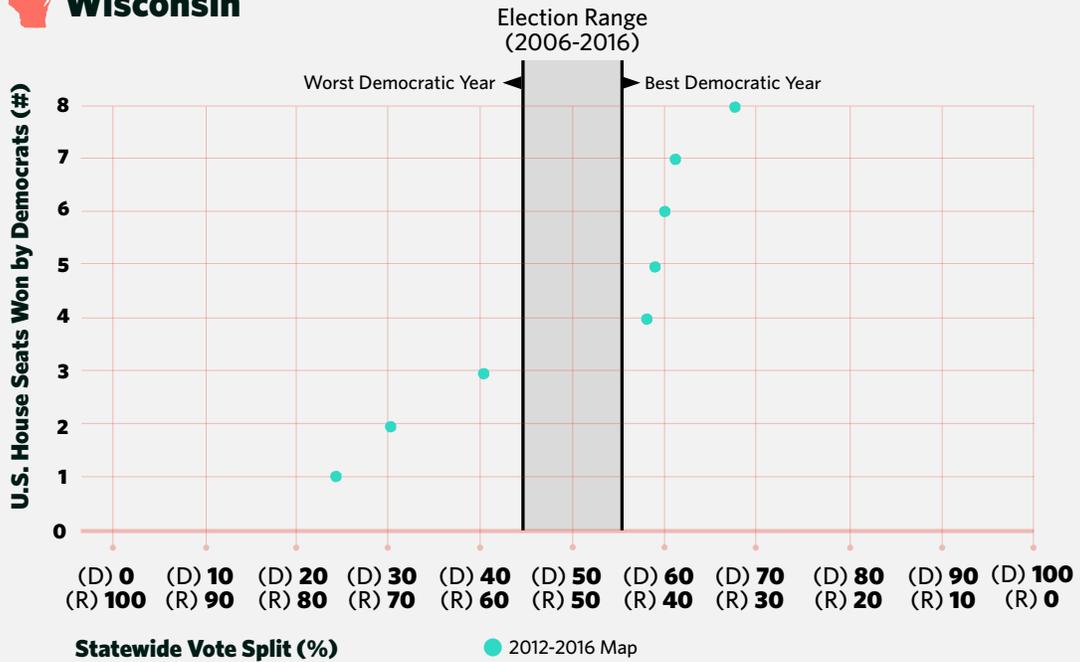


Figure 27

Single Party (Republican)

Wisconsin



APPENDIX 2

Seats in Play Under Different 2018 Election Scenarios

Four 2018 Election Scenarios

- **Modest Democratic Year.** This scenario assumes that that statewide Democratic vote share in 2018 increases by 2 percentage points over 2016.

In some states, like California, 2016 was a strong year for Democrats and a two-point increase in vote share would represent an all-time high for Democrats. In other states, particularly in the Midwest, 2016 was a much weaker Democratic year and a two-point increase would still result in a fairly, and in some cases significantly, Republican-leaning year.

- **Strong Democratic Year.** This scenario assumes that statewide Democratic vote share in 2018 increases by four percentage points over 2016. Although increasing vote share by four points would be difficult in heavily Democratic states, it would be a reasonable reversion to the historic mean in states like Ohio and could be in reach of Democrats in certain other states.
- **Democratic Wave.** This scenario assumes that statewide Democratic vote share in 2018 increases by 7 percentage points over 2016.
- **Democratic Tsunami.** This scenario assumes that statewide Democratic vote share in 2018 increases by 10 percentage points over 2016.

An 11-point win for Democrats in the national popular vote is consistent with:

- a wave election in Alabama, Indiana, Kentucky, Louisiana, Michigan, Minnesota, North Carolina, Ohio, South Carolina, Tennessee, Texas, and Wisconsin,
- a strong to wave election in Arizona, Colorado, Florida, Georgia, Missouri, New York, Pennsylvania, Virginia, and Washington,
- a strong election in Maryland, Massachusetts, and New Jersey, and
- a modest to strong election in California and Illinois.

If states' 2018 elections align with these election scenarios, around 28.5 seats not currently held by Democrats are projected to be in play in these states in this year's mid-terms in an 11-point national win scenario.

For purposes of this appendix, we included a seat as being in play if it is not currently held by Democrats and is located on the seats to votes curve for that state no more than one percentage point higher than the projected statewide vote under a scenario. For example, if the statewide vote share under the Strong Democratic Gain scenario is 52.48 percent, we counted a seat located on the curve at 52.98 percent as being in play. Statewide vote share figures represent Democrats' share of the two-party congressional vote.

