

Making a Case for Two Paths Forward
in Light of Gill v. Whitford

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Abstract

In light of the Supreme Court's ruling in Gill v. Whitford (2018), we propose two paths forward for establishing manageable standards to identify partisan gerrymanders. One is aimed most particularly at exclusionary gerrymanders and follows the Court's directive to demonstrate the harm to representational rights is personal and district specific. The second challenges mapmakers in the first instance and courts, if needed later, to recognize that entrenchment gerrymanders offend not just representational rights but also the right for all votes to carry the same weight. We put our proposals to a series of tests through applications to post-2010 suspected gerrymanders of congressional districts in Maryland and Ohio along with applications to Massachusetts and Illinois to show that the approaches hold safe district plans that are not gerrymanders.

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1. Introduction

Justice White, writing for the Court majority in *Bandemer*, noted that the legitimate implications of the fair and effective representation recognized in *Reynolds v. Sims* (1964) are grounded in preferences “for a level of parity between votes and representation sufficient to ensure that significant minority voices are heard and, that majorities are not consigned to minority status ...” (*Davis v. Bandemer* 1986, 125). Thirty-two years later, the Supreme Court’s opinion in *Gill v. Whitford* retreated to first steps. To mount a challenge to unconstitutional partisan gerrymandering requires a threshold showing of harm that “affect[s] the plaintiff in a personal and individual way” and is “district specific” (*Gill v. Whitford* 2018, 13 and 14).

Because gerrymandering maneuvers involve interrelated machinations—e.g., packing one set of partisans so that their co-partisans elsewhere can be cracked—gerrymandering’s critics face a challenge to cross the *Whitford* threshold and proceed to purge gerrymandering’s systemic harms of exclusion and entrenched counter-majoritarianism identified in *Bandemer*. To meet the challenge, we offer two paths forward.

The first path is consistent with the Court’s holding requiring a district-specific analysis focused on individual voters. This approach is broadly applicable, to exclusionary and entrenchment gerrymanders, but, we surmise, is best reserved for allegations of district-specific exclusionary gerrymanders. The reason for such a reservation is that exclusion without entrenchment almost always is a matter involving one or two districts. For that reason the required district-specific analysis can be narrowly focused and, if needed, a remedy can be narrowly tailored.

Our second path approaches the issue with an alternative legal theory not heretofore considered by courts and addresses solely entrenchment forms of gerrymandering. Exclusion

involves a dilution of individual representational rights. Entrenchment gerrymanders do so as well, but they also have a demonstrably additional dilutive effect on the right to cast an equally weighted vote. That is, entrenchment gerrymanders not only offend by distorting the parity between votes and representation, they also effectively assign different weights to voters depending on the party they support. We know entrenchment has this vote-weight effect because it entails violating majority rule and that necessarily means votes of one set of partisans carry less weight than their opposition: adhering to majority rule is an unmistakable equality principle of democratic governance (May 1954; Dahl 1989, 139; McGann 2006, 60-85). Moreover, entrenchment gerrymanders usually involve not one or a few districts but a large number, making the avoidance of gerrymandered entrenchment more easily communicated to and more easily managed by mapmakers in the first instance and, if called upon, by courts after enactment.

2. Gerrymander's Two Forms of Vote Dilution

Because it is possible to view all gerrymandering as burdening representational rights but to view entrenchment forms of gerrymandering as burdening both representational and equal vote weight rights, we begin by drawing the distinction.

2a. Dilution of Representational Rights

The plaintiffs in Whitford relied on evidence of Democrat versus Republican relative counts of wasted votes. When Democratic voters cast considerably more wasted votes than Republicans, as was shown to have occurred in Wisconsin's Assembly districts, the evidence is claimed to reveal dilution of Democratic votes. Plaintiffs maintained and the Court accepted that wasting votes is achieved through drawing district lines that pack and/or crack voters in particular districts. Districts are packed when one party's supporters are concentrated in just a

few districts, each of which they win by an overwhelming margin. Packing wastes votes by piling up votes far in excess of what it takes to win, votes that could be used more efficiently in other districts. Cracking, on the other hand, divides a party's supporters among several districts so that they are unlikely to win a majority in any one of them. Cracking wastes votes by virtue of the simple fact the disfavored party's votes in the cracked districts are going to losing candidates and thus carry no direct electoral value in gaining representation.

One harm from packing and cracking is a diminished opportunity to elect one's candidate of choice, a representational right. That right is possessed by individuals, the Whitford Court held unanimously, and therefore to have standing a plaintiff must show that his or her representational right has been burdened by assignment to a packed or cracked district—"to prove concrete and particularized injuries using evidence ... that would tend to demonstrate a burden on their individual votes" (Gill v. Whitford 2018, 21). Such a showing can be accomplished, the Whitford majority says implicitly and Justice Kagan says expressly (Whitford v. Gill 2018, 20; Justice Kagan concurring at 4), by comparing an individual's district circumstance to circumstances he or she would be in under fairly drawn alternative maps.¹

We propose to identify packing and cracking, or their absence, for any districting plan by first creating a large set of computer-generated fairly drawn plans. Next, following Mattingly and his colleagues (see, e.g., Bangia et al. ND), we rank order one or the other party's observed district two-party vote percentages from low to high and compared them to the rank order of lowest to highest party percentages in each of the computer plans. A trace along the expected

