IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN

WILLIAM WHITFORD, ROGER ANCLAM, EMILY BUNTING, MARY LYNNE DONOHUE, HELEN HARRIS, WAYNE JENSEN, WENDY SUE JOHNSON, JANET MITCHELL, ALLISON SEATON, JAMES SEATON, JEROME WALLACE, and DONALD WINTER, Plaintiffs, v. GERALD C. NICHOL, THOMAS BARLAND, JOHN FRANKE, HAROLD V. FROEHLICH, KEVIN J. KENNEDY, ELSA LAMELAS, and TIMOTHY VOCKE, Defendants.	)	No. 15-cv-421-bbc

---

PLAINTIFFS' OPPOSITION TO DEFENDANTS' MOTION FOR SUMMARY JUDGMENT

Peter G. Earle
LAW OFFICE OF PETER G. EARLE
839 North Jefferson Street, Suite 300
Milwaukee, WI 53202
(414) 276-1076

Michele Odorizzi
MAYER BROWN LLP
71 South Wacker Drive
Chicago, IL 60606
(312) 782-0600

Paul Strauss
Ruth Greenwood
Annabelle Harless
CHICAGO LAWYERS' COMMITTEE
FOR CIVIL RIGHTS UNDER LAW, INC.
100 N. LaSalle St., Suite 600
Chicago, IL 60602
(312) 202-3649

Nicholas O. Stephanopoulos
UNIVERSITY OF CHICAGO LAW SCHOOL
1111 E. 60th St., Suite 501
Chicago, IL 60637
(773) 702-4226

Dated: January 25, 2016

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Page(s)

Cases

Rules

Other Authorities

INTRODUCTION

Plaintiffs have proposed a three-part test for adjudicating partisan gerrymandering claims. First, plaintiffs must show that a district plan was enacted with partisan *intent*. Second, they must demonstrate that the *effect* of the plan was to create a large and durable level of partisan asymmetry relative to historical norms. Third, if the first two prongs are met, the map will be held unconstitutional unless defendants can show that its partisan tilt was unavoidable given the state's political geography and legitimate redistricting objectives.[1] As they did in their motion to dismiss, defendants largely ignore the first and third prongs of the test, focusing their attention almost exclusively on the primary measure of partisan asymmetry that plaintiffs have proposed for the test's effect prong—the efficiency gap.

Throughout their brief, defendants tilt at a strawman because they misunderstand the role the efficiency gap plays in plaintiffs' analysis. Defendants rely heavily on the fact that maps crafted by courts or through bipartisan processes sometimes result in large efficiency gaps, arguing that this proves that the efficiency gap is a "flawed way to measure partisanship in the districting process; the 'gap' that purports to show partisan intent appears when there is no partisan intent." Defs' Br. at 2. But plaintiffs do not offer the efficiency gap to prove that Wisconsin's Current Plan (or any other map) was drawn with the intent to achieve a partisan advantage. Instead, plaintiffs employ the efficiency gap as a measure of partisan *effect* to determine when an *intentional* gerrymander gives rise to a partisan asymmetry that is so severe and durable that it should be deemed unconstitutional.[2] When defendants' misunderstanding is

[1] As discussed in greater detail below, plaintiffs' proposed test is just that—a proposal. The Court may decide to alter it in any number of ways. But however it might be altered, that would not affect the outcome of this motion.

[2] Plaintiffs' expert Professor Simon Jackman pointed out in his rebuttal report that defendants' expert Professor Nicholas Goedert misunderstood this vital point and that Professor Goedert's opinion that the efficiency gap could not be used to infer partisan intent is therefore irrelevant: "But this is not at all the legal function of the efficiency gap in plaintiffs' proposed test. Rather, partisan intent is its own independent inquiry, and the efficiency gap then

cleared away, it becomes apparent that summary judgment must be denied because defendants have not met their burden of showing that there are no genuine issues of material fact and that they are entitled to judgment as a matter of law.

Importantly, defendants do not claim that they are entitled to summary judgment on plaintiffs' allegations that the legislators who designed the Current Plan did so with the intent of maximizing Republicans' electoral advantage by diluting the voting strength of Democrats through the rampant packing and cracking of Democratic voters. Nor do they mount a serious challenge to plaintiffs' Demonstration Plan, which shows that the Current Plan's extreme asymmetry was not necessitated by Wisconsin's political geography or legitimate redistricting goals. And even as to the test's second prong, defendants do not dispute that the Current Plan resulted in a large efficiency gap, however that metric is calculated, which is unlikely to disappear over the course of the Plan's ten-year life. Thus, defendants do not contest that the Current Plan fails plaintiffs' proposed test, and instead seek summary judgment based solely on their argument that the test itself is not judicially discernible or manageable.

As to this argument, defendants' principal contention is that the Current Plan's extreme asymmetry could have resulted even if the Plan had been created without any partisan intent. Citing the 2000 plan endorsed by a federal court, defendants assert that Wisconsin's political geography leads naturally to a map favoring Republicans and that this somehow shows that plaintiffs' proposed effect prong does not meet the Supreme Court's requirement of judicial manageability. Indeed, defendants go even further, claiming that the nationwide increase in partisan gerrymandering that plaintiffs' expert Professor Jackman documented is the result of a *nationwide* geographic trend in Republicans' favor. According to defendants and their experts,

---

comes into play at the *second* stage of the test, to determine if a plan's electoral *consequences* are sufficiently severe that it should be deemed presumptively unconstitutional. To put it simply, the efficiency gap is plaintiffs' measure of partisan *effect*, not of partisan *intent*." Jackman Rebuttal Rpt. at 3-4; APFOF ¶ 175.

this trend has arisen because Republicans are more spread out while Democrats are naturally "packed" into urban areas.

As demonstrated below, defendants' arguments fail on both the facts and the law. The facts do not support defendants' claim that a large pro-Republican efficiency gap is the necessary consequence of Wisconsin's political geography. While in some election years the 2000 plan exhibited a substantial pro-Republican efficiency gap, two earlier court-drawn plans had average efficiency gaps of nearly zero, as does plaintiffs' Demonstration Plan. Well-established measures of geographic clustering and isolation also show that Democratic and Republican voters in Wisconsin have almost identical spatial distributions. And the efficiency gap models of defendants' own expert, Professor Goedert, reveal that if Wisconsin's 2011 map had been designed through a bipartisan or nonpartisan process, it would have favored *Democrats* in 2012 and 2014.

Professor Goedert's models also indicate that the typical state nationwide would have had a pro-Democratic efficiency gap in 2012 and 2014 if its map were neutrally drawn. In addition, standard indices of segregation show that Democratic and Republican voters have been roughly equally spatially distributed for decades. And while it is true enough that plans' efficiency gaps have grown more Republican over the last two decades, record evidence establishes that this trend is entirely attributable to Republicans' control of more state governments—not to any change in the country's political geography. At the very least, defendants' arguments on all of these points raise disputed questions of fact.

On the law, the fact that bipartisan or nonpartisan line-drawing processes have sometimes resulted in substantial partisan asymmetries does not disqualify the efficiency gap as either a discernible or manageable measure of partisan effect. Defendants suggest that this fact shows

that there is no discernible constitutional right to symmetrical treatment. But this claim once again ignores the intent prong of plaintiffs' proposed test: the Court need not decide whether there is a constitutional right to partisan symmetry, *regardless* of the mapmaker's intent; rather, the question is whether there is a constitutional right not to be *intentionally* subjected to unequal electoral treatment. The Supreme Court's recent discussions of partisan symmetry—and this Court's ruling on defendants' motion to dismiss—show that the answer to that question is "yes."

As to manageability, the pivotal issue is whether plaintiffs' proposed test reliably distinguishes lawful from unlawful plans. *See Vieth v. Jubelirer*, 541 U.S. 267, 278 (2004) (plurality opinion) ("[L]aw pronounced by the courts must be principled, rational, and based upon reasoned distinctions."). The test's partisan intent prong meets this requirement. There is unlikely to be partisan intent absent unified control of the redistricting process by a single party, and when a single party is in control intent can ordinarily be divined (as in this case) from the redistricting process itself. The test's effect prong also provides a principled way to distinguish between politics as usual and excessive partisan gerrymandering. The efficiency gap is an intuitive metric that precisely captures the extent of a plan's partisan asymmetry in a single number. Courts may then use that number to compare the extent of a challenged plan's asymmetry to historical norms, both statewide and across the country. It is that comparison to historical patterns—and not merely a single data point like Wisconsin's 2000 plan—that allows courts to decide, based on reasoned distinctions, when intentional gerrymandering has reached a level that is intolerable under the Equal Protection Clause and/or the First Amendment.

Contrary to defendants' assertion, plaintiffs' proposed test would not result in the invalidation of an inordinate number of district plans. Defendants again ignore the test's partisan intent prong, suggesting that every plan with an initial efficiency gap of 7% or above would

automatically be overturned under plaintiffs' proposal. But that is not true. Only plans that were drawn with partisan intent would be at risk—usually those where a single party had unified control over redistricting. Of the roughly two hundred distinct plans in Professor Jackman's database, only about seventy recorded an efficiency gap above 7% in their first election, and of these seventy, only about forty were designed by a single party with unified control over redistricting. Thus at least *80%* of plans would be wholly insulated from judicial review under plaintiffs' approach. This amounts to far less disruption than was caused by the reapportionment revolution of the 1960s—and far less than already takes place during each redistricting cycle.

For all of these reasons and the reasons outlined below, defendants' motion should be denied.

STANDARD OF REVIEW

Summary judgment is not a substitute for a trial on the merits, nor is it a vehicle for resolving factual disputes. *Waldridge v. Am. Hoechst Corp.*, 24 F.3d 918, 920 (7th Cir. 1994). The Court must construe all facts in the light most favorable to the non-moving party and draw all reasonable inferences in favor of the non-moving party. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986). Summary judgment may be granted if and only if the evidence, when so viewed, shows that there is "no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." Fed. R. Civ. P. 56(c); *Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986).

Summary judgment cannot be granted where, as here, the evidence consists almost entirely of dueling expert reports. *See, e.g.*, *Landmark-Ind. Ltd. P'ship v. City of Indianapolis*, 2015 WL 2449592, at *11 (S.D. Ind. May 22, 2015) ("The parties' opposing expert witness opinions is a classic 'battle of the experts' which precludes the entry of summary judgment");

Bullock v. Dart, 599 F. Supp. 2d 947, 959 (N.D. Ill. 2009) (same); *Coles v. LaSalle Partners Inc. Disability Plan*, 287 F. Supp. 2d 896, 903-04 (N.D. Ill. 2003) ("Here we have the classic 'battle of the experts' that cries out for resolution by a factfinder (either the court in a bench trial or a jury, as the case may be), not by a court operating within the strictures of Rule 56."). Indeed, unless defendants "can keep out plaintiff's experts' testimony," such testimony will almost always "present[] a genuine issue of material fact." *Grismer v. The Upjohn Co.*, 1995 WL 390053, at *3 (N.D. Ill. June 26, 1995). Here, defendants have not even attempted to argue that either of plaintiffs' experts' opinions should be excluded.

BACKGROUND

Rather than presenting undisputed facts, defendants' twenty-seven pages of "facts" offer defendants' spin on the evidence in the record, treating their own experts' hotly disputed conclusions as uncontested and ignoring the rebuttal reports provided by plaintiffs' experts, which rebut defendants' various criticisms. Below, we first provide general background on plaintiffs' experts and their analyses (Part I), and then explain the factual dispute between the parties' experts as to whether the recent pro-Republican trend in the efficiency gap, both nationwide and in Wisconsin, is due to a change in political geography (Parts II and III). Part IV addresses defendants' claims about the volume of plans at risk of failing plaintiffs' proposed test. The last three sections respond to various criticisms defendants have leveled at the methodologies employed by plaintiffs' experts, involving the reliability of the efficiency gap (Part V), Professor Mayer's efficiency gap calculations for Wisconsin (Part VI), and the two methods for calculating the efficiency gap (Part VII).

I. Plaintiffs' Experts and Their Analyses.

There is no question that plaintiffs' experts are well-qualified to render the opinions they offered in their initial and rebuttal expert reports. Simon Jackman is a Professor of Political Science at Stanford University, where he teaches classes on American politics and statistical methods in the social sciences. Jackman Rpt. (Dkt. 62) at p. 1; APFOF ¶ 1.[3] He has authored and published many articles in peer-reviewed journals over the last decade on a variety of subjects in his field, including the properties of electoral systems and election administration. APFOF ¶ 1-2. Kenneth Mayer is a Professor of Political Science at the University of Wisconsin-Madison, and a faculty affiliate at the University's Lafollette School of Public Affairs. He teaches courses on American politics, the presidency, Congress, campaign finance, election law, and electoral systems. He too has published numerous articles in peer-reviewed journals on these topics. Mayer Rpt. (Dkt. 54) at p. 2; APFOF ¶ 3-4. Although neither Professor Jackman nor Professor Mayer invented the efficiency gap measure, both were already highly conversant with the principles of partisan symmetry on which it is based before this lawsuit was filed, and both are well-qualified to calculate the metric for any district plan. APFOF ¶ 5.

As the Court has correctly noted, the efficiency gap is "the difference between the parties' respective wasted votes in an election, divided by the total number of votes cast." Order (Dkt. 43) at 4. Wasted votes are votes that are cast either for a losing candidate ("lost votes") or for a winning candidate but in excess of what he or she needed to prevail ("surplus votes"). Jackman Rpt. (Dkt. 62) at pp. 15-16; APFOF ¶ 6. All gerrymandering is accomplished by cracking and packing the disadvantaged party's voters, causing that party to accrue more lost and surplus votes and thus to convert its popular support into legislative representation less efficiently than the favored party. The efficiency gap measures the extent to which one party's

[3] Citations to "APFOF" are to plaintiffs' Additional Proposed Findings of Fact, filed herewith.

voters are more cracked and packed than the other's, and so provides a single intuitive figure (expressed as a negative value for a pro-Republican gap and a positive value for a pro-Democratic gap) that can be used to assess the existence and extent of partisan gerrymandering and to compare one plan's partisan impact to another's. Jackman Rpt. (Dkt. 62) at pp. 15-16; APFOF ¶ 7.

Professor Jackman calculated the efficiency gap for every state house election for which data was available over the period from 1972 to 2014, using actual election results. To do so, he did not aggregate wasted votes district by district, but rather used a simplified computation method based on statewide electoral data. *See* Part VII, *infra*. Defendants' expert, Professor Goedert, "concur[s] that this shortcut is an appropriate and useful summary measure of [the] efficiency gap." Jackman Rep. (Dkt. 62) at p. 16; Goedert Rpt. (Dkt. 51) at p. 5; Goedert Dep. (Dkt. 65) at 70:17-73:2; APFOF ¶ 8-9. Using the simplified method for Wisconsin's Current Plan, Professor Jackman calculated an efficiency gap of -13% in 2012 and -10% in 2014. He also found that, from 1972 to 2010, not a single map in the country was as asymmetric as the Plan in its first two elections, and that there is nearly a 100% likelihood that the Plan will continue to disadvantage Democrats throughout its lifespan. Jackman Rpt. (Dkt. 62) at pp. 4-5, 63-73; APFOF ¶ 10-11. Indeed, Professor Jackman opined that any plan that gives rise to an efficiency gap of 7% or more in its first election is likely to create a partisan advantage that will endure for the remainder of the decade. Jackman Rpt. (Dkt. 62) at pp. 56-69; Jackman Rebuttal Rpt. (Dkt. 63) at pp. 5-17; Jackman Decl. Ex. D (Dkt. 58-4) at pp. 1-6; APFOF ¶ 12. *See also* Part V, *infra*.

Professor Mayer's task and hence his methodology were somewhat different. He calculated the efficiency gap in 2012 both for Wisconsin's Current Plan and for a Demonstration Plan he developed to show that it would have been possible to design a map that met all federal

and state requirements at least as well as the Current Plan, but that did not have a large pro-Republican efficiency gap. Unlike Professor Jackman, Professor Mayer used the full method to calculate the efficiency gap, tallying wasted votes district by district. Also unlike Professor Jackman, Professor Mayer did not use actual vote totals. Instead, because he was comparing an actual with a hypothetical plan, he used a regression analysis to estimate what the wasted votes would have been in each district, under both the Current Plan and his Demonstration Plan. Mayer Rpt. (Dkt. 54) at pp. 5-10, 8-18; APFOF ¶ 13-14.