Single Party (Republican)

State* — Democratic Share of Vote in 2016	Congressional Seats and Split After 2016 Election	Modest Democratic Year — Seats in Play if Ds Increase Vote by 2 points	Strong Democratic Year — Seats in Play if Ds Increase Vote by 4 points	Democratic Wave — Seats in Play if Ds Increase Vote by 7 points	Democratic Tsunami — Seats in Play if Ds Increase Vote by 10 points
Alabama 37%	7 (6R, 1D)	0	0	0	0
Georgia 44%	14 (10R, 4D)	0	1	1	1
Indiana 40%	9 (7R, 2D)	0	0	0	1-2
Louisiana 34%	6 (5R, 1D)	0	0	0	0
Michigan 49%	14 (9R, 5D)	0	0	2	6
North Carolina 47%	13 (10R, 3D)	0	0	2	7
Ohio 42%	16 (12R, 4D)	0	0	0	0
South Carolina 40%	7 (6R, 1D)	0	0	0	2
Tennessee 35%	9 (7R, 2D)	0	0	0	0
Wisconsin 47%	8 (5R, 3D)	0	0	0	1
<i>Total</i>	103	0	1	5	18-19

* See section on court-imposed maps for Pennsylvania.

Single Party (Democrat)

State — Democratic Share of Vote in 2016	Congressional Seats and Split After 2016 Election	Modest Democratic Year — Seats in Play if Ds Increase Vote by 2 points	Strong Democratic Year — Seats in Play if Ds Increase Vote by 4 points	Democratic Wave — Seats in Play if Ds Increase Vote by 7 points	Democratic Tsunami — Seats in Play if Ds Increase Vote by 10 points
Illinois 56%	18 (7R, 11D)	0	1	2	3
Maryland 63%	8 (1R, 7D)	0	0	0	0
Massachusetts 68%	9 (0R, 9D)	0	0	0	0
<i>Total</i>	35 (8R, 27D)	0	1	2	3

Split Control

State — Democratic Share of Vote In 2016	Congressional Seats and Split After 2016 Election	Modest Democratic Year — Seats in Play if Ds Increase Vote by 2 points	Strong Democratic Year — Seats in Play if Ds Increase Vote by 4 points	Democratic Wave — Seats in Play if Ds Increase Vote by 7 points	Democratic Tsunami — Seats in Play if Ds Increase Vote by 10 points
<i>Kentucky</i> 35%	6 (5R, 1D)	0	0	0	1
<i>Missouri</i> 40%	8 (6R, 2D)	0	0	0	0
<i>Total</i>	14 (11R, 3D)	0	0	0	1

Independent Commission

State — Democratic Share of Vote In 2016	Congressional Seats and Split After 2016 Election	Modest Democratic Year — Seats in Play if Ds Increase Vote by 2 points	Strong Democratic Year — Seats in Play if Ds Increase Vote by 4 points	Democratic Wave — Seats in Play if Ds Increase Vote by 7 points	Democratic Tsunami — Seats in Play if Ds Increase Vote by 10 points
<i>Arizona</i> 46%	9 (5R, 4D)	1	1	1	1
<i>California</i> 63%	53 (14R, 39D)	2	4	5	10
<i>Total</i>	62 (19R, 43D)	3	5	6	11

Political Appointee Commission

State — Democratic Share of Vote In 2016	Congressional Seats and Split After 2016 Election	Modest Democratic Year — Seats in Play if Ds Increase Vote by 2 points	Strong Democratic Year — Seats in Play if Ds Increase Vote by 4 points	Democratic Wave — Seats in Play if Ds Increase Vote by 7 points	Democratic Tsunami — Seats in Play if Ds Increase Vote by 10 points
<i>New Jersey</i> 54%	12 (5R, 7D)	0	1	3	5
<i>Washington</i> 55%	10 (4R, 6D)	0	0	0	2-3
<i>Total</i>	22 (9R, 13D)	0	1	2	7-8

Court Modified

State — Democratic Share of Vote In 2016	Congressional Seats and Split After 2016 Election	Modest Democratic Year — Seats in Play if Ds Increase Vote by 2 points	Strong Democratic Year — Seats in Play if Ds Increase Vote by 4 points	Democratic Wave — Seats in Play if Ds Increase Vote by 7 points	Democratic Tsunami — Seats in Play if Ds Increase Vote by 10 points
<i>Florida</i> 47%	27 (16R, 11D)	1	1	5	8
<i>Virginia</i> 48%	11 (7R, 4D)	1	1	2	3
<i>Texas</i> 42%	36 (25R, 11D)	1	1	1	6
<i>Total</i>	74 (48R, 26D)	3	3	8	17