¹ This sort of comparison is similar to a required showing of prong 1 of the Gingles three-prong pre-conditions for racial vote dilution. Justice Brennan explained the prong 1 requirement this way. "The reason that a minority group [challenging a potentially racially dilutive districting plan] must show, as a threshold matter, that it is sufficiently large and geographically compact to constitute a majority in a single-member district is this: Unless minority voters possess the potential to elect representatives in the absence of the challenged structure or practice, they cannot claim to have been injured by that structure or practice" (Thornburg v Gingles 1986, 50 fn. 17).

district percentages makes it visually and statistically obvious which, if any, observed district percentage is substantially out of line with fair expectations. Further probing can identify precincts in which, say, Republican voters currently reside in a needlessly cracked district but which in all reasonable likelihood would reside in a majority Republican or swing district. Voters in such precincts have a diminished opportunity to elect a candidate of their choice, contrary to their individual right to fair and effective representation. The same probing can also identify precincts in which one group of partisans is excessively packed. Their votes could, of course, be used more effectively in competitive districts. However, it is not proper to say the packed partisans have a diminished opportunity to elect candidates of their choice inasmuch as their preferred partisan candidate won in the packed district. The harm is actually foisted upon the packed partisans' co-partisans in districts where the packed partisans' votes could have been useful in overcoming cracking.

2b. Vote Weight Dilution

While the district-specific approach just described is applicable to entrenchment gerrymanders, when the issue is entrenchment a legal theory based on an equal vote weights is both more probative and more easily managed. One needs to begin with the easy arithmetic comparison of a party's two-party median vote percentage to its two-party average vote percentage. If there is no difference running persistently in favor of one party, the check for an entrenchment gerrymander is closed—there is no entrenchment. As Richard Niemi and John Deegan remarked long ago, a symmetrical vote distribution, which has the median equal to the mean, is a necessary and sufficient condition for an unbiased plan that does not violate majority rule (Niemi and Deegan 1979, 1308). It is easy to see and appreciate why. If a symmetrical vote distribution is centered at 50.1 or above, then half or more of the districts belong to the majority

party just as majority rule requires. It follows that any district plan that persistently violates majority rule in favor of one party has to have been constructed on the basis of an asymmetrical vote distribution.

One might object that a concern for violating majority rule is misplaced as either a legal or practical matter. Concurring in Veith, Justice Kennedy offered this thought about the applicability of a majority rule principle (Vieth v. Jubelirer 2004, 308).

The fairness principle appellants propose is that a majority of voters in the Commonwealth should be able to elect a majority of the Commonwealth's congressional delegation. There is no authority for this precept. Even if the novelty of the proposed principle were accompanied by a convincing rationale for its adoption, there is no obvious way to draw a satisfactory standard from it for measuring an alleged burden on representational rights.

As an alleged burden on representational rights and as it pertains to a state's congressional delegation, Justice Kennedy's point is arguably well taken (but, see Justice Breyer dissenting, Vieth v. Jubelirer 2004, 361), since congressional delegations have no particular decision making authority of their own. However, when viewed from the standpoint of whether violating majority rule signals that all votes do not carry the same weight, his observation about representational rights is beside the point. The injury is found in the fact that the districting plan does not provide equal vote weight.

As a practical matter, Justice Scalia asks this sensible question, with a doubtful intention: "how is a party's majority to be established?" (Veith v Jubelirer 2004, 288). Daniel Lowenstein and Jonathan Steinberg observe, "Political parties [seeking legislative seats] do not compete for the highest statewide vote totals or the highest mean district vote percentage: They compete for specific seats." (Lowenstein and Steinberg 1985, 59-60). It's also true, as Lowenstein and Steinberg further observe, depending on how the lines are drawn candidates change, campaign money flows or dries up, and campaign organizations operate more or less vigorously

(Lowenstein and Steinberg 1985, 59-60). All of this tells us to check majority status violations by relying on statewide contests (just as politically minded mapmakers do when drawing districts lines). District line placements precede decisions about who is going to compete in various districts and with what potential resources that competition is going to be supported. That makes the vote totals from legislative elections under the adopted plan a dubious indicator of both the partisan disposition of the districts, as such, and of the jurisdiction-wide majority status. Statewide elected offices are not subject to the same within-district competition incentives as the district-specific races and thus provide a cleaner and clearer reading of a possible gerrymander effect.

3. Necessary and Sufficient Conditions for a Gerrymander

To answer any causal question in a case-specific application, as courts are often called upon to do, identifying a set of necessary and sufficient conditions proves tremendously helpful. Absent any one necessary condition, we know the suspected causal force is not the cause. When all necessary conditions are present and when considered in combination they are sufficient, we have the substantively substantial knowledge to conclude that the suspected cause is the actual cause.²

A first necessary condition for gerrymandering is predictable partisan voting patterns. Absent such predictability there can be no way to say whether a district can be relied on to vote in support of one party or the other. Thereafter, deciding whether one district or a districting

² One area of voting rights law where this form of inquiry has worked effectively as an effects test is the Gingles' three-prong necessary pre-conditions of racial vote dilution, when considered in the context of the totality of circumstances. For partisan gerrymandering it is also necessary to demonstrate intention to dilute (Davis v. Bandemer 1986). Evaluation of intent requires a case-specific local appraisal.

plan as a whole constitutes gerrymandering requires inquiries into multi-layered necessary conditions applied to case specific circumstances.