Although defendants have criticized Professor Mayer's failure to use actual votes in his calculations, his results were remarkably similar to those generated by Professor Jackman using actual data. *See* Jackman Rpt. (Dkt. 62) at p. 72 (-13% efficiency gap for Current Plan in 2012); Mayer Rpt. (Dkt. 54) at p. 46 (-12% efficiency gap for Current Plan in 2012); APFOF ¶ 15. Professor Mayer also found that his Demonstration Plan would have had an efficiency gap of only -2% in 2012, a score more than 80% smaller than the Current Plan's. Mayer Rpt. (Dkt. 54) at p. 46; APFOF ¶ 16. He further determined that the partisanship estimates prepared *prior* to the 2012 election by the Legislature's consultant, Professor Keith Gaddie, corresponded to an efficiency gap of -12% for the Current Plan. Mayer Rpt. (Dkt. 54) at p. 46; APFOF ¶ 17. This figure, of course, is virtually identical to the ones calculated by Professor Mayer and Professor Jackman *after* the 2012 election.

In their brief, defendants repeat a number of criticisms their experts made of Professors Jackman's and Professor Mayer's methodologies and opinions. Both of plaintiffs' experts submitted rebuttal reports in which they not only debunked defendants' criticisms, but also tried out virtually all of the suggestions made by defendants' experts to test their opinions. As

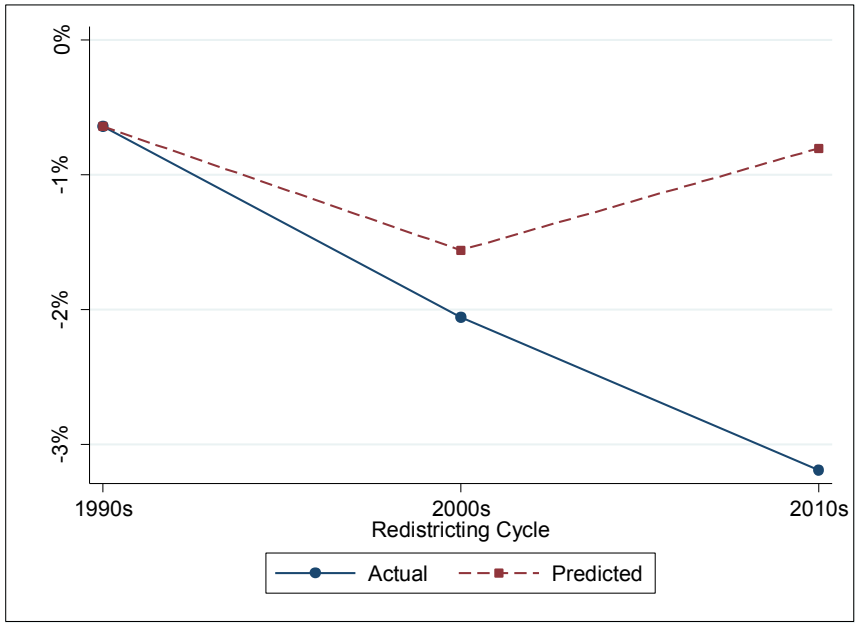
demonstrated below, these rejoinders, which defendants essentially ignore, demonstrate that, at most, defendants have raised questions of fact that can only be resolved at trial.

II. National Trends in the Efficiency Gap and Their Explanations.

Professor Jackman's work shows that over the modern redistricting era, from 1972 to 2014, the average efficiency gap of state house plans has been -0.5%, or almost exactly zero. Jackman Rpt. (Dkt. 62) at p. 35; APFOF ¶ 18. The same is true for congressional plans from 1972 to 2012. Nicholas O. Stephanopoulos & Eric M. McGhee, *Partisan Gerrymandering and the Efficiency Gap*, 82 U. CHI. L. REV. 831, 869-870 (2015); APFOF ¶ 19. In the last three redistricting cycles, however, state house plans have become steadily more pro-Republican, with their average efficiency gap dropping from -0.6% in the 1990s to -2.1% in the 2000s to -3.2% in the 2010s. Jackman Rebuttal Rpt. (Dkt. 63) at p. 20; APFOF ¶ 20.

Remarkably, defendants claim that this pro-Republican trend is entirely attributable to a change in the country's political geography. Defs' Br. at 27-28. But as Professor Jackman's rebuttal report shows, the actual explanation is the growing share of district plans that were designed by Republicans in full control of the state government. This proportion increased from about 10% in the 1990s to about 20% in the 2000s to about 40% in the 2010s. By comparison, fewer than 20% of current plans were designed by Democrats in full control of the state government. Jackman Rebuttal Rpt. (Dkt. 63) at p. 19; Trende Dep. (Dkt. 66) at 79:11-23; APFOF ¶ 21-22. The chart below shows how the average efficiency gap of state house plans would have changed from the 1990s to the 2010s if the distribution of party control over redistricting had remained constant over this period. Strikingly, the average efficiency gap would barely have changed, going from -0.6% only to -0.8%. Jackman Rebuttal Rpt. (Dkt. 63) at p. 20; Jackman Decl. Ex. F (Dkt. 58-6); APFOF ¶ 23-24. Based on this analysis of Professor

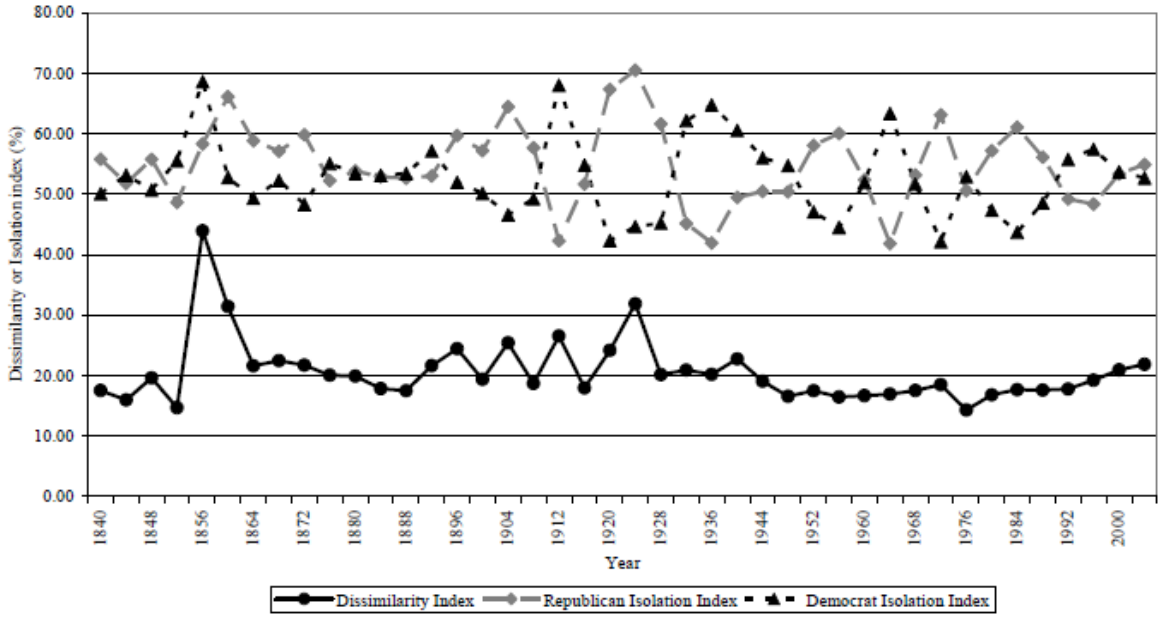
Jackman's, a finder of fact could conclude that essentially *all* of the pro-Republican trend in the efficiency gap stems from greater Republican control over redistricting.



APFOF ¶ 23.

The conclusion that the country's political geography has not appreciably shifted in recent years—and so cannot explain the pro-Republican trend in the efficiency gap—is supported by the work of Edward Glaeser and Bryce Ward. They calculated what is known as the isolation index for Democratic and Republican voters by county from 1840 to 2004. This index indicates, for the average Democratic or Republican voter, what share of his or her fellow county residents are also Democrats or Republicans. Edward L. Glaeser & Bryce Adam Ward, *Myths and Realities of American Political Geography* (2005) (Dkt. 59-3) at pp. 5-6; APFOF ¶ 25. If the country's political geography were becoming more favorable for Republicans due to the natural "packing" of Democrats, as defendants contend, the isolation score for Democrats would be high and rising and there would be a low and steady isolation score for Republicans. Defs' Br. at 27-28.

As the below chart reveals, this is not at all the case. Instead, over the last half-century, both Democratic and Republican isolation scores have been close to 50%, oscillating over a range from roughly 40% to 60%. Glaeser & Ward, *supra* (Dkt. 59-3), at p. 39; APFOF ¶ 26. In some elections, Democrats are more isolated; in other elections, it is Republicans who are more packed. In the final election covered by the study (2004), "[t]he isolation index . . . was 53.4 percent for Republicans and 52.6 percent for Democrats." Thus "[t]he isolation measures show even less of a trend," and certainly do not support defendants' Democratic clustering thesis. Glaeser & Ward, *supra* (Dkt. 59-3) at p. 6; APFOF ¶ 27.



APFOF ¶ 26.

Further evidence that the country's political geography does not intrinsically benefit Republicans comes from work done by defendants' own expert, Professor Goedert. For both 2012 and 2014, he constructed models with a measure essentially identical to the efficiency gap as the dependent variable, along with the following independent variables: whether a plan was designed by Democrats or Republicans in full control of the state government or through a bipartisan or nonpartisan process; each state's proportions of black and Hispanic residents; each

state's level of urbanization; the Democratic share of the statewide vote; and the number of seats in each state. Both of these models have large R-squared values (0.829 in 2012, 0.570 in 2014), indicating that the models capture a large fraction of the variance in the efficiency gap. Nicholas Goedert, *Gerrymandering or Geography? How Democrats Won the Popular Vote But Lost the Congress in 2012*, Res. & Pol. (2014), Goedert Dep. Ex. 20 (Dkt. 65-2) at p. 6 [hereinafter Goedert, *Gerrymandering or Geography?*]; Nicholas Goedert, *The Case of the Disappearing Bias: A 2014 Update to the "Gerrymandering or Geography* (2015), Goedert Dep. Ex. 21 (Dkt. 65-3) at p. 13 [hereinafter Goedert, *Disappearing Bias*]; Goedert Dep. (Dkt. 65) at 79:24-80:3; APFOF ¶ 28-29.

As Professor Mayer explains in his rebuttal report, Professor Goedert's models can be used to predict what the efficiency gap would have been in 2012 and 2014 in a state that resembled the country as a whole—demographically, geographically, and electorally—if that state's plan was designed through a bipartisan or nonpartisan process. Plugging the appropriate values of the independent variables into the models reveals that the typical state would have had a *pro-Democratic* efficiency gap of 0.7% in 2012, and a *pro-Democratic* efficiency gap of 1.6% in 2014, if its map had been drawn by a court, a commission, or a divided state government. Mayer Rebuttal Rpt. (Dkt. 64) at pp. 15-16; Goedert Dep. (Dkt. 65) at 90:12-18; APFOF ¶ 30-31. Thus, Professor Goedert's own work indicates that, far from inherently favoring Republicans, the country's political geography is, on average, slightly tilted in a Democratic direction.[4]

[4] Professor Goedert's work includes two additional findings that undermine defendants' political geography claim. First, in both 2012 and 2014, unified Democratic control over redistricting was associated with about as large a pro-Democratic efficiency gap boost as unified Republican control was with a pro-Republican boost. Second, Professor Goedert's proxy for political geography, a state's level of urbanization, failed to reach statistical significance in one of his two 2012 models *and* in his 2014 model. Goedert, *Gerrymandering or Geography*, *supra* (Dkt. 65-2), at 6; Goedert, *Disappearing Bias*, *supra* (Dkt. 65-3), at 13; APFOF ¶ 28.

Defendants argue to the contrary primarily on the basis of a single political science article: Jowei Chen & Jonathan Rodden, *Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures*, 57 Q.J. POL. SCI. 239 (2013). *See* Defs' Br. at 27. This article contends that if district plans were drawn randomly, using only contiguity, compactness, and equal population as criteria, they would exhibit pro-Republican partisan biases in most (but not all) states. But, as explained in Professor Jackman's rebuttal report, "there are several issues with [this] work that make it inapplicable here." Jackman Rebuttal Rpt. (Dkt. 63) at p. 20; APFOF ¶ 32.

First, Chen and Rodden's simulated plans are not lawful because they completely ignore the Voting Rights Act as well as state legal requirements such as respect for political subdivisions and respect for communities of interest, which are in effect in a majority of states. Jackman Rebuttal Rpt. (Dkt. 63) at pp. 20-21; Goedert Dep. (Dkt. 65) at 154:20-55:3; Trende Dep. (Dkt. 66) at 67:10-21; APFOF ¶ 33. Second, Chen and Rodden use only presidential election results from 2000 in their analysis. They do not use state legislative election results (which are more relevant to the issue of state legislative partisan gerrymandering) or results from more recent years. Jackman Rebuttal Rpt. (Dkt. 63) at p. 21; APFOF ¶ 34.

Third, Chen and Rodden's simulated maps do not actually constitute a representative sample of all possible maps that satisfy their criteria. Because of flaws in their simulation algorithm, their maps capture only an arbitrary subset of the entire solution space. Jackman Rebuttal Rpt. (Dkt. 63) at p. 21; Benjamin Fifield et al., *A New Automated Redistricting Simulator Using Markov Chain Monte Carlo* (2015), Jackman Decl. Ex. H (Dkt. 58-8) at pp. 2-3; APFOF ¶ 35. And fourth, their results are directly contradicted by other recent work using a nearly identical methodology. Roland Fryer and Richard Holden also simulated plans with

contiguous, compact, and equipopulous districts for multiple states. But they found that, "[u]nder maximally compact districting, measures of Bias are slightly *smaller* in all states except [one]." And not only are the biases slightly smaller, they are also slightly *pro-Democratic* in all cases. Roland Gerhard Fryer & Richard Holden, *Measuring the Compactness of Political Districting Plans*, 54 J.L. & Econ. 493 (2011), Goedert Dep. Ex. 18 (Dkt. 65-1) at pp. 514-15; Jackman Rebuttal Rpt. (Dkt. 63) at p. 21; APFOF ¶ 36.

The only other evidence defendants cite in support of their claim that Democrats are becoming more clustered nationwide is the opinion of their expert (Sean Trende) based on his analysis of a set of maps comparing county-level presidential election results in 1996 and 2012 in the West South Central region of the country. Defs' Br. at 27-28; Trende Decl. (Dkt. 55) ¶¶ 66-68; APFOF ¶ 37. There are a host of problems with Trende's analysis. Among other things, Trende admitted that there are no "peer-reviewed studies that have analyzed the geographic clustering of Democratic and Republican voters by examining trends in counties won by each part[y's] presidential candidate," Trende Dep. (Dkt. 66) at 51:6-11; APFOF ¶ 38; that the maps he relied upon make no adjustment for counties' wildly divergent populations, Trende Dep. (Dkt. 66) at 52:25-53:3; Goedert Dep. (Dkt. 65) at 186:5-7; APFOF ¶ 39; that the maps do not display each party's margin of victory in each county, Trende Dep. (Dkt. 66) at 52:3-6; APFOF ¶ 40; that the maps are based on presidential rather than state legislative election results, Trende Dep. (Dkt. 66) at 53:25-54:13; APFOF ¶ 41; and that the maps do not generate any quantitative measure of partisan clustering over time, but rather are simply meant to be "eyeball[ed]," Trende Dep. (Dkt. 66) at 59:2-8; APFOF ¶ 42. Plaintiffs will soon be filing a *Daubert* motion challenging the admissibility of Trende's opinions. But even if these opinions were admissible, they would do no more than raise questions of fact as to whether the nationwide pro-Republican

trend in the efficiency gap is the product of geographic change or shifts in partisan control over redistricting.