Court Imposed

State — Democratic Share of Vote In 2016	Congressional Seats and Split After 2016 Election	Modest Democratic Year — Seats in Play if Ds Increase Vote by 2 points	Strong Democratic Year — Seats in Play if Ds Increase Vote by 4 points	Democratic Wave — Seats in Play if Ds Increase Vote by 7 points	Democratic Tsunami — Seats in Play if Ds Increase Vote by 10 points
<i>Colorado</i> 50%	7 (4R, 3D)	0	1	1	2
<i>Minnesota</i> 52%	8 (3R, 5D)	1	1	2	3-4
<i>New York</i> 62%	27 (9R, 18D)	0	1	2	7
<i>Pennsylvania*</i> 48%	18 (13R, 5D)	3	4	7	7
<i>Total</i>	60 (29R, 31D)	4	7	12	19-20

* We include Pennsylvania in this appendix as a court-imposed map because its 2011 congressional map, drawn under sole Republican control, has since been invalidated by the Pennsylvania Supreme Court and replaced by a map drawn by the court that substantially reconfigures most of the districts in the 2011 map.

ENDNOTES

- 1 “Are Democrats or Republicans Winning the Race for Congress?,” *FiveThirtyEight*, last updated March 20, 2018, <https://projects.fivethirtyeight.com/congress-generic-ballot-polls/>.
- 2 Alan I. Abramowitz, “Generic Ballot Model Gives Democrats Early Advantage in Battle for Control of the House,” *Larry Sabato’s Crystal Ball*, July 6, 2017, <http://www.centerforpolitics.org/crystalball/articles/generic-ballot-model-gives-democrats-early-advantage-in-battle-for-control-of-house/>.
- 3 For purposes of our analysis, we count MI-13 as a Democratic district even though it is currently vacant due to the resignation of Rep. John Conyers. Because the district is heavily Democratic, we assume that it will continue to be held by Democrats. We similarly treat AZ-8 and OH-12 as Republican districts despite vacancies on the assumption that Republicans win special elections in April and August respectively. We also do not factor in the Democratic special election win in PA-18 since the November elections will take place using a wholly different map. See endnote 4.
- 4 The Pennsylvania Supreme Court struck down the state’s 2011 congressional map as a partisan gerrymander on January 22, 2018 and ordered the map redrawn. When the legislature and governor could not agree on a new plan, the court adopted its own replacement plan and ordered it to be used for the 2018 election.
- 5 Laura Royden and Michael Li, *Extreme Maps*, Brennan Center for Justice, May 9, 2017, 1-5, https://www.brennan-center.org/sites/default/files/publications/Extreme%20Maps%205.16_0.pdf.
- 6 *Ibid.*, 1
- 7 *Ibid.*, 2
- 8 Gary King and Robert X. Browning, “Democratic Representation and Partisan Bias in Congressional Elections,” *American Political Science Review* 81 no. 4 (1987): 1251, <http://nrs.harvard.edu/urn-3:HUL.InstRepos:4455010>.
- 9 The correlation between statewide and district specific vote share becomes less constant in districts that overwhelmingly favor one party or the other. But since those districts are unlikely to “flip” even in a tsunami-like wave election, we are less concerned with them. For example, in NY-15, Democrats have won between 93.8 and 96.7 percent of the presidential vote in recent years. Imagining a scenario where Republicans win the district at a congressional level is virtually impossible or at least would require imagining a very different kind of political universe.
- 10 Michael P. McDonald, “Seats to Votes Ratios in the United States,” (unpublished paper, UC Irvine Jack W. Peltason Center for the Study of Democracy, 2009), <https://www.democracy.uci.edu/files/docs/conferences/mcdonaldgmu.doc>, and Nicholas O. Stephanopoulos and Eric M. McGhee, “Partisan Gerrymandering and the Efficiency Gap,” *University of Chicago Law Review*, 82 (2015): 831, http://uchicagolawjournalsmshaytiubv.devcloud.acquia-sites.com/sites/lawreview.uchicago.edu/files/04%20Stephanopoulos_McGhee_ART.pdf.
- 11 Simon Jackman, “The Predictive Power of Uniform Swing,” *PS: Political Science & Politics*, 47, no. 2 (2014): 317-321, doi:10.1017/S1049096514000109 and Simon Jackman, “Assessing the Current North Carolina Congressional Districting Plan,” Rose Institute of State and Local Government, March 1, 2017, <http://roseinstitute.org/wp-content/uploads/2016/05/Expert-Report-of-Simon-Jackman.pdf>.
- 12 Richard E. Cohen and James A. Barnes, *The Almanac of American Politics 2018* (Washington, D.C.: Columbia Books, 2017), 1584-1585.
- 13 See discussion of California, *infra*.
- 14 The seats-to-votes curve in Figure 5 was generated using district specific data from PlanScore: “Partisan Gerrymandering Historical Data,” accessed March 5, 2018, <https://planscore.org>.
- 15 *Almanac of American Politics 2018*, 868.
- 16 *Benisek v. Lamone*, No. 17-333 (U.S. filed Aug. 25, 2017).