In line with the Court's ruling in Whitford, our fist path asked whether the enacted set of districts reveal cracking. This could arise either from excessively packing the disfavored partisans so that they are deprived of having their votes counted in the cracked districts or by unpacking favored partisans so their votes are more efficiently distributed in districts they would otherwise lose. That is not all. We also need to check whether the cracked districts are effectively depriving the disfavored partisan of a realistic opportunity to elect candidates of their choice. The answer to this question can be evaluated by looking at a variety of statewide elections the results of which are aggregated to boundaries of the proposed/enacted districts and asking whether, as the two-party vote swings more and less in favor of the cracked partisans party, the voters in the cracked districts actually have no realistic chance of winning. If a legislative election has already occurred in a cracked district, the result has to be checked to see whether, despite the minimal opportunity as read from the district's partisan disposition, some set of resources were drawn on that enabled a candidate to overcome the seemingly minimal opportunity.

Inferring the existence of entrenchment gerrymanders requires reasoning through a similar number of layers. We look first for whether the choice of line placements create electoral bias and thereby potentially cause harm in the form of violating majority rule. Electoral bias is a two-element concept—turnout bias and gerrymandering bias. To wit,

$$\textit{Total electoral bias} = \textit{Turnout bias} + \textit{Gerrymandering bias}.$$

Turnout bias is the difference between a party's statewide vote percentage, which weights each voter equally, and the mean district vote percentage, which weights each district equally

(Edgeworth 1898, 536-7; Butler 1947, 287; Erikson 1972, 1236; Gudgin and Taylor 1979, 55-9; Grofman et al. 1997, 461-4)—i.e.,

$$\textit{Turnout bias} = \textit{Mean district vote\%} - \textit{Statewide vote\%},$$

Gerrymandering bias (asymmetry bias) is the difference between a party's median district vote percentage, which marks the vote percentage received in a district when reaching the threshold of majority control of a delegation, and the mean district vote percentage, which, assuming equal turnout, is the level of vote support for a party (Edgeworth 1898, 534-6; Butler 1951, 330; Erikson 1972, 1237; McDonald and Best 2015; Wang 2016)—i.e.,

$$\textit{Gerrymandering bias} = \textit{Median district vote\%} - \textit{Mean district vote\%}.^3$$

Distinguishing between turnout and gerrymandering bias is but one inferential layer for investigating packing gerrymanders. The bias could be natural or chosen, natural in the sense of a median versus mean district percentage difference is attributable to residential patterns or chosen in the sense that a median versus mean difference goes beyond levels attributable to residential patterns. We are interested in choice as a key element in the causal flow, in the sense that the harm would have been reasonably easy to avoid.

A median-mean difference is a leading indicator; its persistence above expectations from residential patterns gives rise to the likelihood we are looking at a chosen structural entrenchment form of gerrymandering. In addition, the choice of a structural gerrymander must show observable harm, not just potential harm. This requires observing two additional facts. We need to look to see whether the disfavored partisans have their majority vote persistently turned

³ The median is the midpoint score of a set of numbers arranged in order from low to high; the mean is simply the average score. Importantly, as it relates to redistricting partisan politics, having control over the median means having control over 50 percent or more of the situation. Since the mean district vote percentage for districts with equal turnout indicates whether a party has received a majority or minority of the vote, democratic theory implies that the median district two-party vote percentage should offer a consistent reading of the majority versus minority status for districts won.

into a minority of districts carried. If that does not occur more often than not, then the bias operating against them cannot be deemed to be structural. Finally, because the offices of most interest are those elected through the districts, not the statewide offices used to evaluate the partisan disposition of the districting plan, we need to check whether the otherwise disfavored party held resources that, despite their disadvantage, allowed them to overcome it.

In enumerated summary, the inferential layers work through answers to these two series of questions. If the answer is *no* to any question asked in sequence, then we know there is no harmful gerrymander. If all answers are *yes*, then we know that the district plan has the effect of violating some voters' representational and/or voting rights.

District-specific Analysis:

1. Are voting patterns predictably partisan?
2. Is any district cracked beyond expectations from a set of partisan-blind, computer-generate district plans?
3. Are minority party opportunities to win a cracked district minimal?
4. Do the facts of the House elections with respect to the identified district(s) show minimal likelihood of the minority party prevailing?

Equal Vote Weight Analysis:

1. Are voting patterns predictably partisan?
2. Does the median versus mean district percentage difference show a gerrymandering bias running persistently against one set of partisan voters?
3. Does the gerrymandering bias go beyond expected median-mean due to residential patterns?

4. Does the bias violate majority rule more often than not under reasonably competitive electoral circumstances, without compensation from turnout bias?
5. Do the facts of the House elections show a similar gerrymandering bias with the disadvantaged party holding a minority of seats in a delegation?

4. Applications

To evaluate our two approaches we apply them to two of medium size congressional delegations, Massachusetts and Maryland, and two cases with relatively large delegations, Ohio and Illinois. The point of the four-state demonstrations is to show that the approaches are capable of providing a convincing determination of and distinction between congressional district plans that are (Maryland and Ohio) and are not (Massachusetts and Illinois) gerrymanders.⁴

The data we rely on come from two sources: statewide election returns compiled and disaggregated to voter tabulation districts (VTDs) by Stephen Wolf at Daily Kos (Wolf n.d.) and shapefiles provided by the U.S. Census Bureau.⁵ Since U.S. elections at all levels are administered by county or local governments, collecting statewide data is often quite challenging. Daily Kos publishes statewide election results by congressional and legislative district built from estimates at the level of VTDs. Wolf uses county-level returns to assign votes

⁴ As we mention in fn. 3, case-specific applications of partisan gerrymandering require an intent inquiry. Our applications speak directly to gerrymandering effects. Nevertheless, it is worth noting that the use of the computer generated partisan blind maps provides some degree of analytical leverage on intent. It is also worth noting that if a clear, convincing, and consensus effects standard were to be adopted, an intent inquiry would be essentially self-executing, much as inquiries into malapportioned congressional districts are essentially self-executing absent a compelling state justification.