III. Wisconsin's Political Geography

Defendants claim not only that the country's political geography increasingly favors Republicans, but that Wisconsin's does so as well. Defs' Br. at 28-30. Wisconsin's own Assembly plans over the five cycles of the modern redistricting era refute that claim—or, at the very least, raise questions of fact. In this period, four of the state's five plans (all but the Current Plan) were designed either through bipartisan agreement or by a court. In the 1970s, a Democratic Governor and Assembly were able to reach a compromise with a Republican Senate. In the 1980s, a federal court drew the Assembly districts (which were then revised somewhat by the elected branches). *See Wisc. State AFL-CIO v. Elections Bd.*, 543 F. Supp. 630 (E.D. Wis. 1982). In the 1990s, another federal court drew the districts. *See Prosser v. Elections Bd.*, 793 F. Supp. 859 (W.D. Wis. 1992). The *Prosser* court took into account likely electoral effects and designed the map that was the "least partisan" and "create[d] the least perturbation in the political balance of the state." *Id.* at 871. In the 2000s, still another federal court drew the districts. *See Baumgart v. Wendelberger*, 2002 WL 34127471 (E.D. Wis. May 30, 2002). Defendants seize on this plan as evidence that Wisconsin's political geography has a natural pro-Republican tilt. Defs' Br. at 22-25. But that single data point proves nothing. For one thing, the tilt may be explained by the fact that the *Baumgart* court did *not* consider likely electoral effects and adopted a plan more similar to that submitted by the Republican intervenors than to the one offered by the Democratic intervenors. *Id.* at *7; Mayer Dep. (Dkt. 52) at 121:7-16; APFOF ¶ 43.

In addition, the 2000 plan is itself an anomaly. The table below lists the average efficiency gaps of each of Wisconsin's modern plans over their lifetimes. The table also lists the

average efficiency gap of Professor Mayer's Demonstration Plan over the Democratic wave, Republican wave, and 2012 electoral scenarios. Four of the five average efficiency gaps are very small: -0.3% in the 1970s, -1.9% in the 1980s, -2.4% in the 1990s, and -1.9% for the Demonstration Plan. Jackman Rpt. (Dkt. 62) at p. 72; Jackman Decl. Ex. F (Dkt. 58-6) at p. 3-25; Mayer Rebuttal Rpt. (Dkt. 64) at p. 26; APFOF ¶ 44-48. The *only* large average efficiency gap is the one for the court-drawn plan in the 2000s.[5] The most reasonable inference to be drawn from this data is that *most* Assembly plans designed through a bipartisan or nonpartisan process do not significantly benefit either party. Certainly one cannot conclude that a neutral plan would necessarily have a significant pro-Republican tilt.

Cycle	Designer	Average Efficiency Gap
1970s	Divided government	-0.3%
1980s	Court	-1.9%
1990s	Court	-2.4%
2000s	Court	-7.6%
2010s	Professor Mayer	-1.9%

APFOF ¶ 44-48.

This view is bolstered by Professor Goedert's efficiency gap models for 2012 and 2014. In his rebuttal report, Professor Mayer plugged in Wisconsin's values for the models' independent variables (6.6% black, 6.5% Hispanic, 70.2% urbanized, 50.8% Democratic in 2012, and 47.2% Democratic in 2014) and assumed a bipartisan or nonpartisan redistricting process. The results were a *pro-Democratic* efficiency gap of 1.9% in 2012, and a *pro-Democratic* efficiency gap of 4.4% in 2014. Mayer Rebuttal Rpt. (Dkt. 64) at pp. 15-16; Goedert

[5] Apart from the fact that it is but a single data point, that plan also showed a great deal of variability over its life. In the first election (2002), the efficiency gap was -7.5%; in the next two elections, the efficiency gap grew to -10% (2004) and -12% (2006), but then the trend reversed and in the last two elections the gap declined to -5% (2008) and -4% (2010). In their brief, defendants notably omit 2008 and 2010 from their table, relegating these years' much smaller gaps to a footnote. Defs' Br. at 35.

Dep. (Dkt. 65) at 85:7-20; APFOF ¶ 49-50. Based on this analysis, a finder of fact could conclude that if a neutral institution had designed Wisconsin's district plan, the map would have slightly advantaged *Democrats* over the last two elections.

In his rebuttal report, Professor Mayer also calculated measures of the isolation and concentration of Wisconsin's Democratic and Republican voters. One was the isolation index described above, which indicates, for the average Democratic or Republican voter, how much more heavily Democratic or Republican his or her ward is than the state as a whole. A Democratic isolation score of 10%, for example, means that the average Democratic voter lives in a ward that is 10% more Democratic than the state in its entirety. *See* Mayer Rebuttal Rpt. (Dkt. 64) at pp. 16-17; Edward Glaeser & Jacob Vigdor, *The End of the Segregated Century* (2012), Mayer Decl. Ex. D (Dkt. 59-4) at p. 3; APFOF ¶ 51. The other measure, Global Moran's I, shows how spatially clustered Democratic or Republican voters are. It varies from -1 (perfect dispersion) to +1 (perfect clustering). *See* Mayer Rebuttal Rpt. (Dkt. 64) at pp 16-17; Su-Yeul Chung & Lawrence A. Brown, *Racial/Ethnic Sorting in Spatial Context: Testing the Explanatory Frameworks*, 28 Urb. Geo. 312 (2007), Mayer Decl. Ex. E (Dkt. 59-5) at p. 322; APFOF ¶ 52.

The table below displays the Democratic isolation, Republican isolation, Democratic clustering, and Republican clustering scores for all available years: 2004-2014 for the isolation index and 2012-2014 for Global Moran's I. As Professor Mayer opined in his rebuttal report, at all times, Democratic and Republican voters were about equally isolated and about equally clustered. In some years, Democratic voters were slightly more isolated (2008, 2012, 2014) and clustered (2014). In other years, Republican voters were slightly more isolated (2004, 2006, 2010) and clustered (2012). Mayer Rebuttal Rpt. (Dkt. 64) at pp. 17-18; APFOF ¶ 53. There is absolutely no indication, as defendants claim, that Wisconsin's Democrats are systematically

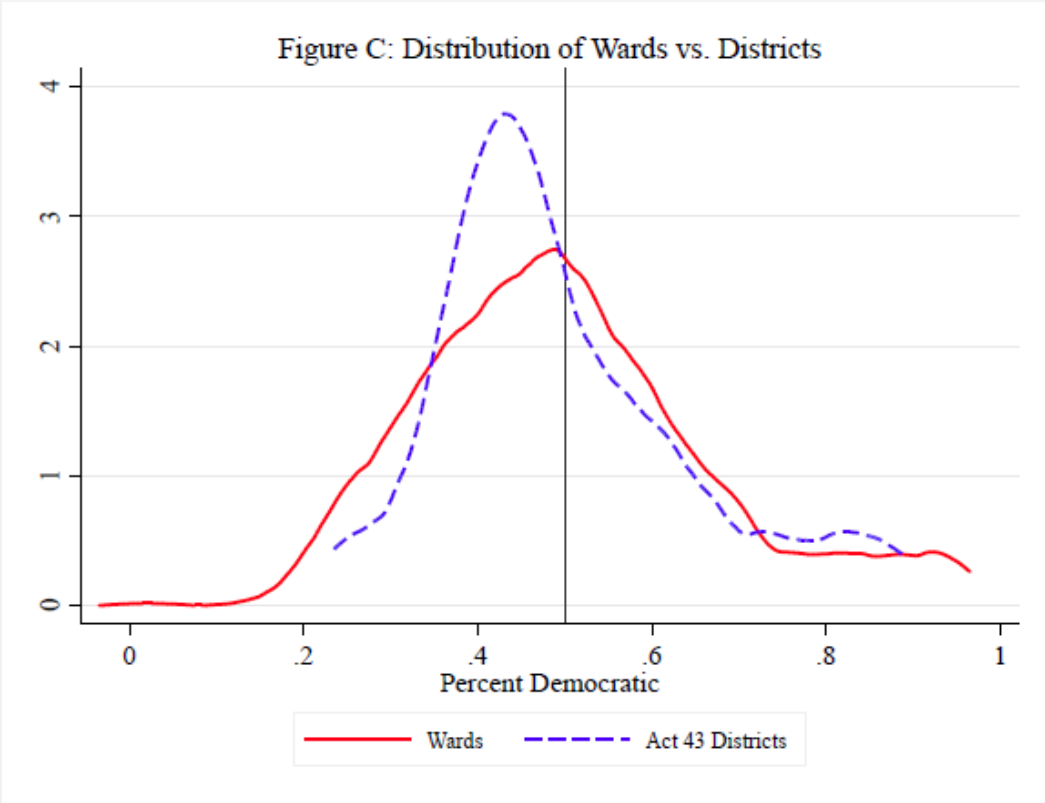
more packed than its Republicans. Defs' Br. at 28-30. To the contrary, as Professor Mayer explains, the more plausible inference is that the state's Democrats and Republicans have comparable spatial distributions.

Year	Democratic Isolation	Republican Isolation	Democratic Clustering	Republican Clustering
2004	20%	21%		
2006	16%	17%		
2008	15%	14%		
2010	15%	17%		
2012	14%	12%	0.68	0.69
2014	23%	20%	0.75	0.68

APFOF ¶ 53.

Lastly, in his rebuttal report, Professor Mayer compares the partisan distribution of Wisconsin's *wards* with that of the Current Plan's *districts*. Mayer Rebuttal Rpt. (Dkt. 64) at pp. 11-12; APFOF ¶ 55. He notes that if the state had an intrinsic pro-Republican geography, the two distributions would look very similar, with both featuring a clear pro-Republican median (indicative of natural Democratic "cracking") and a pronounced Democratic tail (suggesting natural Democratic "packing"). Professor Mayer observes both of these properties in the Current Plan's district distribution, which peaks at around 42% Democratic and has a long Democratic tail. Mayer Rebuttal Rpt. (Dkt. 64) at pp. 11-12; APFOF ¶ 56. The ward distribution, however, looks completely different. It is almost perfectly symmetric in its shape, and its peak is very close to 50% Democratic. Mayer Rebuttal Rpt. (Dkt. 64) at pp. 11-12; APFOF ¶ 57. In combination, these histograms "reveal that Act 43's designers were able to distort a fairly neutral ward distribution into a far more advantageous district distribution, through gerrymandering."

Mayer Rebuttal Rpt. (Dkt. 64) at p. 12; Goedert Dep. (Dkt. 65) at 166:7-13, 169:3-15; APFOF ¶ 58.[6]



APFOF ¶ 55.

Defendants' only countervailing evidence consists of the opinion of one of their experts (Trende) that is based on two Wisconsin maps, one from 1996 and the other from 2012, showing what Trende calls the "partisan index" of each of the state's counties. Defs' Br. at 28-30. Trende calculated this index by determining how much more or less Democratic each county's presidential vote was than the country as a whole in these years. For reasons that will be explained at greater length in plaintiffs' *Daubert* motion, Trende's opinions are not even admissible, much less undisputed. As Professor Mayer points out, the partisan index is used

[6] This is the case even though, in violation of usual practice, the current ward boundaries were determined *after* the Current Plan's districts had already been drawn. *See* Jason Stein & Patrick Marley, *GOP Redistricting Maps Make Dramatic Changes*, MILWAUKEE JOURNAL-SENTINEL (July 8, 2011) Earle Decl. Ex. D (Dkt. 57-4); APFOF ¶ 59. The wards are thus endogenous to the districts, not exogenous as in previous years.

"almost exclusively by political commentators," and "less frequently in academic research." Mayer Rebuttal Rpt. (Dkt. 64) at p. 5; Trende Dep. (Dkt. 66) at 56:2-6 (admitting that he could not "identify any peer-reviewed studies that have analyzed the geographic clustering of Democratic and Republican voters by examining trends in County Partisan Indices"); APFOF ¶ 60-61.

Apart from this fundamental problem, Trende's analysis suffers from a host of other flaws. As he conceded, the maps he used do not adjust for Wisconsin counties' very different populations, Trende Dep. (Dkt. 66:7-17) at 58; Goedert Dep. (Dkt. 65) at 185:19-186:4; APFOF ¶ 62, and are based on presidential rather than state legislative election results, covering only two elections to boot, Trende Dep. (Dkt. 66) at 56:9-58:9; APFOF ¶ 63. As Trende also admitted, the maps do not generate any "quantitative scores for Democratic and Republican clustering," but rather must be "eyeball[ed]" by the viewer—hardly a scientific analysis. Trende Dep. (Dkt. 66) at 59:2-8; Trende Decl. (Dkt. 55) ¶ 25; APFOF ¶ 64. And if anything, this eyeballing leads to the conclusion that it is Wisconsin's *Republicans* who are more clustered. As Trende agreed, while "there are about 10 adjacent red counties in the southeast corner of the state," it is impossible to identify "any clusters of 10 very blue counties anywhere in the state." Trende Dep. (Dkt. 66) at 62:22-63:2; APFOF ¶ 65.

Unable to show that the Current Plan's extreme pro-Republican efficiency gap is necessitated by Wisconsin's political geography, defendants retreat to arguing that a very small pro-Republican tilt is inherent. Defs' Br. at 36. In support, defendants point to Professor Mayer's Demonstration Plan, which averages a -1.9% efficiency gap under a variety of electoral scenarios. Jackman Rpt. (Dkt. 62) at p. 7; APFOF ¶ 68. That very small gap, however, is more

than *80%* lower than the actual 2012 gap and (as demonstrated below) is hardly a basis for granting summary judgment to defendants.

IV. The Volume of Plans at Risk of Failing Plaintiffs' Proposed Test

While defendants' principal factual arguments involve Wisconsin's and the country's political geography, they also contend that too many plans would be invalidated under plaintiffs' proposed test. Defs' Br. at 17-20, 44-46. But because plaintiffs' proposed test includes three distinct elements, it is impossible to say exactly how many historical or current plans would fail it. To make this determination, one would need to know (1) whether each plan was designed with partisan intent; (2) whether each plan's initial efficiency gap was large and durable relative to historical norms; and (3) whether this significant asymmetry could have been avoided given each state's political geography and legitimate redistricting goals. This information can only be gathered through litigation. Still, the data in the record does enable a first pass at the issue of the test's impact. But what is clear—though consistently resisted by defendants—is that efficiency gap scores *alone* are not enough to make any headway here. At the very least, the scores must be supplemented with some proxy for partisan intent.

In his work, defendant's own expert, Professor Goedert, has recommended exactly such a proxy: whether a single party had unified control over redistricting, in the sense of holding majorities in both legislative chambers as well as the state's governorship. *See* Goedert, *Gerrymandering or Geography*, *supra*, Goedert Dep. Ex. 20 (Dkt. 65-2) at 3 ("Each state is coded for redistricting control by Republicans, Democrats, or some other institution (e.g. commission, court, bipartisan agreement)."); Goedert Dep. (Dkt. 65) at 39:19-40:5 ("The definition of partisan gerrymandering I use in my work is . . . a redistricting plan which is done under the complete control of one party. . . . [with] control over both houses of the state

legislature and the governorship."); APFOF ¶ 66. Plaintiffs agree that when a single party has unified control over redistricting, partisan intent is usually (though not necessarily) present. They therefore employ Professor Goedert's proxy for purposes of this analysis, while noting that a more rigorous examination would be required in actual litigation.

There are 206 distinct plans in Professor Jackman's database. Of these, 70 plans (or 34%) had initial efficiency gaps above 7%. And of these 70, 43 plans (or 21%) had initial efficiency gaps above 7% *and* unified control over redistricting by a single party. If we increase the threshold to 10%, 32 plans (or 16%) had initial efficiency gaps this large, and of these 32, 20 plans (or 10%) had initial efficiency gaps this large *and* unified control over redistricting by a single party. Jackman Rpt. (Dkt. 62) at p. 7; Jackman Rebuttal Rpt. (Dkt. 63) at pp. 18-20; Jackman Decl. Ex. F (Dkt. 58-6; APFOF ¶ 67-71. The below table includes all of these figures.