- 17 *Almanac of American Politics 2018*, 866.
- 18 *Ibid.*
- 19 *Ibid.*, 882.
- 20 Alison Mitchell, “Redistricting 2002 Produces No Great Shake Ups,” *New York Times*, March 13, 2002, accessed March 5, 2018, <http://www.nytimes.com/2002/03/13/us/redistricting-2002-produces-no-great-shake-ups.html>.
- 21 *Favors v. Cuomo*, No. 1:11-cv-5632, 2012 WL 928216, (E.D.N.Y. March 12, 2012), (adopting report and recommendation).
- 22 *Ibid.*, *12-*15.
- 23 *Ibid.*, *16-*19.
- 24 “2018 House Race Ratings,” *Cook Political Report*, February 27, 2018, <https://www.cookpolitical.com/ratings/house-race-ratings>.
- 25 *Favors*, 2012 WL 928216, *15.
- 26 Memorandum Opinion at 15, *League of Women Voters of North Carolina v. Rucho*, No. 1:16-cv-01026, (M.D.N.C. Jan. 9, 2018), ECF No. 118.
- 27 Todd J. Gillman. “2010 Census Results Give Texas Four Additional Seats in Congress,” *Dallas Morning News*, December 22, 2010, <https://www.dallasnews.com/news/local-politics/2010/12/22/2010-census-results-give-texas-four-additional-seats-in-congress>.
- 28 Ross Ramsey, Matt Stiles, Julián Aguilar, and Ryan Murphy, “Minorities Drove Strong Texas Growth, Census Figures Show,” *Texas Tribune*, February 18, 2011, accessed March 5, 2018, <https://www.texastribune.org/2011/02/18/minorities-drove-texas-growth-census-figures-show/>.
- 29 For example, TX-26 in the plan passed in 2011 by the Texas Legislature (Plan C185) would have joined heavily Latino portions of Fort Worth with suburban heavily white Denton County to the north. This was accomplished by a configuration that essentially had a taproot descend from Denton County through Fort Worth, picking up heavily Latino neighborhoods.
- 30 Plan C213 was proposed by Texas Latino Redistricting Task Force, one of the plaintiffs in litigation over the Texas maps. Other Latino plaintiffs offered additional alternative plans that would have had broadly similar effect in terms of remedying the cracking of urban Latino and African-American communities.
- 31 *Almanac of American Politics 2018*, 1944.
- 32 *Ibid.*
- 33 *A 50 State Guide to Redistricting*, Brennan Center for Justice, May 23, 2011, <http://www.brennancenter.org/publication/50-state-guide-redistricting>.
- 34 Memorandum Opinion at 15, *League of Women Voters of North Carolina v. Rucho*, No. 1:16-cv-01026, (M.D.N.C. Jan. 9, 2018), ECF No. 118.
- 35 *Ibid.*, 16.
- 36 *Ibid.*, 18.
- 37 *Ibid.*, 18-19.

- 38 David Wasserman's spreadsheet of 2012 House results is available at <http://bit.ly/2pUatCy>, his spreadsheet of 2014 House results is available at <http://bit.ly/2pETQKc>, and his spreadsheet of 2016 House results is available at <http://bit.ly/2p5ELy2>.
- 39 David Nir, "Daily Kos Elections' Presidential Results by Congressional District for the 2016 and 2012 Elections," *Daily Kos*, November 19, 2012, accessed April 21, 2017, <http://www.dailykos.com/story/2012/11/19/1163009/-Daily-Kos-Elections-presidential-results-by-congressional-district-for-the-2012-2008-elections>.
- 40 Jackman, "The Predictive Power of Uniform Swing."
- 41 Jackman, "Assessing the Current North Carolina Congressional Districting Plan," 54-60 and Stephanopoulos and McGhee, "Partisan Gerrymandering and the Efficiency Gap," 863-865.

Endnotes for Table on Page 2

- i The Pennsylvania Supreme Court struck down the state's 2011 congressional map as a partisan gerrymander on January 22, 2018 and ordered the map redrawn. When the legislature and governor could not agree on a new plan, the court adopted its own replacement plan and ordered it to be used for the 2018 election.
- ii The historical model is based on regression analysis of mid-term election results from 1946-2014 performed by Alan Abramowitz. See note 2 above. Note that this regression includes one election cycle from the current decade, whose maps include some of the most aggressive gerrymandering in American history.

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