⁵ VTDs roughly correspond to state designated voting precincts; however, the correspondence to actual voting precincts is not precise. In practice, states re-precinct more frequently than they redistrict. States share their precinct boundaries with the Census Bureau once every ten years, so the VTDs we use to develop our neutral maps are almost certainly out of date by the 2012 and 2014 elections, requiring us to rely on estimated vote totals by VTD. On the other hand, the Census Bureau does ensure that the population reported for VTDs is accurate.

to VTDs according to votes cast in the VTD in the 2008 presidential election and the proportion of the county's population living in a VTD. The disaggregation of Democratic votes to VTDs can be characterized by the following equation.

$$d_i^t = \delta_i D^t,$$

where d_i^t is the estimated number of votes cast for a Democratic candidate in VTD i in election t , δ_i is the proportion of a county's votes cast in VTD i for the Barack Obama in 2008, and D^t is the county-level count of Democratic votes for election t .

We have tested the accuracy of Wolf's data in Wisconsin, North Carolina, and Florida where we have state-provided official tallies of VTD-level votes. Correlations of the Daily Kos numbers and official vote totals were high across all races covered by the data, range from 0.87 to 0.97.

The Census Bureau is charged with collecting maps of each state's VTDs before each census, and it releases this information as shapefiles. We use these VTD shapefiles to generate 10,000 alternative congressional maps for each state using a graph partitioning process proposed by Daniel Magleby and Daniel Mosesson (Magleby and Mosesson *forthcoming*). Each map has the requisite number of contiguous districts with a population variance of plus or minus 1 percent. The process itself is blind to partisan considerations; the computer algorithm considers only population and contiguity of VTDs. After the maps have been generated, we merge VTD voting data from Daily Kos to calculate candidate performance in these alternative congressional districts in each statewide election.

For reasons already explained as matters of law and practicality, we rely on statewide elections as the only feasible data for responding to our question 2. Here as two matters of unavoidable pragmatism we can add these points. There is no sensible way to rearrange the

legislative votes to evaluate the extent, if any, that residential patterns are responsible for partisan consequences. And, a manageable standard should be available to mapmaking decision makers before a district plan is enacted, and there is no sensible way to compile data for pre-enactment evaluative purposes by rearranging legislative votes from prior legislative elections.

4a. Checking for District-Specific Dilution

Maryland congressional districts remain under Federal court scrutiny following the Supreme Court's denial of plaintiffs' request for a preliminary injunction (Benisek v. Lamone 2018). Evidence from Goedert (2014) as well as Chen and Cotrell (2016) indicates the plaintiffs' gerrymandering allegation is credible; evidence from Wang's tests suggests it probably is not (Wang 2016a). In Massachusetts no Republican has won a congressional seat since 1994. That makes Massachusetts the only state with three or more districts where the minority party has been unable to carry a single congressional seat during this twenty-plus year period. Goedert's post-2010 analysis indicates this could be the result of a pro-Democratic gerrymander (Goedert 2014; 2015); Chen and Cotrell see no evidence of a Massachusetts gerrymander (Chen and Cotrell 2016); Wang's three gerrymandering tests are inconclusive (Wang n.d.).⁶ Analyses by both Goedert (2014) and Chen and Cotrell (2016) indicate Ohio's congressional map is drawn to favor Republicans, and a month before the Supreme Court's decision in Whitford the ACLU filed suit to replace the Ohio map before the 2020 election (Thomas-Lundborg 2018). In Illinois, a few weeks before the Legislature passed and the Governor signed the Illinois congressional redistricting plan, a writer for the Christian Science Monitor labelled it "a radical Illinois

⁶ Wang's analysis for Massachusetts appears on his Princeton Gerrymandering Project website at <http://gerrymander.princeton.edu/#explore-us>.

gerrymander” (Greenbaum 2011). After enactment, and in response to a challenge in federal court by Republicans, one court called the plan “a blatant political move to increase the number of Democratic congressional seats,” and another said it was “enacted in large part to give Democrats a partisan advantage” (quoted in Chicago Tribune, 2011). An analysis by Goedert (2014, 4) agrees; another by Chen and Cotrell (2016, 338) does not.

Maryland. We begin with Maryland. There, as is true for all four states, partisan predictability is clearly present.⁷ We have data on nine statewide elections between 2006 and 2013; the 40 pairwise correlations at the congressional district level range from a low of .956 to a high of .993. To visualize what this means, Figure 1 displays the relationship between the Democratic percent of the two-party vote in each of eight elections against the Democratic percent of the two-party vote in the 2010 Governor election among the State’s eight congressional districts.

[Figure 1 about here]

Table 1 reports the Democratic two-party percentage for the 2010 Governor’s race by district arranged from low to high. Alongside is the expected percentage from 10,000 computer generated plans in low to high rank order. While O’Malley lost District 1 with just 33.9 percent of the two-party vote this low performance is due in large measure to Republicans having been packed. Of the 10,000 partisan-blind maps, only 76 (less than one percent) could reasonably be expected to produce a percentage that low in a district drawn in a partisan blind process. At the high end of the ranking, it is apparent that districts 4, 5, and 7 unpacked Democratic voters, presumably so they could be used more effectively in more competitive districts. By themselves, none of the four impose a burden on representational rights. That burden is found in districts 2 and 6. In District 6 O’Malley received his second lowest vote total, 52.2, but that is more than

⁷ A further check on all 38 states with three or more congressional districts show similar levels of high partisan predictability everywhere but Oklahoma and West Virginia.