The table also includes analogous information for the 43 current plans in Professor Jackman's database. Of these, 16 plans (or 37%) had initial efficiency gaps above 7%, and of these 16, 11 plans (or 26%) had initial efficiency gaps above 7% *and* unified control over redistricting by a single party. Raising the threshold to 10%, 11 plans (or 26%) had initial efficiency gaps this large, and of these 11, 7 plans (or 16%) had initial efficiency gaps this large *and* unified control over redistricting by a single party. Jackman Rpt. (Dkt. 62) at p. 7; Jackman Rebuttal Rpt. (Dkt. 63) at pp. 18-20; Jackman Decl. Ex. F (Dkt. 58-6); APFOF ¶ 72-75.

Historical		**Current**	
All plans	206	Current plans	43
All plans with initial *EG* above 7%	70	Current plans with initial *EG* above 7%	16
All plans with initial *EG* above 7% *and* unified party control over redistricting	43	Current plans with initial *EG* above 7% *and* unified party control over redistricting	11
All plans with initial *EG* above 10%	32	Current plans with initial *EG* above 10%	11
All plans with initial *EG* above 10% *and* unified party control over redistricting	20	Current plans with initial *EG* above 10% *and* unified party control over redistricting	7

APFOF ¶ 67-75.

This data allows us to place some upper bounds on the potential impact of plaintiffs' proposed test. Of all plans in the modern redistricting era, at most 43 would have been at risk under a 7% threshold, and at most 20 under a 10% threshold. Of all current plans, at most 11 would be in danger under a 7% threshold, and at most 7 under a 10% threshold. And all of these numbers are at least somewhat overstated. A single party with unified control over redistricting does not always seek to benefit itself. *See* Goedert Rpt. (Dkt. 51) at p. 10 ("In the 2000's decade, Democrats controlled all branches of state government in California, but instead of crafting an aggressively partisan congressional map, worked closely with Republicans in the legislature to draw districts that would protect incumbents of both parties."); APFOF ¶ 76. And a large efficiency gap is not always avoidable given a state's political geography and legitimate redistricting goals.

To put these figures in perspective, the reapportionment revolution of the 1960s resulted in the invalidation of almost *every* state house, state senate, and congressional plan in the country. *See* Gary W. Cox & Jonathan N. Katz, Elbridge Gerry's Salamander (2002) ("Both state legislative and congressional districts were redrawn more comprehensively—by far—than at any

previous time in our nation's history."); Jackman Decl. Ex. J (Dkt. 620) at p. 4; APFOF ¶ 77. The Supreme Court's decision in *Thornburg v. Gingles*, 478 U.S. 30 (1986), construing Section 2 of the Voting Rights Act, spawned at least 800 lawsuits over the next generation. *See* Ellen D. Katz et al., *Documenting Discrimination in Voting: Judicial Findings Under Section 2 of the Voting Rights Act*, 39 U. Mich. J.L. Reform 643, 655 (2006), Earle Decl. Ex. B (Dkt. 57-2) at p. 655; APFOF ¶ 78. And in just the current cycle, 224 cases were filed in 42 states, resulting in 23 plans being invalidated or designed by the courts. *See Litigation in the 2010 Cycle*, All About Redistricting, http://redistricting.lls.edu/cases.php [hereinafter *2010 Litigation*]; APFOF ¶ 79. Relative to the enormous volume of redistricting litigation that already takes place, the adoption of plaintiffs' proposed test would thus amount to a fairly modest development.

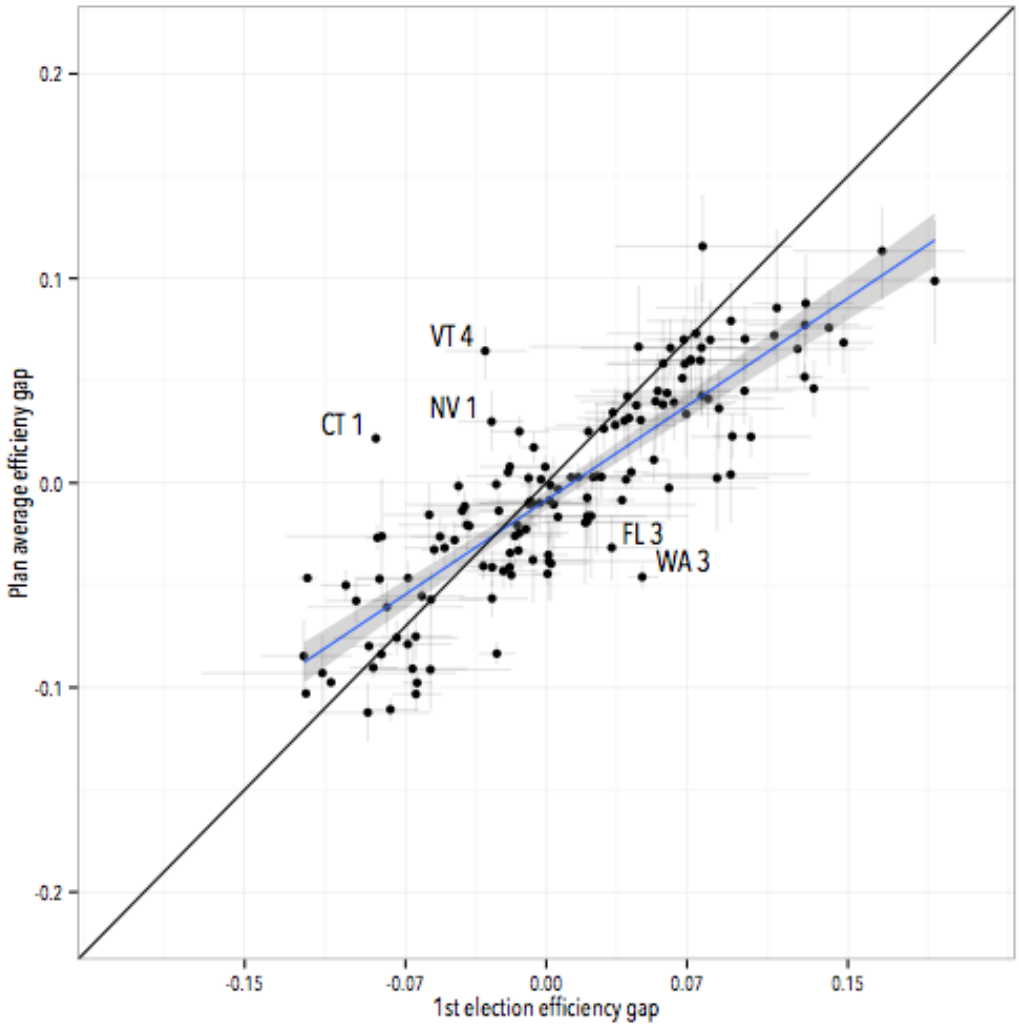
V. The Reliability of the First Efficiency Gap Recorded Under a Plan

Another of defendants' factual challenges involves the reliability of the first efficiency gap recorded under a plan. Defendants claim in various places that this first value is not a robust enough guide to a plan's subsequent performance over its lifetime. Defs' Br. at 17-20, 38, 45, 49. Plaintiffs agree that it is important to determine how reliably a plan's *initial* efficiency gap predicts the magnitude and direction of the plan's *average* efficiency gap over its lifetime. If the relationship between the initial and average values is strong, then a court can be confident that the initial value captures the plan's true partisan asymmetry. Conversely, if the relationship is weak, then a court might legitimately worry that not much information about the plan's true nature is conveyed by the initial value.

The below scatter plot, prepared by Professor Jackman in his rebuttal report, displays the relationship between state house plans' initial and average efficiency gap values from 1972 to 2010 (including only plans with at least three recorded efficiency gaps, for which the average is

more meaningful). Jackman Rebuttal Rpt. (Dkt. 63) at pp. 15-17; APFOF ¶ 80. As is evident from the plot, the relationship is very strong. Specifically, plans' initial efficiency gaps explain fully *three-fourths* of the variation in their average efficiency gaps. Jackman Rebuttal Rpt. (Dkt. 63) at pp. 15-17; APFOF ¶ 81. All other factors—candidate quality, campaign spending, electoral tides, etc.—account for only a quarter of the variation.

The plot also indicates the size and orientation of the average efficiency gap associated with each initial efficiency gap. For an initial efficiency gap of 7% in a Republican direction, for example, the average efficiency gap is predicted to be 5.3%, and there is more than a 96% likelihood that the average will be pro-Republican. Jackman Rebuttal Rpt. (Dkt. 63) at p. 16; APFOF ¶ 82. Similarly, for an initial efficiency gap of 7% in a Democratic direction, the average efficiency gap is forecast to be 3.7%, and there is roughly a 90% likelihood that the average will be pro-Democratic. Jackman Rebuttal Rpt. (Dkt. 63) at p. 16; APFOF ¶ 83. As for Wisconsin's Current Plan, which opened with a pro-Republican efficiency gap of 13.3%, it is likely to have an average efficiency gap of *9.5%* over its lifetime, with more than a *99.9%* likelihood of exhibiting a pro-Republican mean. Jackman Rebuttal Rpt. (Dkt. 63) at p. 16; APFOF ¶ 84.

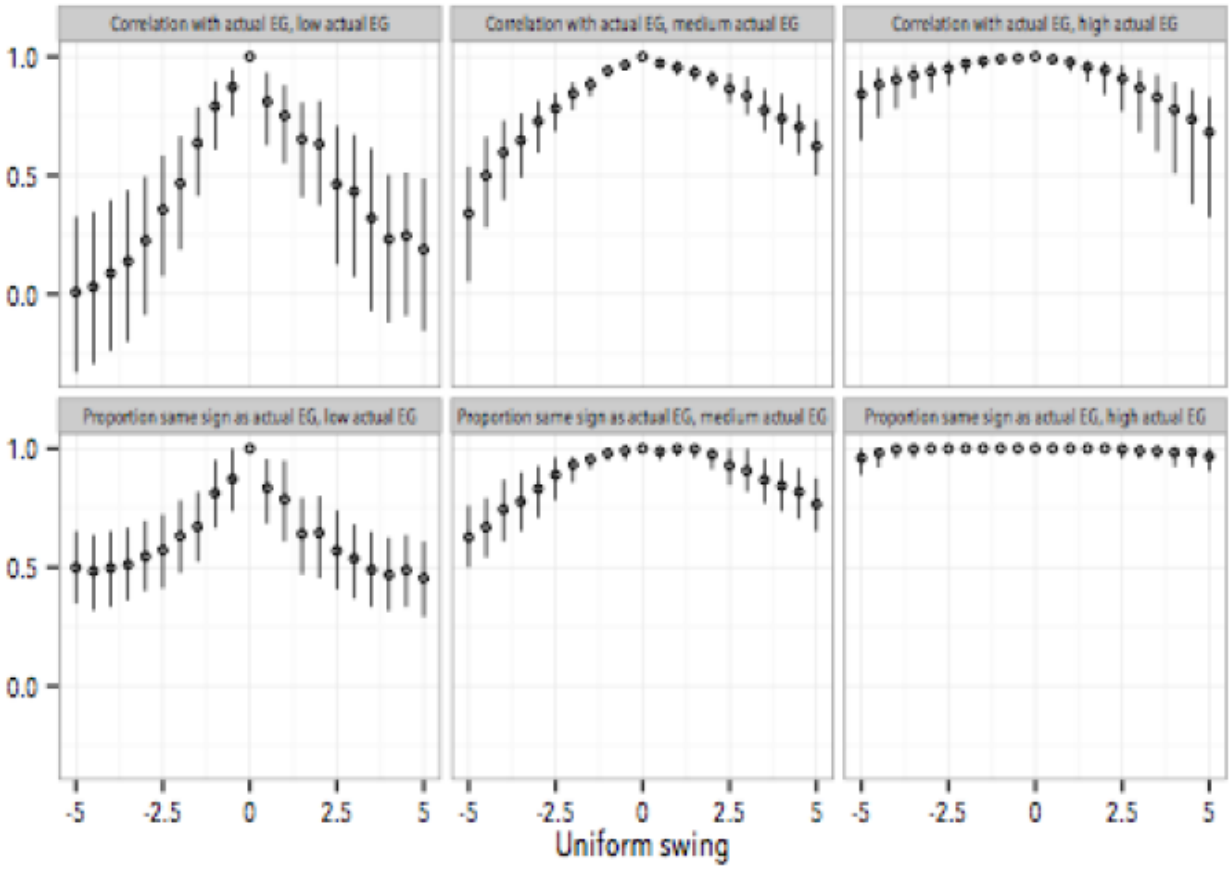


APFOF ¶ 80.

Of course, this analysis is based on historical data, and so may not apply perfectly to the state house plans currently in effect. To determine how the current plans' efficiency gaps would vary under different electoral environments, Professor Jackman carried out the sensitivity testing recommended by defendants' expert, Professor Goedert. *See* Goedert Rpt. (Dkt. 51) at p. 15 (referring to sensitivity testing as "an important acknowledgement of the fluctuations observed in efficiency gap as electoral tides shift"); APFOF ¶ 85. Professor Jackman also used the uniform swing methodology employed and endorsed by Professor Goedert. *See* Goedert Rpt (Dkt. 51) at p. 22 (using "uniform swing from 2012 Presidential Election Results"); Goedert Dep. (Dkt. 65)

at 123:12-20 ("recommend[ing] using uniform swing assumption"); Jackman Decl. Ex. D (Dkt. 58-4); APFOF ¶ 86. That is, Professor Jackman shifted the actual 2012 and 2014 election results by up to five points in each direction, and then recorded the efficiency gaps produced by each shift. Election swings of this magnitude encompass "the vast majority of state legislative elections from 1972 to 2012," and thus illustrate how the current plans would perform under almost all plausible electoral conditions. Jackman Decl. Ex. D (Dkt. 58-4) at pp. 1-2; Goedert Dep. (Dkt. 65) at 126:16-127:10; APFOF ¶ 87-88.

The below figure, prepared by Professor Jackman, divides the current plans' actual efficiency gaps into three categories: small (absolute value below 3%), medium (absolute value between 3% and 7%), and large (absolute value above 7%). Jackman Decl. Ex. D (Dkt. 58-4) at p. 4; APFOF ¶ 89. For each category, the figure then shows the *correlation* between the plans' actual and predicted efficiency gaps, as well as the proportion of actual and predicted efficiency gaps *with the same sign*, given different vote swings. As is evident, for plans with large actual efficiency gaps, the correlation between their actual and predicted values is very high (always above 0.7 and usually above 0.9) for all vote swings. For these plans, the proportion of their actual and predicted efficiency gaps with the same sign is even higher—nearly 100% for all vote swings. Jackman Decl. Ex. D (Dkt. 58-4) at p. 4; APFOF ¶ 90-91. The sensitivity testing thus corroborates the historical analysis; a large initial efficiency gap is again an excellent predictor of lifetime efficiency gap magnitude and direction.



APFOF ¶ 89.

Further confirmation along these lines comes from the prognostic tests that Professor Jackman ran in his rebuttal report. In these tests (among other things), he analyzed how often a given efficiency gap threshold would result in a "false positive," that is, a conclusion that a plan's average efficiency gap would have the same sign as its initial efficiency gap that turned out to be incorrect. He found that a 7% threshold would drive down the rate of false positives to minute levels, below 5%. A slightly higher threshold of around 8% would reduce the rate of false positives all the way to zero. Jackman Rebuttal Rpt. (Dkt. 63) at p. 12; APFOF ¶ 92.

Still more evidence of this kind was included in Professor Jackman's initial report, in which he calculated, for different efficiency gap thresholds, the proportion of plans that either (1) would fall below the threshold or (2) if above the threshold, would exhibit an efficiency gap of

the same sign throughout their lifetimes. On the Republican side, this proportion is roughly 96% for an efficiency gap threshold of 7%. On the Democratic side, a 7% efficiency gap threshold is associated with an almost identical confidence rate of 93%. Jackman Rpt. (Dkt. 62) at p. 67; APFOF ¶ 93. This is strong additional proof that plans' initial efficiency gaps, when they are large, accurately forecast their lifetime performance.

VI. Efficiency Gap Calculations for Wisconsin's Current Plan and Demonstration Plan

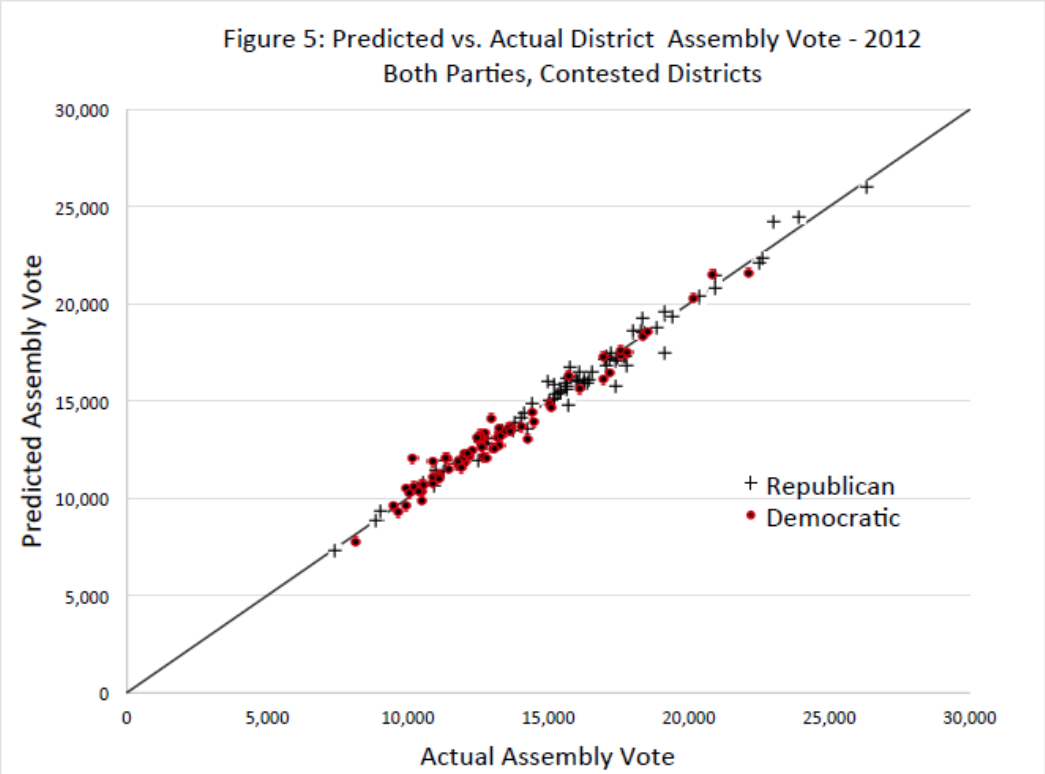
Defendants also quibble with some of the methods used by Professor Mayer and argue that he should have conducted certain additional analyses. Defs' Br. at 5-11, 36-37, 49-51. Defendants' methodological cavils betray their misunderstanding of Professor Mayer's work, while their suggestions for further study all confirm Professor Mayer's original findings: namely, that the Current Plan has an extreme pro-Republican tilt and the Demonstration Plan is impressively symmetric.

To begin with, defendants seem to have completely misunderstood why Professor Mayer constructed a model to predict Assembly votes rather than using actual Assembly votes. Defs' Br. at 5-6, 49-51. He did *not* do so simply in order to calculate the Current Plan's efficiency gap. That can be done perfectly well with actual votes—and, indeed, *was* done for the Current Plan and for 205 other plans by Professor Jackman. Rather, Professor Mayer constructed the model so that he could determine the efficiency gap of the *Demonstration Plan* that he designed. *This* plan's efficiency gap "cannot be estimated by simply rearranging the votes cast in actual Assembly contests into a new district configuration, as the votes cast for specific Assembly candidates in each district are a function of the electoral environment in that district and whether a race is even contested by both parties." Mayer Rpt. (Dkt. 54) at pp. 5-6; APFOF ¶ 94.

Fortunately, "[a] large literature has developed around the problem of estimating the likely election results in redistricting plan alternatives." Mayer Rpt. (Dkt. 54) at p. 6; APFOF ¶ 95. The key insight of this literature is that *exogenous* variables such as presidential election results can be used to *predict* election results at the level of the map at issue (here the Wisconsin Assembly). Since presidential election results are independent of Assembly results, they enable the latter to be forecast not just for Wisconsin's actual district plan but also for any other district configuration. There is no dispute among scholars that this sort of modeling is the appropriate (in fact, the only) way to assess proposed maps under which no elections have been held. *See, e.g.*, Bruce E. Cain, *Assessing the Partisan Effects of Redistricting*, 79 Am. Pol. Sci. Rev. 320 (1985), Jackman Decl. Ex. K (Dkt. 621); Andrew Gelman & Gary King, *Estimating the Electoral Consequences of Legislative Redistricting*, 85 J. Am. Stat. Ass'n 274 (1990), Jackman Decl. Ex. I (Dkt. 58-9); APFOF ¶ 96. This is why the Legislature's consultant, Professor Keith Gaddie, used the exact same method to predict the Current Plan's partisan consequences prior to the Plan's enactment. Mayer Rpt. (Dkt. 54) at p. 29; APFOF ¶ 97.

Next, defendants are simply wrong when they claim that Professor Mayer's model incorrectly predicted the winners of five Assembly seats. Defs' Br. at 6-7, 36, 50. The actual number is two: District 51 (actual Republican vote: 51.9%; predicted Republican vote: 49.9%) and District 70 (actual Republican vote: 49.7%; predicted Republican vote: 50.1%). Mayer Rpt. (Dkt. 54) at pp. 24-25; Mayer Dep. (Dkt. 52) at 87:22; APFOF ¶ 98. These incorrect predictions are balanced, one for each party, meaning that in the aggregate, Professor Mayer's model forecast the partisan distribution of contested districts (56 Republican, 16 Democratic) with perfect accuracy. Mayer Rpt. (Dkt. 54) at pp. 24-25; APFOF ¶ 99.

In fact, it is quite odd that defendants take issue with Professor Mayer's model, because if there is one thing that can be said about it, it is that it is spectacularly reliable. The R-squared value for the Republican Assembly Votes regression is 0.99, and the R-squared value for the Democratic Assembly Votes regression is 0.98. Mayer Rpt. (Dkt. 54) at pp. 24-25; Mayer Dep. (Dkt. 52) at 125:11-17; APFOF ¶ 100. These extraordinarily high values mean that the independent variables capture essentially *all* of the variation in the dependent variable. The model's precision is apparent in the below scatter plot, prepared by Professor Mayer, which compares the actual Assembly vote to the predicted Assembly vote for all contested districts. The fit between the actual and predicted values is more or less perfect, with the two sets of scores tightly hugging the regression line. Mayer Rpt. (Dkt. 54) at p. 23; APFOF ¶ 101.



APFOF ¶101.

Where, then, does defendants' erroneous five-seat figure come from? It comes from a later permutation of Professor Mayer's model, in which he "set[] all incumbency variables to zero." Mayer Rpt. (Dkt. 54) at p. 29; APFOF ¶ 102. Professor Mayer made this adjustment for the same reason that the Legislature's consultant, Professor Gaddie, did: to determine the baseline level of partisanship in each district, or as Professor Gaddie put it, to find out "what the vote would usually do without an incumbent in the district." Mayer Rebuttal Rpt. (Dkt. 64) at p. 22; Goedert Dep. Ex. 25 (Dkt. 65-4); APFOF ¶ 103. *See also* Mayer Rebuttal Rpt. (Dkt. 64) at p. 24 (noting that "incumbents can be defeated, retire, run for higher office, or switch parties over a plan's decade-long lifespan," and that "[a] map's authors will typically want to ensure that their projections do not depend on particular incumbents continuing to run in particular districts"); APFOF ¶ 104.

Crucially, this version of the model, stripped of incumbency effects, was *not* intended to predict the winners of the Current Plan's districts in 2012. Obviously, to make such predictions, it would be foolish to discard relevant information about candidates, and the first form of the model, discussed above, did not do so. *See* Mayer Dep. (Dkt. 52) at 52:19-53:19; APFOF ¶ 105. Rather, this version was intended to determine how the parties would fare in contested districts without incumbents, thus enabling an apples-to-apples comparison between the Current Plan and the Demonstration Plan. As Professor Mayer explained, "This is a more accurate method of determining the baseline partisanship of a district, as it removes the effect of incumbents, who may or may not be running in an alternative plan. This baseline process is standard in the discipline, and was used by the expert retained by the state legislature." Mayer Rpt. (Dkt. 54) at p. 31; Mayer Dep. (Dkt. 52) at 63:15-24, 70:4-17; APFOF ¶ 106. Defendants thus arrive at their

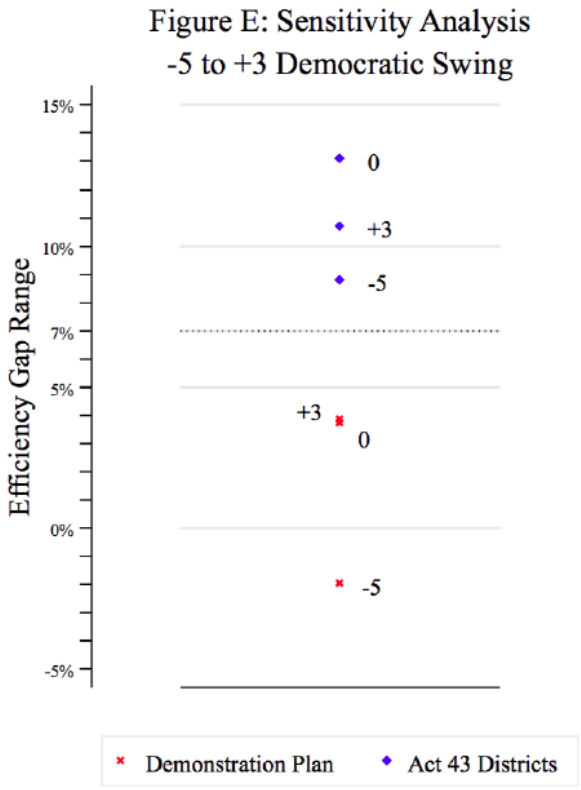
five-seat figure only by using Professor Mayer's baseline model for a purpose for which it was not designed.

Defendants, though, do identify a transcription error with respect to Professor Gaddie's estimates. Defs' Br. at 8. But this error actually works against them. Using Professor Gaddie's correct estimate for District 86 (55.08% Republican), the Current Plan's predicted efficiency gap *rises* from 12.36% to 13.29% due to the addition of one more Republican seat. In addition, defendants' claim that it is an accident that Professor Gaddie's predictions were so accurate would come as a surprise to the legislative leadership that hired him precisely to make accurate predictions. Compl. (Dkt. 1) ¶36; Mayer Rpt. (Dkt. 54) at p. 31; Mayer Dep. (Dkt. 52) at 63:15-24, 70:4-17; APFOF ¶ 107. In any event, the accuracy is no accident. Because "election results in Wisconsin (and in most states) are extremely highly correlated from one election to the next," predicted efficiency gaps will be very similar no matter which elections they are based on. Mayer Rebuttal Rpt. (Dkt. 64) at p. 23; *see also id.* (pointing out that Wisconsin's "2008 county level presidential vote and the 2012 county level presidential vote are almost perfectly correlated (r^2=0.96)"); Mayer Dep. (Dkt. 52) at 75:3-15; APFOF ¶ 108-109.

Defendants' final criticisms of Professor Mayer's analysis are that he did not take incumbency into account and that he did not consider electoral environments other than of 2012. Defs' Br. at 36-37, 49-51; Goedert Rpt. (Dkt. 51) at pp. 16-17. These criticisms are misplaced since the professional norm (also followed by Professor Gaddie) is to ignore incumbency, and since the point of the Demonstration Plan was to show that the Current Plan's extreme partisan asymmetry in 2012 was avoidable. Nevertheless, in his rebuttal report, Professor Mayer carried out robustness checks that squarely addressed both of these concerns. Strangely, defendants do not even mention these checks in their brief.

With respect to incumbency, Professor Mayer "used the actual incumbents who ran in the plan's districts" for the Current Plan, and "geocoded incumbents' home addresses and then identified which districts had incumbents residing in them" for the Demonstration Plan. Mayer Rebuttal Rpt. (Dkt. 64) at p. 24; Goedert Dep. (Dkt. 65) at 145:21-25; APFOF ¶ 110. Incorporating incumbency into the models had next to no effect on their results. The Current Plan's efficiency gap rose from 11.7% to 13.0%, and the Demonstration Plan's efficiency gap rose from 2.2% to 3.7%. The enormous gulf between the two plans' efficiency gaps remained essentially unchanged (9.5% without incumbency, 9.3% with incumbency). Mayer Rebuttal Rpt. (Dkt. 64) at pp. 24-25; APFOF ¶ 111-113.

Likewise, with respect to shifting electoral environments, Professor Mayer used the uniform swing methodology endorsed by Professor Goedert to simulate the largest Democratic and Republican wave elections of the past three decades: 2006 (with a Democratic vote share 3% higher than in 2012) and 2010 (with a Democratic vote share 5% lower than in 2012). Mayer Rebuttal Rpt. (Dkt. 64) at pp. 26-27; APFOF ¶ 114. The outcomes of this sensitivity testing are displayed in the below chart prepared by Professor Mayer—and confirm the Current Plan's extreme asymmetry and the Demonstration Plan's neutrality under a wide range of electoral conditions. Mayer Rebuttal Rpt. (Dkt.59-2) at pp. 26-27; APFOF ¶ 115. The Current Plan's efficiency gap varies from 8.8% (in the Republican wave scenario) to 10.7% (in the Democratic wave scenario) to 13.0% (in 2012). Likewise, the Demonstration Plan's efficiency gap varies from -2.0% (in the Republican wave scenario) to 3.7% (in 2012) to 3.9% (in the Democratic wave scenario). At all times, the Current Plan's efficiency gap is well above 7%, and the Demonstration Plan's is well below. Mayer Rebuttal Rpt. (Dkt. 64) at pp. 26-27; APFOF ¶ 116-118.



APFOF ¶ 115.

VII. General Properties of the Efficiency Gap

Finally, defendants make a series of misleading or false claims about the properties of the efficiency gap: that it does not correspond to parties' advantage or disadvantage due to redistricting, Defs' Br. at 33-34; that there are two different "versions" of the efficiency gap, *id.* at 11-12; and that the measure requires "hyper-proportional" representation, *id.* at 12-14, 47-48. All of these criticisms are wrong or, at the very least, raise disputed issues of fact.

That the efficiency gap perfectly captures a party's edge or handicap from redistricting was demonstrated by Eric McGhee in his initial article introducing the measure. He compiled a set of 501 state house elections from 1970 to 2003, and then constructed a pair of very simple models. In both cases, party seat share was the dependent variable, and party vote share was one of the independent variables. The other independent variable was either partisan bias (an older

measure of partisan symmetry) or the efficiency gap. Partisan bias turned out to be a relatively poor predictor of party seat share, with a coefficient of only 0.246. But the efficiency gap turned out to be a *perfect* predictor, with a coefficient of exactly 2.0. Eric McGhee, *Measuring Partisan Bias in Single-Member District Electoral Systems*, 39 Legis. Stud. Q. 55 (2014), Jackman Decl. Ex. G (Dkt. 58-7) at p. 67; APFOF ¶ 119.

Next, while it is true that there are two different *methods* for calculating the efficiency gap, Defs' Br. at 11-12, the underlying concept remains the same no matter how it is computed. In its full form, as calculated by Professor Mayer, the efficiency gap aggregates the parties' wasted votes district by district. Mayer Rpt. (Dkt. 54) at pp. 5-6; APFOF ¶ 120. However, this district-by-district aggregation is unnecessary when districts have equal turnout. In this case, the efficiency gap can be computed using the formula $(S - 0.5) - 2(V - 0.5)$, where S is a party's statewide seat share and V is a party's statewide vote share. Jackman Rpt. (Dkt. 62) at p. 16; APFOF ¶ 121. This formula is not a different measure of the efficiency gap, as it produces exactly the same values as district-by-district aggregation when there is equal district turnout. This is why, as noted earlier, defendants' own expert, Professor Goedert, "concur[s] that this shortcut is an appropriate and useful summary measure." Goedert Rpt. (Dkt. 51) at 5; Goedert Dep. (Dkt. 65) at 70:17-71:1; APFOF ¶ 122.