10 points higher than would be expected from a partisan-blind process. A similar 10 point difference also occurs in District 2. Moreover, not only are there ten point differences, the likelihood of drawing a second and third least supportive district in the O'Malley race is below one-half of one percent. The evidence of a cracking gerrymander of two Maryland districts is clear.

Massachusetts, Applying the same form of analysis to the 2010 Massachusetts's State Auditor election between Democrat Susan Bump and Republican Mary Connaughton Baker. Bump received 51.1 percent of the two-party vote but carried only three of nine congressional districts.⁸ Without going any farther, the contra-majoritarian result standing alone is definite evidence there is no pro-Democratic gerrymander, at least across the Commonwealth as a whole. The figures in Table 2 help to explain what underlies the contra-majoritarian result. District number 7, the most strongly Democratic of the nine districts, is more than nine points more Democratic than would likely be produced by a partisan-blind process. Besides the packing of Democrats in District 7, there is an overall general tendency for Massachusetts residential patterns to operate more favorably to Republicans than Democrats. That much is signaled by the result showing from the partisan-blind line drawing that even with 51 percent of the vote Bump is expected to receive a majority in four of nine districts. In short there is no evidence that Massachusetts' Democrats are and have been sweeping all nine congressional districts because the district lines have been drawn in some way helpful to them. That is not true in general or in any particular district.

[Table 2 about here]

⁸ We could rely on Deval Patrick versus Charlie Baker 2010 gubernatorial contest, but that election had a third-party candidate who received 8 percent of the vote. Applying the analysis about to be presented using the Auditor race to the Governor race, or to other elections between 2006 and 2010, all lead to the same conclusion we are about to report.

Ohio. The Ohio design of congressional districts, under the watchful eye of then-Speaker of the House John Boehner was designed to bring about a 12-4 Republican delegation majority (Barone and McCutcheon 2013, 1291-2). It did just that. As the numbers in Table 3 reveal, the accomplishment required a good deal of gerrymandering. Using the Obama versus McCain two-party Democratic presidential vote percentages arrayed from low to high together with expectations from 10,000 partisan blind maps, the obvious force of the gerrymandering can be seen in the four districts (#s 3, 9, 11, and 13) where Democrat votes are packed beyond any reasonable expectation. Among the four, between no district and fewer than one half of one percent is expected to be as packed as these four. The spillover effect and the harm to Democratic voters is seen in the five districts where their votes are cracked, with vote percentages between 47.7 and 50, when reasonable expectation are for district at ranks 8 through 12 to hold substantial Democratic majorities in the vote percentage range of 51 and 57. Each and all five of these districts would certainly appear to be above the bar set by the Court's reasoning in Whitford.

[Table 3 about here]

Illinois. Analyzing the possible unfairness in Illinois' congressional districts has to begin with this recognition. Second only to New York, the residential patterns in Illinois are strongly biased in favor of Republicans. The State is politically competitive, but a large proportion of its Democrats reside in and around Chicago. With Democrats in control of both legislative chambers and the Governor's office at the time of redistricting, a good case can be made that they did everything they could to help their co-partisans seeking seats in the U.S. House (see, e.g., Barone and McCutcheon 2013, 541). Despite the outcries of unfairness and sober court reflections of a "blatant political move" (quoted above), the reality as shown in Table 4 is that

the Democrats' self-help maneuvering was largely a matter of tamping down some of the pro-Republican effects of residential patterns. After arrangement of two-party Democratic percentages from the 2010 gubernatorial election from low to high that four of the five most competitive districts in the State (#s 3, 8, 10, 11, and 12) have Democratic percentages higher than could reasonably be expected. Nevertheless, four of the five were not carried by the Democratic gubernatorial candidate, Pat Quinn, even though he won the election with 50.5 percent of the two-party vote. Moreover, despite winning the election, Quinn carried only 7 of the 18 districts. That the Democrats maneuvered to help themselves is unquestionable; that the Republicans suffered no injury to their representational rights is just as unquestionable.

[Table 4 about here]

4a. Checking for Vote Weight Dilution

Application of the equal vote weight standard to check for injurious gerrymandering effects is not designed to a counterpoint or even a quibble with the conclusions just drawn about the entrenchment forms of gerrymandering in Ohio or Illinois. If the conclusions were at variance, that would be a serious problem for one, the other, or both approaches. The point, instead, is to indicate that the vote weight standard reaches the same conclusion and does so using a more easily manageable analysis compared to the district specific approach.

Recall that once we have evidence of strongly predictable partisan voting patterns, which as we have reported we do for all but two states, the next question is whether a consistent bias running against the disfavored party. Checking for bias is a matter of calculating the arithmetic median-mean difference in two-party district vote percentages. When we calculate the difference for eight Illinois statewide elections from 2008 and 2010, as a mapmaker could easily check prior to enactment or a court could check if called upon afterward, the results reported in

Table 5 show the enacted map has a gerrymander bias running persistently against Democrats. That is the end of the inquiry. There is no entrenchment form of gerrymandering injurious to Republicans.

[Table 4 about here]

The evidence of the Ohio gerrymander requires going through all five prongs of the equal vote weight analysis. As noted, voting patterns in Ohio are predictable partisan. The median-mean differences in all ten statewide elections for which we have data show an asymmetry bias between 3.8 and 5.8 points running against Democrats. That bias receives but minor compensation from typically half to two-thirds of a percentage point of turnout bias favoring Democrats. Third, the asymmetry bias from gerrymandering is consistently three to five points larger than one could expect from residential patterns. With that information in hand, the expectation is that Democrats likely need to win 54 to 56 percent of the vote statewide to carry a majority of Ohio's districts. And, in fact, in the three elections Democrats won with 51.5 to 53.2 percent of the statewide vote, their candidate 4, 5, and 6 of the State's 16 districts. From a simple analysis of the eight elections prior to enactment of the plan, mapmakers could have known these facts. A court viewing the facts after enactment would also know that the same pattern held in the two statewide elections in 2012. Finally, an after the fact further check on what has occurred in the three U.S. House elections after 2012 are likely consigned to winning just four districts throughout the decade and in even a best case scenario are highly unlikely to win more than six House seats even in a very good year for the Democratic Party.

5. Conclusion

Despite the anxious anticipation of a Supreme Court ruling on a manageable standard for identifying gerrymandering, the Court took but one minor step. It announced that if there is a

manageable standard, it will have to follow from a threshold demonstration of a plaintiff's district-specific injury to her or his individual representational rights. We foresee two paths forward. One follows closely the Court's directive for analyzing dilution of an individual's right to fair and equal representation. Its focal point is on district-specific exclusion arising from an individual finding her- or himself in a cracked district with de minimis prospect of being able to elect a candidate of choice. Such a showing can be accomplished, at least so far as a showing of effect is concerned, by constructing a set of fairly drawn, partisan-blind alternative district plans and comparing the likelihood that an alleged cracked district is highly unlikely partisan voter but for a purpose to diminish identifiable partisan voters' ability to elect candidate of their choice.

A second approach rests on a legal theory of vote dilution not in the sense of a diminished ability to elect a candidate of choice but in the sense that the choice of district lines caused unequal vote weights for supporters of the two major parties. This sort of constitutional affront occurs only in gerrymandered jurisdictions where the enacting party seeks to entrench itself in power regardless of their majority vote status.

The choice of which path to pursue rests in large part on whether the allegation is of district-specific exclusion or system-wide entrenchment. Both paths lead to re-empowering voters to make the choice of who represents them without the partisan affiliation of the representative being foreordained at the beginning of a decade.

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Figure 1: Partisan Predictability as Shown via the Consistent Alignment of Partisan Voting Patterns in Nine Elections

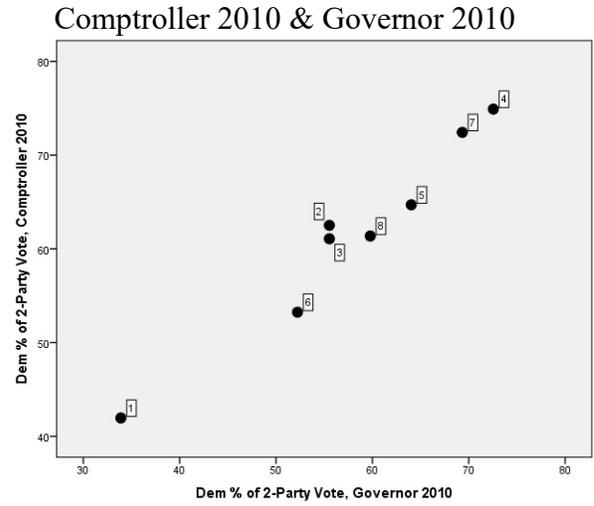
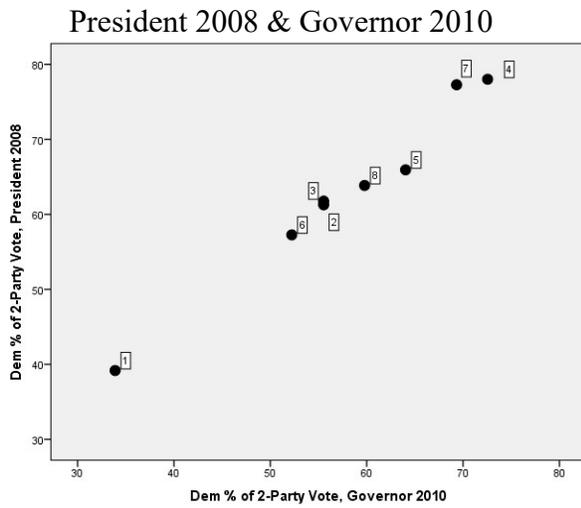
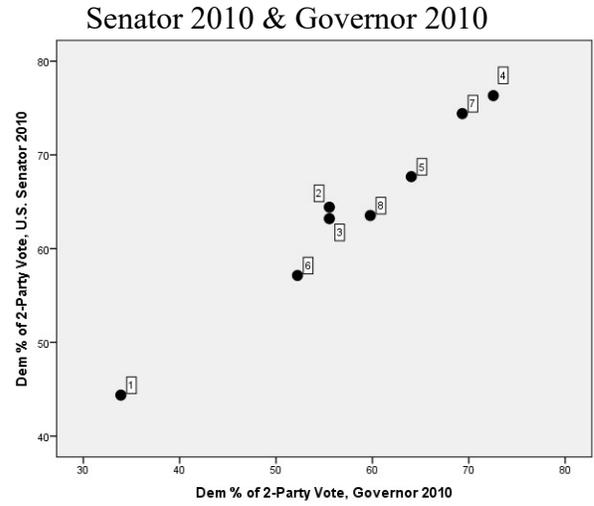
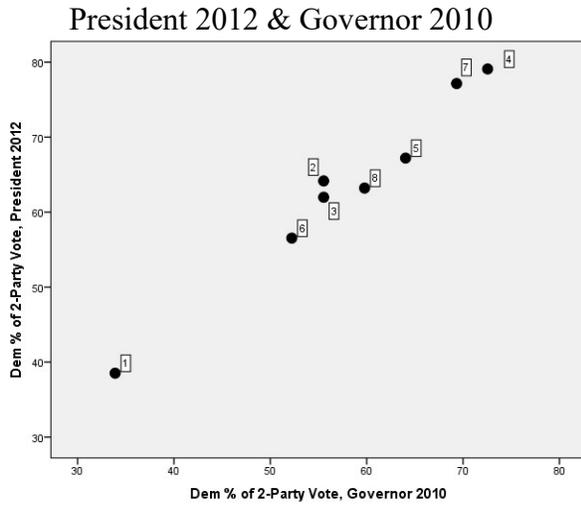