Of course, districts are never exactly equal in their turnout. But America's very strict equal population rule—the most rigid in the world—ensures that they are never *too* different either. *See* Nicholas O. Stephanopoulos, *Our Electoral Exceptionalism*, 80 U. Chi. L. Rev. 769 (2013), Earle Decl. Ex. 1 (Dkt. 57-1) at pp. 797, 806; APFOF ¶ 123. More importantly, variations in turnout have only a minor impact on the values of the efficiency gap that are obtained using the full method and the simplified method. Defendants' other expert, Trende,

established this point with respect to Wisconsin's Current Plan and Demonstration Plan. In 2012, the Current Plan had an efficiency gap of -11.7% using the full method and -9.9% using the simplified method, a difference of only 1.8%. Similarly, the Demonstration Plan had an efficiency gap of -2.2% using the full method and -0.8% using the simplified method, a difference of only 1.4%. Mayer Rpt. (Dkt. 54) at p. 46; Jackman Rpt. (Dkt. 62) at p. 71; APFOF ¶ 124.

That the two methods converge for all practical purposes can be shown even more rigorously by considering elections in which all races were contested, thus allowing both methods to be used without any statistical adjustment. There were three such cases in Professor Jackman's database of state house elections: Michigan in 1996, Michigan in 2014, and Minnesota in 2008. Professor Jackman also identified six successive state senate elections in Michigan in which all races were contested, from 1994 to 2014. Jackman Rpt. (Dkt. 62) at p. 25; Jackman Dep. (Dkt. 53) at 61:12-62:17; Jackman Decl. Ex. E (Dkt. 58-5); APFOF ¶ 125. The efficiency gaps for these states and years, calculated using both methods, are as follows:

State	Year	Chamber	Full Method	Simplified Method	Difference
Michigan	1996	House	-6.7%	-7.5%	0.8%
Michigan	2014	House	-13.4%	-13.1%	-0.3%
Minnesota	2008	House	0.8%	1.4%	-0.6%
Michigan	1994	Senate	-3.5%	-4.1%	0.6%
Michigan	1998	Senate	-9.7%	-10.3%	0.6%
Michigan	2002	Senate	-10.3%	-10.4%	0.1%
Michigan	2006	Senate	-18.7%	-18.4%	-0.3%
Michigan	2010	Senate	-14.6%	-14.4%	-0.2%
Michigan	2014	Senate	-22.8%	-21.8%	-1.0%

APFOF ¶ 126-134.

Plainly, it makes effectively no difference whether the full method or the simplified method is used. The two methods produce nearly identical estimates in all cases, never varying by more than 1.0% and exhibiting a correlation of 0.997. Jackman Rpt. (Dkt.58-1) at p. 25; Jackman Dep. (Dkt. 53) at 40-41, 61-62; Jackman Decl. Ex. E (Dkt.58-5); PFOF ¶¶ 121-130; APFOF ¶ 135. This is further confirmation that the equal turnout assumption is reasonable for purposes of calculating the efficiency gap.

As for defendants' claim that plaintiffs' proposal would require "hyper-proportional" representation, Defs' Br. at 12-14, 47-48, it appears to stem from the fact that under the simplified method, the $(S - 0.5) - 2(V - 0.5)$ formula implies that for the efficiency gap to be zero, there must be a 2:1 relationship between seat share and vote share (also known as "responsiveness"). Jackman Rpt. (Dkt. 62) at pp. 17-18; APFOF ¶ 136. But this 2:1 relationship is merely an algebraic implication of the formula, not the normative underpinning of the efficiency gap (which is equal wasted votes). The 2:1 relationship also does not necessarily apply when the full method is used.

More significantly, as Professor Goedert has explained in his report and other work, a responsiveness of 2 "conform[s] with the observed average seat/votes curve in historical U.S. congressional and legislative elections." Goedert Rpt. (Dkt. 51) at p. 6; Goedert Dep. (Dkt. 65) at 95:17-21; APFOF ¶ 137. At the congressional level, the seat/vote curve had "an average slope of 2.02 for the past 40 years." During "the preceding 70 years," it had an "average of 2.09." Goedert, *Gerrymandering or Geography*, *supra,* Goedert Dep. Ex. 20 (Dkt. 65-2) at p. 7; APFOF ¶ 138. This is why Professor Goedert "assume[s] that a party should expect to win a proportion of seats in line with historical patterns"—featuring a responsiveness of 2—and then compares the party's actual seat share "with the expected seat share under a 'fair map' with . . . a

historically average seats-votes curve." *Id.* at 2-3; APFOF ¶ 139. In other words, he calculates a quantity essentially indistinguishable from the simplified version of the efficiency gap, and treats it as his measure of partisan asymmetry. Plaintiffs can hardly be faulted for doing the same.

ARGUMENT

Defendants' scattershot arguments in support of their motion for summary judgment fall into three general categories: (1) challenges to the three-part test plaintiffs have proposed; (2) challenges to the test's discernibility; and (3) challenges to the test's manageability. For the reasons outlined below, none of defendants' arguments show that they are entitled to summary judgment.

I. Defendants' Challenges to Plaintiffs' Proposed Three-Part Test Should Be Rejected.

Beginning with their proposed three-part test, plaintiffs first point out some of the ways in which the Court could, at its discretion, alter it. Plaintiffs then show that the test's intent prong neither will always be satisfied nor will prove incapable of consistent application. Lastly, plaintiffs explain that, as in the one-person, one-vote cases, it is reasonable to shift the burden to justify a plan onto defendants at the test's third stage.

A. The Court May Adjust Plaintiffs' Proposal as It Sees Fit.

At the outset, it should be noted that plaintiffs' proposed three-part test is not set in stone. Partisan gerrymandering plaintiffs no doubt bear some of the responsibility for developing a discernible and manageable standard for this cause of action. But the task is not theirs alone. Rather, it is shared by the judiciary. As the *Vieth* plurality explained, "it is *our* job, not the plaintiffs', to explicate the standard that makes the facts alleged by the plaintiffs adequate or inadequate to state a claim." 541 U.S. at 301 (plurality opinion). Justice Stevens made the same point in *LULAC v. Perry*, observing that "it is this Court, not proponents of the symmetry

standard, that has the judicial obligation to answer the question of how much unfairness is too much." 548 U.S. 399, 468 n.9 (2006) (Stevens, J., concurring in part and dissenting in part). *See also Baldus v. Wisc. Gov't Accountability Bd.*, 849 F. Supp. 2d 840, 853 (E.D. Wis. 2012) (commenting that "the Court shares th[e] duty" of "development of the law.").

Although plaintiffs believe that their test as stated meets the requirements of discernibility and manageability, there are ways in which it could be revised. First, as plaintiffs have said all along, there is no need for an efficiency gap threshold to be set in this case. Instead, as in the one-person, one-vote cases, the threshold may be allowed to emerge over time as courts become more familiar with the extent of partisan gerrymandering. *See* Stephanopoulos & McGhee, *supra*, at 890-91 (describing how the 10% population deviation threshold was set only after the Court first struck down plans with deviations of 20%, 26%, and 34%, and upheld plans with deviations of 8% and 10%, over roughly a decade); APFOF ¶ 140.

If the Court does wish to choose a threshold in this case, however, it is not bound by Professor Jackman's 7% recommendation. The Court could raise or lower the cutoff as it sees fit. Notably, Wisconsin's Current Plan, with its initial efficiency gap of 13%, satisfies any plausible threshold. In addition, the Court could supplement any threshold with the sensitivity testing recommended by defendants' expert, Professor Goedert. Goedert Rpt. (Dkt. 51) at p. 15; APFOF ¶ 141. That is, the Court could require not only that a plan's initial efficiency gap exceed some cutoff, but also that the plan would likely *remain* asymmetric over its lifespan given realistic shifts in the state's electoral environment.

In his rebuttal report, Professor Mayer conducted precisely the sensitivity testing Professor Goedert suggested, and found that the Current Plan is likely to continue to exhibit large pro-Republican efficiency gaps even if Wisconsin experiences Democratic or Republican

electoral waves. APFOF ¶ 116-118. Professor Jackman also performed this sensitivity testing, concluding that an initial efficiency gap above 7% is an excellent predictor of the measure's size and sign under a wide range of electoral environments. APFOF ¶ 90-93.

Second, instead of requiring defendants to show that a plan's large efficiency gap was unavoidable, the Court could oblige plaintiffs to show that a plan's asymmetry was avoidable. This shift in the burden would not alter the outcome here: defendants do not contest that plaintiffs' Demonstration Plan complies at least as well as the Current Plan with all federal and state requirements, but has an efficiency gap more than 80% smaller. Mayer Rpt. (Dkt. 54) at p. 37, 46; APFOF ¶ 142.

And third, the Court could require a different measure of partisan symmetry, such as partisan bias, to be used instead of or in addition to the efficiency gap. The efficiency gap resolves the concerns about partisan bias voiced by Justice Kennedy in *LULAC*, *see* 548 U.S. at 419-20 (opinion of Kennedy, J.), though partisan bias is more widely known. Here the Current Plan had a 13% pro-Republican partisan bias in 2012, and a 12% pro-Republican partisan bias in 2014—scores virtually identical to, and just as extreme as, the Plan's efficiency gaps. Compl. (Dkt. 1) at ¶ 9; APFOF ¶ 10.

B. The Test's Partisan Intent Prong Is Neither Always Satisfied nor Unmanageable.

Defendants' first complaint about plaintiffs' proposed test is that its partisan intent prong either will always be satisfied or else resembles the predominant intent standard deemed unmanageable in *Vieth*. Defs' Br. at 41. Plaintiffs agree that *Vieth* precludes any purpose inquiry based on predominant intent and do not advocate one here. But defendants are wrong to claim that "intentional discrimination against an identifiable political group" will *always* be present in a partisan gerrymandering case. *Davis v. Bandemer*, 478 U.S. 109, 127 (1986) (plurality

opinion). In fact, it will usually *not* be present when a district plan is designed by a commission, a court, or a state government under divided party control.

That a redistricting commission or a court responsible for redrawing boundaries will rarely aim to benefit one party and disadvantage its adversary follows from the nature of these institutions. As a general matter, bipartisan or nonpartisan bodies have no incentive to try to provide an electoral edge or handicap to either party. The same is true when the elected branches draw the lines under conditions of divided government. In these circumstances, the elected branches may try to protect incumbents of *both* parties, but any proposal that seeks to help *one* party and harm its opponent is likely to be blocked. It is thus unsurprising that partisan gerrymandering challenges against plans designed through bipartisan or nonpartisan processes have failed for lack of partisan intent. *See, e.g.*, *In re 2003 Legislative Apportionment of House of Representatives*, 827 A.2d 810, 811 817 (Me. 2003) (no "impermissible discriminatory intent" where Maine "Legislature established a bipartisan Apportionment Commission" to draw maps); *McClure v. Sec'y*, 766 N.E.2d 847, 857 (Ma. 2002) ("Nor have the plaintiffs shown discriminatory intent on the part of the Legislature" where Massachusetts maps were enacted under divided government).

In addition, even though "it should not be very difficult to prove" partisan intent when a single party has unified control over redistricting, this "does not, of course, mean that it need not be proved at all." *Bandemer*, 478 U.S. at 129, n.11 (plurality opinion). Consistent with this reasoning, plaintiffs' proposed test does not *presume* partisan intent, even under conditions of unified government, but rather requires it to be affirmatively demonstrated. Professor Goedert identified one well-known case where such a demonstration would not have been possible. "In the 2000's decade, Democrats controlled all branches of state government in California, but

instead of crafting an aggressively partisan congressional map, worked closely with Republicans in the legislature to draw districts that would protect incumbents of both parties." Goedert Rpt. at 10; APFOF ¶ 76. Similar examples in the current cycle include Maine, where Republicans in full control of the state government authorized an advisory commission and then heeded its line-drawing recommendations, and Vermont, where Democrats in full control did the same. *See Maine*, All About Redistricting, http://redistricting.lls.edu/states-ME.php; *Vermont*, All About Redistricting, http://redistricting.lls.edu/states-VT.php; APFOF ¶ 172.

Defendants also oddly assert that under plaintiffs' proposal, "a legislature needs to district so as to minimize the efficiency gap but courts are free to ignore it." Defs' Br. at 41. This statement is doubly incorrect. To avoid failing the test's partisan intent prong, all a legislature must do is refrain from deliberately benefiting one party and disadvantaging its opponent when designing a district plan. The legislature need not deliberately *minimize* its plan's partisan asymmetry. As for a court or other neutral body that is tasked with crafting a district plan, the proposed test does not absolve the mapmaker from the requirement of acting without partisan intent. It is simply unlikely that a neutral institution *would* act with such intent, thus typically barring any partisan gerrymandering challenge.

Furthermore, defendants' claim that "[c]ourts have never considered" electoral effects when designing plans is belied by both Wisconsin's own history and that of several other states. Courts do sometimes—properly—take into account likely electoral consequences when entrusted with responsibility over redistricting. For example, the court that drew Wisconsin's Assembly and Senate districts in the 1990s considered election results from the previous decade and produced the plan that was the "least partisan" and "create[d] the least perturbation in the political balance of the state." *Prosser*, 793 F. Supp. at 871. This plan had an average efficiency

gap of only -2.4% over the course of the ensuing cycle. Jackman Rpt. at 72; APFOF ¶ 46. *See also, e.g.*, *Legislature v. Reinecke*, 516 P.2d 6, 38 (Cal. 1973) (designing plan that would not "produce a manifestly unfair political result," and in fact had average efficiency gap of 2.5%); *Maestas v. Hall*, 274 P.3d 66, 79 (N.M. 2012) (designing plan that "avoid[s], to the extent possible, partisan bias," and in fact had average efficiency gap of -1.6%); APFOF ¶ 143-144.

To repeat: plaintiffs do not seek a declaration that the Constitution requires every district plan to meet some Platonic ideal of partisan symmetry. Instead, they seek a ruling that a state cannot adopt a district plan that deliberately and severely disadvantages the adherents of one party over the other, unless the asymmetry is unavoidable. That said, given the tools that are now available, including the efficiency gap, it seems likely that in the future, bipartisan and nonpartisan mapmakers will give greater attention than they have in the past to partisan symmetry, adding it to the list of factors that should be taken into account in developing a fair map.

C. There Is Nothing Unfair About Setting a Threshold for the Effect Prong and Shifting the Burden to the State to Justify Large Intentional Deviations.

Defendants also object to the notion of setting a threshold at which intentional partisan gerrymandering is presumed unconstitutional, subject to a state's ability to show that the extreme asymmetry was unavoidable. Defendants argue that plaintiffs' analogy to the one-person, one-vote cases, which use exactly the same burden-shifting framework, is inapposite; and that it is "fundamentally unfair" to ask the state to justify its plan. Defs' Br. at 42-44. But the reapportionment analogy is actually very close, since the one-person, one-vote cases also involve a constitutional value (there, equal population; here, partisan symmetry) that must be balanced against other redistricting criteria and constraints. And it is eminently reasonable to ask the party

best acquainted with a plan's goals and tradeoffs—namely, the state—to explain why a more symmetric map could not have been drawn.

Ironically, plaintiffs largely agree with defendants' characterization of the one-person, one-vote cases: that "the Court *first* established the constitutional right, leaving the specifics of the test to be developed later," and that "the courts developed a numerical test . . . *after* the constitutional standard of equal population had been established." *Id.* at 42-43. This is precisely the sequence plaintiffs advocate here. In *LULAC*, five Justices expressed interest in the concept of partisan symmetry, making the case similar to the Court's tentative endorsement of population equality in *Baker v. Carr*, 369 U.S. 186 (1962). *See id.* at 251 (Clark, J., concurring) (noting that the Court only "holds that the appellants have alleged a cause of action" and "fails to give the District Court any guidance" as to how liability is meant to be proven).

If *LULAC* bears some resemblance to *Baker*, then the next doctrinal period should look like the one that stretched from *Reynolds v. Sims*, 377 U.S. 533 (1964), all the way to *Connor v. Finch*, 431 U.S. 407 (1977). In this era, there was no population deviation threshold above which plans were presumptively unconstitutional and below which they were presumptively valid. Instead, the courts decided reapportionment cases in a more qualitative and common law fashion, reasoning based on specific facts and past precedents rather than firm quantitative cutoffs. Plaintiffs recommend this mode of inquiry until the courts have more experience with plans' levels of partisan asymmetry and the reasons for them.

Only in *Connor*, after more than a decade of experience with one-person, one-vote claims, did the Court announce that "'under-10%' deviations" are "considered to be of prima facie constitutional validity." 431 U.S. at 418; *see also Brown v. Thomson*, 462 U.S. 835, 852 (1983) (Brennan, J., dissenting) ("We have come to establish a rough threshold of 10%

maximum deviation from equality . . . ."). Likewise, a particular partisan asymmetry threshold may be identified by the courts after a number of partisan gerrymandering cases have been decided. The information and expertise accumulated in these cases would ensure that the eventual threshold is appropriate.

Given this position, defendants' claims that plaintiffs "are trying to establish the constitutional right based on a statistical method," and "use the efficiency gap calculation to establish the very existence of a constitutional violation," are self-evidently wrong. Defs' Br. at 43. The *Supreme Court*, not plaintiffs, "establish[ed] the constitutional right" to a district plan free from partisan gerrymandering in *Bandemer*. *Id.* And the Court, not plaintiffs, recognized the underlying concept of partisan symmetry in *LULAC*. All plaintiffs have done in this action is introduce a *measure* of partisan symmetry (the efficiency gap) that enables a court to determine exactly how symmetric or asymmetric a plan is, and thus whether a sufficient partisan effect has been shown once partisan intent has been proven. This "statistical method" or "calculation" is obviously not the "constitutional violation" itself. *Id.*

Defendants also complain that it would be unfair to shift the burden onto them at the test's third stage. But this burden allocation makes perfect sense given the point of the third stage: to determine whether a plan's extreme partisan asymmetry was necessitated by a state's political geography or legitimate redistricting goals. Since the state will have *designed* the map at issue, it will be more cognizant of the choices and tradeoffs inherent in the plan than anyone else could be. *See Brown*, 462 U.S. at 843 (noting Wyoming's showing that it respected political subdivision boundaries "in a manner 'free from any taint of arbitrariness or discrimination'"); *Mahan v. Howell*, 410 U.S. 315, 326 (1973) (noting Virginia's evidence that its plan "'produces the minimum deviation above and below the norm, keeping intact political boundaries'").

Another reason to allocate the burden to defendants is that, by the time the test's third stage is reached, plaintiffs will already have demonstrated both partisan intent and large and durable partisan asymmetry. These showings of discriminatory purpose and effect may properly be viewed as the establishment of a prima facie case, making it appropriate to require the state to justify its deliberately and dramatically asymmetric plan. *See Voinovich v. Quilter*, 507 U.S. 146, 161 (1993) (holding that "appellants were required to justify the deviation" after "appellees established a prima facie case of discrimination" by showing that "the maximum total deviation from ideal district size exceeded 10%"); *Brown*, 462 U.S. at 842-43 ("A plan with larger disparities in population, however, creates a prima facie case of discrimination and therefore must be justified by the State.").

In any event, nothing hinges on the allocation of the burden in this case. At the very least, plaintiffs' Demonstration Plan shows that there is a question of fact as to whether the Current Plan's extreme partisan asymmetry was necessitated by Wisconsin's political geography or by the state's legitimate redistricting goals. Indeed, defendants do not even challenge the Demonstration Plan, which complies at least as well with all federal and state requirements while exhibiting an efficiency gap more than 80% smaller. APFOF ¶ 142.

II. Defendants Have Not Shown That They Are Entitled to Summary Judgment on the Issue of the Proposed Test's Discernibility.

A number of defendants' arguments relate to the discernibility of the effect prong of plaintiffs' proposed test—that is, whether the prong is sufficiently connected to a principle of constitutional magnitude. For example, defendants claim that the prong "calls for hyper-proportional representation." Defs' Br. at 47. They also complain that Professor Mayer's analysis relies on a "'hypothetical state of affairs'" and the presence of "'vote switchers'" in violation of Justice Kennedy's admonitions in *LULAC*. *Id.* at 49 (quoting 548 U.S. at 420 (opinion of

Kennedy, J.)). For the reasons outlined below, these and other discernibility arguments advanced by defendants should be rejected.

A. Partisan Symmetry Is a Viable Foundation for the Effect Prong of a Partisan Gerrymandering Test.

Before addressing defendants' specific claims, plaintiffs first make two brief points about the concept of partisan symmetry that underlies their proposed test's effect prong. The first is that, as this Court has observed, "some of the justices have pointed to partisan symmetry as a theory with promise." Order (Dkt. 43) at 21-22. The Justices' interest likely stems from the fact that partisan symmetry corresponds closely to the Court's conception of partisan gerrymandering in multiple cases. In *Bandemer*, when the Court first recognized gerrymandering as a constitutional offense, a plurality described the practice as "the manipulation of individual district lines" causing a party's "voters over the State as a whole" to be "subjected to unconstitutional discrimination." 478 U.S. at 127 (plurality opinion). In *Vieth*, the plurality defined gerrymandering as "giv[ing] one political party an unfair advantage by diluting the opposition's voting strength." 541 U.S. at 271 n.1 (plurality opinion). And in *Ariz. State Legis. v. Ariz. Indep. Redist. Comm'n*, 135 S. Ct. 2652, 2658 (2015), the Court reiterated this definition: "the drawing of legislative district lines to subordinate adherents of one political party and entrench a rival party in power."

Partisan symmetry—the idea that the electoral system should "treat similarly-situated parties equally," so that they are able to convert their popular support into legislative representation with approximately equal ease—is closely linked to all of these notions. *LULAC*, 548 U.S. at 466 (Stevens, J., concurring in part and dissenting in part). A plan is asymmetric if (1) a party's supporters are discriminated against through the manipulation of district boundaries, *Bandemer*, 478 U.S. at 127 (plurality opinion); (2) one party is granted an electoral advantage

through the dilution of its opponent's votes, *Vieth*, 541 U.S. at 271 n.1 (plurality opinion); and (3) if district lines are drawn to subordinate one party and entrench its rival in power, *Ariz. State Legis.*, 135 S. Ct. at 2658. Accordingly, partisan symmetry is not some esoteric concept upon which the *LULAC* Court happened to stumble. Rather, it is a principle at the heart of all of the Court's partisan gerrymandering jurisprudence. *See also* Bernard Grofman & Gary King, *The Future of Partisan Symmetry as a Judicial Test for Partisan Gerrymandering After* LULAC v. Perry, 6 ELECTION L.J. 2, 6 (2007) (noting that the use of "partisan symmetry . . . to define partisan fairness in the American system . . . has been virtually a consensus position of the scholarly community").

In addition, partisan symmetry may be the *only* theory that is still doctrinally available. In *Bandemer*, *Vieth*, and *LULAC*, the Court rejected most other potential bases for a test: proportional representation, *see Vieth*, 541 U.S. at 288 (plurality opinion); *Bandemer*, 478 U.S. at 130 (plurality opinion); predominant or exclusive partisan intent, *see LULAC*, 548 U.S. at 417 (opinion of Kennedy, J.); *Vieth*, 541 U.S. at 285 (plurality opinion); district noncompactness, *see Vieth*, 541 U.S. at 296 (plurality opinion); and minority party entrenchment, *see id.* at 300. So if the courts are ever to limit one of the most pernicious practices in modern American politics—a practice that produces legislatures and policies that flout rather than respect the will of the people and a practice that has risen sharply in intensity in recent years—it will likely be by finding a workable measure of partisan symmetry.

B. The Test Does Not Mandate "Hyper-Proportional Representation."

Turning to defendants' discernibility arguments, they finally concede in their motion for summary judgment that plaintiffs' proposed test would not require proportional representation. *See* Defs' Br. at 47 ("The plaintiffs have maintained that the efficiency gap does not call for one-

for-one proportional representation. That is true . . ."). This concession confirms that the test is not barred by the Court's decisions rejecting proportionality as the benchmark for distinguishing between permissible and unlawful gerrymandering.

Defendants now claim, however, that the test "calls for hyper-proportional representation," with "[e]ach 1% increase in vote share . . . translat[ing] into an additional 2% in seat share." *Id.* This contention is based on Professor Jackman's simplified method for calculating the efficiency gap, using the formula $(S - 0.5) - 2(V - 0.5)$, where S is a party's statewide seat share and V is a party's statewide vote share. APFOF ¶ 121. If this formula is used *and* the efficiency gap is zero, there is a 2:1 relationship between seat share and vote share. But this does not mean, as defendants appear to argue, that plaintiffs' proposal would somehow require district plans to be drawn so that a 1% increase in vote share would always yield a 2% increase in seat share.

As demonstrated above, the 2:1 relationship is an algebraic implication of the formula that applies only when another assumption holds—equal turnout in every district. *See* Background Part VII, *supra.* When the full method for calculating the efficiency gap is used—tallying wasted votes district by district in a world where turnout is not equal—the 2:1 ratio does *not* follow even if the efficiency gap is zero. Professor Mayer used the full method in calculating the efficiency gap for Wisconsin's Current Plan and Demonstration Plan, and confirmed that there is no necessary relationship between a party's vote share and seat share. APFOF ¶ 13.

Even with respect to the simplified method Professor Jackman used, the 2:1 relationship is an artifact of the assumptions used and *not* one of the normative bases of the efficiency gap. Instead, the concept underpinning the measure remains that neither party's supporters should be excessively packed or cracked, and thus that neither party should waste many more votes than its

opponent. Roughly equal wasted votes, not any kind of seat-vote relationship, is the essence of the efficiency gap. *See* McGhee, *supra*, at 68 (referring to the efficiency gap as "relative wasted votes" in the article introducing the measure); Eric McGhee, *Measuring Partisan Bias in Single-Member District Electoral Systems*, 39 Legis. Stud. Q. 55 (2014), Jackman Decl. Ex. G (Dkt. 58-7) at p. 68; APFOF ¶ 145.

Moreover, even under the simplified method, no seat-vote relationship would actually be constitutionalized. A plan could have any seat-vote link if it was not designed with partisan intent, or if its asymmetry was unavoidable. Under the test's second prong too, plans' efficiency gaps would not be required to be *zero*—the only value that results in a 2:1 seat-vote relationship under conditions of equal turnout—but rather would be allowed to vary widely so long as they stayed within historical norms. Assume, for example, that a party won 55% of the statewide vote in the first election after redistricting, and that the courts had set a 7% efficiency gap threshold. Then the party could win anywhere from 53% to 67% of the state's seats without exceeding the threshold, corresponding to seat-vote relationships anywhere from 0.6 to 3.4.[7] These relationships range from very weak to very strong, and show that no *particular* relationship is required by plaintiffs' test.

Furthermore, a 2:1 seat-vote relationship is not arbitrary, but rather represents the actual seat-vote relationship that American elections have exhibited for many years. Indeed, defendants' own expert, Professor Goedert, explained in his report that this relationship "conform[s] with the observed average seat/votes curve in historical U.S. congressional and legislative elections." Goedert Rpt. (Dkt. 51) at p. 6; Goedert Dep. (Dkt. 65) at 95:17-21; APFOF

[7] Under the simplified method, the efficiency gap would be -7% if the party received 53% of the seats ((0.53 – 0.5) – 2(0.55 – 0.5)), and 7% if the party received 67% of the seats ((0.67 – 0.5) – 2(0.55 – 0.5)). The seat-vote relationship would be 0.6 in the first case ((0.53 – 0.5) / (0.55 – 0.5)), and 3.4 in the second case ((0.67 – 0.5) / (0.55 – 0.5)), relative to the benchmark of $S = V = 0.5$. *See* Gelman & King, *supra* (Jackman Decl. Ex. I (Dkt. 58-9) at p.9) (explaining how to calculate electoral responsiveness); APFOF ¶ 148.

¶ 146. *See also* Background Part VII, *supra*. Thus, to the extent that plaintiffs' proposed test may push jurisdictions toward adopting plans with 2:1 seat-vote ratios, it encourages them to comply with rather than defy historical norms.

Lastly, plaintiffs' alternate measure of partisan symmetry, partisan bias, does not imply any kind of seat-vote relationship. Because partisan bias denotes "the extent to which a majority party would fare better than the minority party, should their respective shares of the vote reverse," *LULAC*, 548 U.S. at 420 (opinion of Kennedy, J.), it is compatible with any seat-vote ratio. *See* Grofman & King, *supra*, at 9 ("An electoral system may have any degree of partisan bias, no matter what level of responsiveness happens to exist."); APFOF ¶ ___. As noted earlier, this Court may ask that partisan bias be used instead of or in addition to the efficiency gap.

C. The Test Resolves Justice Kennedy's Concern About "a Hypothetical State of Affairs."

Defendants also contend that plaintiffs' proposed test does not adequately resolve the concerns Justice Kennedy voiced in *LULAC* about partisan bias because plaintiffs' experts relied on "a hypothetical state of affairs" in conducting their analyses. Defs' Br. at 48-53. But when Justice Kennedy's opinion is read in context, it is clear that he was not objecting to the use of any social science study that employs hypotheticals, nor would such resistance to modern statistical methods be plausible or reasonable. Rather, he was expressing reservations about the *particular* hypothetical used to calculate partisan bias, under which the parties' "respective shares of the vote" are "reverse[d]" to simulate a counterfactual election. 548 U.S. at 420 (opinion of Kennedy, J.). As he explained, "[e]ven assuming a court could choose reliably among different models of shifting voter preferences, we are wary of adopting a constitutional standard that invalidates a map based on unfair results that would occur in a hypothetical state of affairs." *Id*. Justice Kennedy's skepticism is understandable. Reversing the parties' respective shares of the

vote *is* problematic because it requires substantial speculation as to which party would have won each district in an election very different from the one that actually occurred.[8]

Nothing in Justice Kennedy's reference to a "hypothetical state of affairs" casts doubt—let alone precludes reliance—on the various methods that plaintiffs' experts used. Defendants complain that Professor Mayer used a regression model rather than actual votes to estimate the 2012 efficiency gap under the Current Plan and his Demonstration plan, and that he constructed a baseline model of partisanship by removing the effects of incumbency. Defendants also argue that Professor Jackman's report impermissibly veers into the realm of the "hypothetical" because his efficiency gap formula assumes equal turnout. Defs' Br. at 50-51. But Justice Kennedy never commented on any of these types of assumptions, which are utterly unexceptional. Indeed, the Legislature's own consultant, Professor Gaddie, removed the effects of incumbency from his model, imputed election results in uncontested races, and assumed equal district turnout—all choices defendants now condemn. Mayer Rebuttal Rpt. (Dkt. 64) at p. 22; APFOF ¶ 151.

In any event, defendants' quarrels with the methodologies used by plaintiffs' experts at most raise questions of fact. For instance, defendants argue that the effects of incumbency should not be removed from efficiency gap models. Defs' Br. at 49-50. But Professor Mayer's initial model, the one he actually used to predict district vote shares (with almost perfect precision), did not remove incumbency effects. Mayer Rpt. (Dkt. 54) at pp. 19-28; APFOF ¶ 152. Nor did the efficiency gap estimates for the Current Plan and for the Demonstration Plan that he presented in

[8] Recent scholarship confirms Justice Kennedy's intuition about the unreliability of this speculation. *See* McGhee, *supra*, Jackman Decl. Ex. G (Dkt. 58-7) at p. 67 (finding that partisan bias is a relatively poor predictor of party seat share); Stephanopoulos & McGhee, *supra*, at 858 (finding that the more uncompetitive a state's election, the less accurate partisan bias becomes); APFOF ¶ 149-150. In addition, if this Court were to require partisan bias to be used instead of or in addition to the efficiency gap, a different version should be used that asks how the parties' seat shares would differ if they each received *50%* of the statewide vote. *See LULAC*, 548 U.S. at 464-70 (Stevens, J., concurring in part and dissenting in part) (using this version). That version requires much smaller counterfactual vote swings, and is thus substantially more reliable than the version Justice Kennedy discussed in *LULAC*.

his rebuttal report, which show that taking incumbency into account barely changes the estimates. APFOF ¶ 111-113. Nor did *any* of Professor Jackman's calculations, all of which made no adjustments for incumbency. Jackman Rpt. (Dkt. 62) at pp. 19-32; APFOF ¶ 153.