Figure 1 continued:

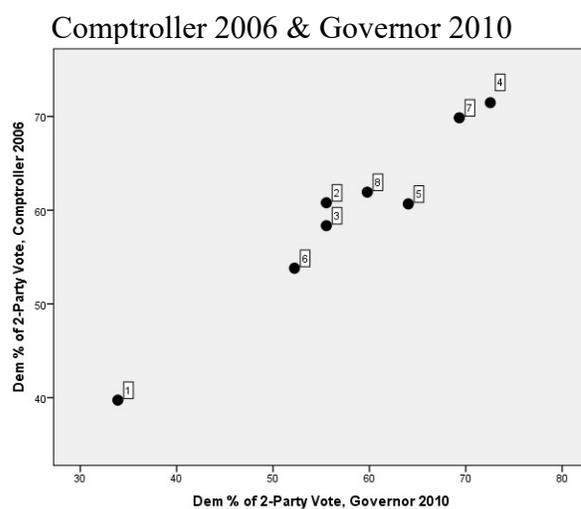
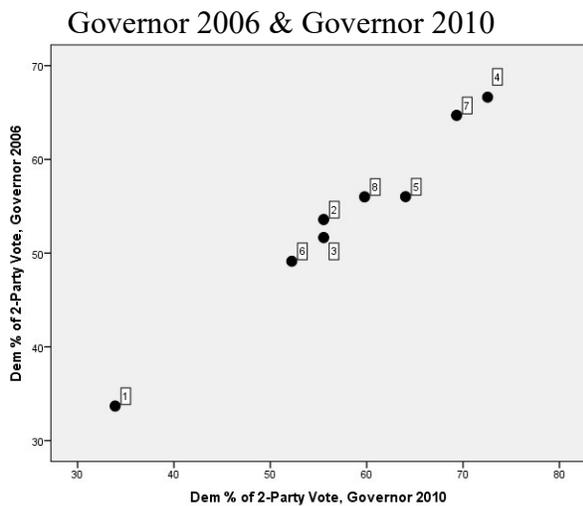
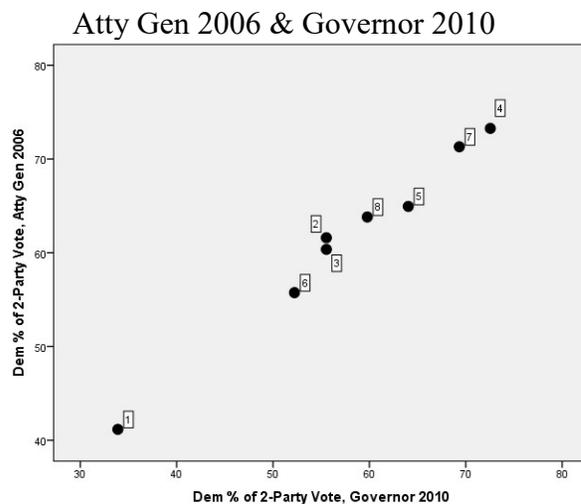
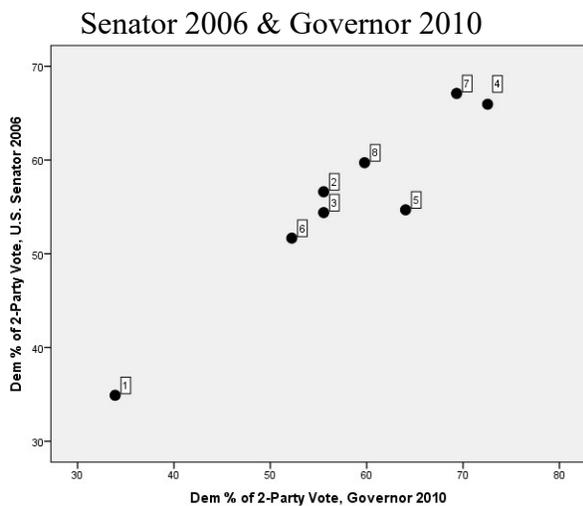


Table 1: Checking Maryland Congressional Districts for Indications of Cracking:
Governor Election 2010

District Rank, Least to Most Democratic Vote Support	#1* Actual District Number	#2 Observed Dem Vote %	#3 Expected Dem Vote%	#4 Probability Expected Less Than Observed
1	1	33.9	37.7	76/10,000
2	3	52.2	41.6	1/10,000
3	4	55.5	45.1	36/10,000
4	8	55.5	55.3	4664/10,000
5	6	59.8	63.6	8056/10,000
6	2	64.0	69.5	345/10,000
7	7	69.3	74.1	774/10,000
8	5	82.5	82.4	46/10,000

Table 2: Checking Massachusetts Congressional Districts for Indications of Cracking:
State Auditor Election 2010

District Rank, Least to Most Democratic Vote Support	#1* Actual District Number	#2 Observed Dem Vote %	#3 Expected Dem Vote%	#4 Probability Expected Less Than Observed
1	6	45.5	42.1	9986/10,000
2	3	46.4	45.1	9532/10,000
3	4	47.5	46.1	9900/10,000
4	9	47.8	47.1	9530/10,000
5	8	49.1	48.7	6289/10,000
6	2	49.4	51.1	351/10,000
7	5	52.9	58.6	188/10,000
8	1	55.5	61.3	2/10,000
9	7	75.5	66.6	10,000/10,000

Table 3: Checking Ohio Congressional Districts for Indications of Cracking:
 Presidential Election 2008

District Rank, Least to Most Democratic Vote Support	#1* Actual District Number	#2 Observed Dem Vote %	#3 Expected Dem Vote%	#4 Probability Expected Less Than Observed
1	8	38.8	38.0	6457/10,000
2	4	44.5	40.4	9905/10,000
3	2	45.0	42.6	9224/10,000
4	12	45.4	44.8	6827/10,000
5	6	45.6	46.2	2794/10,000
6	15	46.9	47.6	3156/10,000
7	5	46.9	49.3	477/10,000
8	1	47.7	51.0	181/10,000
9	16	47.9	52.9	8/10,000
10	7	47.9	54.5	0/10,000
11	14	49.8	56.0	0/10,000
12	10	50.0	57.2	0/10,000
13	13	63.5	58.4	10,000/10,000
14	9	67.9	59.7	10,000/10,000
15	3	68.3	62.0	9995/10,000
16	11	82.7	74.1	9954/10,000

Table 4: Checking Illinois Congressional Districts for Indications of Cracking:
Governor Election 2010

District Rank, Least to Most Democratic Vote Support	#1* Actual District Number	#2 Observed Dem Vote %	#3 Expected Dem Vote%	#4 Probability Expected Less Than Observed
1	15	28.4	32.7	3/10,000
2	18	29.3	34.2	0/10,000
3	16	35.3	35.2	5993/10,000
4	14	36.7	36.5	7317/10,000
5	6	37.1	37.9	2601/10,000
6	13	40.1	40.2	4442/10,000
7	17	42.5	42.3	5988/10,000
8	12	47.0	43.4	10,000/10,000
9	8	47.7	44.3	10,000/10,000
10	11	49.5	45.4	10,000/10,000
11	10	49.6	47.3	9473/10,000
12	3	51.5	50.6	6988/10,000
13	9	58.6	57.5	6288/10,000
1	5	59.6	63.3	1481/10,000
15	4	75.0	69.7	9510/10,000
16	1	76.9	74.9	7867/10,000
17	2	77.8	81.4	1692/10,000
18	7	84.3	91.5	544/10,000

Table 5: Checking for Consistent Gerrymander Bias in Illinois (alleged to be operating against Republicans)

State	Year	Office	Total Vote%	Mean District Vote%	Median District Vote%	Turnout Bias	Obs Gerry-mander Bias	Exp Gerry-mander Bias	Observed Districts Carried	Expected Districts Carried
Illinois 18 Districts	2008	President	62.73	63.15	61.52	.41	-1.63	-5.57	16	16.29
		US Senate	70.40	70.65	68.78	.25	-1.87	-5.46	18	18.00
	2010	Atty Gen.	67.16	67.49	65.22	.33	-2.27	-5.34	17	17.98
		Comp	43.72	44.73	40.87	1.01	-3.86	-7.46	4	4.83
		Governor	50.46	51.50	48.62	1.04	-2.88	-6.70	7	6.55
		US Senate	49.15	49.98	45.51	.82	-4.47	-6.96	6	6.17
		Sec of State	72.12	72.32	70.34	.20	-1.98	-4.08	18	18.00
		Treasurer	47.67	48.67	44.90	1.00	-3.78	-7.46	6	5.84

Table 6: Checking for Consistent Gerrymander Bias in Ohio (alleged to be operating against Democrats),
with Further Checks for Violations of Majority Rule

State	Year	Office	Total Vote%	Mean District Vote%	Median District Vote%	Turnout Bias	Obs Gerry- mander Bias	Exp Gerry- mander Bias	Observed Districts Carried	Expected Districts Carried
Ohio 16 Districts	2008	President	52.33	52.43	47.81	.09	-4.62	-.24	5	9.05
	2010	Atty Gen	49.32	49.72	45.06	.40	-4.67	-.14	4	7.37
		Auditor	47.21	47.72	43.90	.51	-3.82	-.61	4	5.94
		Governor	48.96	49.45	44.39	.49	-5.06	-.52	5	6.50
		US Senate	40.94	41.62	35.82	.68	-5.80	-.56	4	2.32
		Sec of State	43.58	44.20	39.10	.61	-5.10	-.16	4	3.11
		Treasurer	42.67	43.33	37.93	.66	-5.40	-.53	4	2.73
	2012	President	51.51	51.67	46.37	.15	-5.29	-.29	4	8.39
		US Senate	53.15	53.33	48.75	.18	-4.58	-.10	6	9.17