Similarly, as explained above, defendants' quarrel with Professor Mayer's use of a regression formula rather than actual vote totals to calculate the efficiency gap ignores the purpose of Professor Mayer's analysis, which was to compare the Current Plan with his Demonstration Plan. *See* Background Part VI, *supra*. Defendants also ignore the fact that Professor Mayer's model predicted actual votes with astonishing accuracy. Defendants insist that the model incorrectly forecast the outcomes of five races. Defs' Br. at 50. But this figure comes from Professor Mayer's baseline model with incumbency effects removed, which was not designed to make such predictions. APFOF ¶ 105. His initial model, which included incumbency effects, perfectly forecast the overall partisan breakdown of contested races. APFOF ¶ 99.

Defendants also argue that Professor Mayer should have determined how the Current Plan and the Demonstration Plan would have performed in the 2014 election. Defs' Br. at 50-51. But they ignore the fact that, in his rebuttal report, he conducted a far more thorough sensitivity analysis than even defendants suggest, assessing how both plans' efficiency gaps would vary in the event of a Republican wave akin to 2010, as well as a Democratic wave akin to 2006. APFOF ¶ 114. He found that, under both scenarios, the Current Plan would remain highly asymmetric and the Demonstration Plan would remain highly balanced. APFOF ¶ 116-117. Professor Jackman also carried out extensive sensitivity testing for *all* current plans nationwide, concluding that a large initial efficiency gap is an excellent predictor of the measure's performance under a wide range of electoral environments. Jackman Decl. Ex. D (Dkt. 58-4) at pp. 1-6; APFOF ¶ 154.

Defendants further criticize Professor Jackman's "counterfactual" assumption of equal district turnout. Defs' Br. at 51. But in elections in which all races were contested, there was a correlation of *0.997* between the full method's and the simplified method's efficiency gap calculations, showing that the assumption is reasonable. *See* Background Part VII, *supra.* And by objecting to Professor Jackman's "point estimates" and "confidence intervals," Defs' Br. at 51, defendants seem to be griping at much of modern social science.

In sum, all of defendants' quibbles with the methodologies employed by plaintiffs' experts are wrong or, at the very least, hotly contested. In their initial and rebuttal reports, plaintiffs' experts used almost all of the techniques that defendants' experts claimed should have been used.[9] Far from altering the experts' conclusions, those techniques reinforced their opinions that the Current Plan's efficiency gap is extreme compared to historical norms and likely to endure throughout the Plan's ten-year lifespan even in the event of a Democratic wave election.

D. Plaintiffs' Proposed Test Resolves Justice Kennedy's Concern About "Vote-Switchers."

Defendants also latch onto Justice Kennedy's reference in *LULAC* to "vote-switchers" to argue that the efficiency gap is too sensitive to results in close races. Defs' Br. at 51-53. But as the full quote reveals—"[t]he existence or degree of asymmetry may in large part depend on conjecture about where possible vote-switchers will reside," *LULAC*, 548 U.S. at 420 (opinion of Kennedy, J.)—Justice Kennedy was addressing an entirely different issue: problems with the partisan bias metric. He noted that to find out what would happen "should [the parties'] respective shares of the vote reverse"—for example, by flipping from 60% Democratic to 60%

[9] The only suggestion of defendants not tried out by plaintiffs' experts is treating uncontested races as if they were decided by a margin of 100% to 0%. *See* Defs' Br. at 49. This crude approach is guaranteed to produce errors since the voters in uncontested races are never unanimously in favor of the winning party's candidate. Jackman Rpt. at 24; Stephanopoulos & McGhee, *supra*, at 867 ("We strongly discourage analysts from . . . treating [uncontested races] as if they produced unanimous support for a party."); APFOF ¶ 173.

Republican—assumptions had to be made as to the locations of the voters who would have to change their minds. *Id.* These "vote-switchers'" locations would determine whether few, some, or many seats would change hands in the counterfactual election, and thus what partisan bias the plan would be expected to exhibit.

Defendants try to link Justice Kennedy's observation about "vote-switchers" to the *Vieth* plurality's comments about the supposed meaninglessness of statewide seat and vote shares. *See* Defs' Br. at 51-52. But Justice Kennedy did not join the plurality's opinion. Nor is there any discernible connection between the plurality's comments and Justice Kennedy's "vote-switchers" reference. Furthermore, Justice Kennedy's statement had nothing to do with voters who happen to live in competitive districts in an actual election. *See id.* at 52-53. Indeed, such voters are irrelevant to the calculation of partisan bias, which hinges instead on the voters who would have to change their minds to produce the counterfactual election with the parties' vote shares reversed.

In any event, defendants' underlying point here—that the large efficiency gaps of the Current Plan, and of other plans across the country, would vanish if a few close districts changed hands—is wrong as well. As noted above, Professor Mayer's sensitivity testing determined that the Current Plan's extreme asymmetry would endure even in the event of Democratic or Republican electoral waves. APFOF ¶ 114-117. Likewise, Professor Jackman's sensitivity testing showed that maps throughout the nation with large efficiency gaps would remain highly asymmetric even given swings of up to five points in either party's direction. Jackman Decl. Ex. D (Dkt. 58-4) at pp. 1-6; APFOF ¶ 154. Thus, even if the concept of "vote-switchers" is pulled entirely out of context, it cannot salvage defendants' argument.

III. Defendants Have Not Shown That They Are Entitled to Summary Judgment on the Issue of the Proposed Test's Manageability.

Defendants' final set of claims involve the manageability of plaintiffs' proposed test—that is, whether it reliably distinguishes lawful from unlawful plans. Defendants point out that Wisconsin's 2000 plan, as well as other plans nationwide, exhibited large pro-Republican efficiency gaps despite being designed without partisan intent. Defendants also contend that plaintiffs' proposed test would result in too many plans being invalidated. And defendants assert in passing that the efficiency gap is too changeable to be dependable. None of these arguments has merit, and none entitles defendants to summary judgment.

A. The Facts of This Case Confirm the Test's Manageability.

The *Vieth* plurality explained that, in the partisan gerrymandering context as elsewhere, judicially adopted tests must be predictable rather than arbitrary, reliable rather than capricious. "[J]udicial action must be governed by *standard*, by *rule*. Laws promulgated by the Legislative Branch can be inconsistent, illogical, and ad hoc; law pronounced by the courts must be principled, rational, and based upon reasoned distinctions." 541 U.S. at 278 (plurality opinion). The facts of this case demonstrate that plaintiffs' proposed test meets these requirements.

Start with the test's first prong: whether a plan was designed with the intention of benefiting one party and disadvantaging its adversary. This issue is ordinarily easy to resolve given the actors responsible for redistricting, the statements they made, and the process they followed. Here, for example, defendants do not argue that this Court would have any difficulty divining the intent of the Republican leadership who crafted the Current Plan in secret using cutting-edge techniques aimed at maximizing the Republicans' share of seats, and then rammed the Plan through the Legislature in a matter of days. Compl. (Dkt. 1) at ¶¶ 31-43; APFOF ¶ 155. And what is true here applies more generally as well. Courts, commissions, and state

governments under divided control rarely seek to tilt plans in a particular party's favor; any partisan gerrymandering challenges to these bodies' plans are thus unlikely to get to first base. By contrast, state governments under unified control usually *do* try to enact plans that advantage the ruling party. When they do not, their bipartisanship is likely to be readily apparent. It is only in the unusual case where motive is unclear that a plan's efficiency gap may be probative of partisan intent.

Next consider the test's second prong: whether a plan exhibited a high and durable level of partisan asymmetry in the first election after redistricting. Again, there is no doubt this criterion is met here. From 1972 to 2010, not a single map in the country was as asymmetric as the Current Plan in its first two elections, and there is nearly a 100% likelihood that the Plan will continue to disadvantage Democrats throughout its lifespan. APFOF ¶ 11. Again, though, courts should have little trouble ascertaining when the effect prong is *not* satisfied. It is not met when a plan's initial efficiency gap is relatively small, in accordance with historical norms. It is also not met when there is evidence that a plan's large initial efficiency gap would disappear over the course of the decade given plausible shifts in the state's electoral environment (assuming the Court were to require sensitivity testing at this stage).

Lastly, the test's third prong—whether a plan's intentional and severe asymmetry was avoidable given the state's political geography and legitimate redistricting objectives—is manageable as well. This element has plainly been established here. The Demonstration Plan shows that a map with a near-zero efficiency gap could have been drawn while still abiding at least as well with all federal and state requirements. APFOF ¶ 142. And once again, courts would easily be able to tell if the element was *not* proven. As the map's author, the state would often have evidence indicating that any district alterations that reduced the map's efficiency gap would

violate federal or state law. *See, e.g.*, *Mahan*, 410 U.S. at 326 (discussing Virginia's showing to this effect). In addition, if a large efficiency gap were actually compelled by the state's political geography, the plaintiffs ought to be unable to craft a map that slashes the efficiency gap while still achieving the state's legitimate goals. No matter which party bears the burden at this stage, this inability would be telling.

B. Wisconsin's Experience in the 2000s Neither Undermines the Test's Manageability nor Shows that the State Has a Natural Pro-Republican Tilt.

Defendants' first manageability argument hinges on the fact that Wisconsin's court-drawn plan in the 2000s had a substantial pro-Republican efficiency gap. From this single data point, involving just one of the hundreds of plans in Professor Jackman's database, defendants leap to the conclusion that plaintiffs' proposed test is unworkable and that Wisconsin has a natural pro-Republican political geography. *See* Defs' Br. at 34-37. But there is an insurmountable gap between the data point and the conclusions defendants would draw from it.

To begin with, plaintiffs agree with defendants that any viable gerrymandering test should lead to court-drawn plans like Wisconsin's in the 2000s being upheld. Plaintiffs' proposal *would* have produced this outcome because the plan was not designed with partisan intent, and so would not have satisfied the test's first prong. *See Baumgart*, 2002 WL 34127471, at *7 (court's goals were "maintaining municipal boundaries," "uniting communities of interest," and "keep[ing] population deviation between districts as low as possible"). Thus, a plan that *should* not have been struck down *would* not have been struck down, showing that the test yields sensible results even for this allegedly difficult category of cases.

Next, as demonstrated at length above, defendants' contention that Wisconsin's experience in the 2000s indicates that the state has a natural pro-Republican political geography is contradicted by a wealth of record evidence that, at the very least, raises questions of fact.

Among other things, this evidence establishes that all of Wisconsin's other bipartisan or nonpartisan plans in the modern era had very small efficiency gaps; that a neutral map would have produced a slight pro-Democratic advantage in 2012 and 2014; that Wisconsin's Democratic and Republican voters are about equally spatially isolated and clustered; and that Wisconsin's current districts are far more skewed in favor of Republicans than the wards from which they were assembled. *See* Background Part III, *supra*.

Furthermore, even if Wisconsin has a natural pro-Republican political geography, the first and third prongs of plaintiffs' proposed test are specifically designed to take into account this possibility. A state that sought diligently to respect political subdivisions and communities of interest, thus producing a map that accurately reflected its spatial realities, would not have enacted the plan with partisan intent, and so would not have violated the test's first prong. Likewise, as this Court has noted, if a state can show that its plan's intentional and extreme asymmetry was "the necessary result of . . . the state's underlying political geography," then the test's third prong is not met and again there is no liability. Order (Dkt. 43) at 17 (internal quotation marks omitted). Defendants' complaint that the test ignores the impact of geography fails given that two of its three prongs revolve around this very topic.

As for defendants' suggestion that geography be incorporated into the test's second prong too, setting a "baseline" that "corresponded to the gap under a neutral plan," Defs' Br. at 36, the idea is untenable. First, it is in sharp tension with *LULAC*, where a majority of the Justices noted the promise of *actual* measures of partisan asymmetry, not *adjusted* measures indicating how skewed a plan is relative to a map designed through a bipartisan or nonpartisan process. *See, e.g.*, 548 U.S. at 466-72 (Stevens, J., concurring in part and dissenting in part) (reporting actual, not adjusted, partisan bias scores). Second, a non-zero benchmark would give rise to an anomalous

situation under which plans with equal partisan tilts would be treated differently based on which party they happened to favor. This result cannot be squared with the principle of partisan symmetry.

Third, no one actually knows how symmetric the "typical" plan designed through a bipartisan or nonpartisan process would be, in Wisconsin or anywhere else. Professor Goedert's models are a good start, but they only cover actual plans in two elections. The simulated plans created by other scholars are not lawful because they ignore most federal and state requirements, have methodological issues that remain unresolved, and give rise to different conclusions as to whether Democrats or Republicans would benefit from random redistricting. APFOF ¶ 33. And fourth, to the extent the full sweep of modern history is any guide here, it counsels in favor of a neutral benchmark. The 786 observations in Professor Jackman's database, covering all available plans from 1972 to 2014, have an average efficiency gap of -0.5%, or essentially zero. APFOF ¶ 18.

Lastly, defendants' consistently mischaracterize plaintiffs' Demonstration Plan. The Plan does not "show[] the natural disadvantage faced by Democrats." Defs' Br. at 36. Its efficiency gap would have been very close to zero in 2012, and would become *pro-Democratic* under one scenario examined in Professor Mayer's sensitivity testing. APFOF ¶ 115-118. The model on which the Plan is based also did not "underpredict[] Republican wins under Act 43." Defs' Br. at 36. The version suited to making forecasts was exactly right when it came to the overall partisan breakdown of contested races. APFOF ¶ 99. And the Plan's efficiency gap would not "grow ever more negative in favor of Republicans" under different electoral conditions. Defs' Br. at 37. In fact, it would remain very small even in the event of Democratic or Republican electoral waves. APFOF ¶ 115-118.

C. National Data Neither Undermines the Test's Manageability nor Shows that the Country Has a Natural Pro-Republican Tilt.

The undisputed fact that the average efficiency gap of state house plans nationwide has grown substantially more pro-Republican from the 1990s to the present also does not help defendants. *See* Defs' Br. at 37-38. Defendants cite this fact and then jump to the entirely unwarranted conclusion that the country's political geography increasingly favors Republicans. But as demonstrated above, the far more plausible explanation for the pro-Republican trend is the fourfold increase in the number of states with Republicans in full control of the state government. In fact, this increase accounts for essentially *all* of the efficiency gap's movement in a Republican direction. Jackman Rebuttal Rpt. (Dkt. 63) at p. 20; APFOF ¶ 156.[10] That the country's political geography is not becoming more pro-Republican is confirmed by the isolation scores for Democratic and Republican voters, which if anything suggest a pro-Democratic shift; and by Professor Goedert's models, which show that the typical state would have had pro-Democratic efficiency gaps in 2012 and 2014 if its plan had been designed through a bipartisan or nonpartisan process. *See* Background Part II, *supra*.

After making unsubstantiated (or at the very least debatable) assertions about the country's political geography, defendants identify several current plans that have exhibited substantial efficiency gaps, but that are unlikely to have been enacted with partisan intent. Defendants also note that partisan intent was probably present in Illinois, but did not manifest itself in a large efficiency gap. *See* Defs' Br. at 38-40. Like Wisconsin's court-drawn plan in the 2000s, these examples actually demonstrate the manageability of plaintiffs' proposed test. If the plans in the first category were challenged under the test, they would be upheld because partisan

[10] Another factor that can influence the average efficiency gap is the *severity* of partisan gerrymandering, regardless of which party is responsible for redistricting. The severity has clearly increased in the current cycle (showing a spike in the average absolute value of the efficiency gap in the 2010s). APFOF ¶ 20.

intent was absent. Similarly, if Illinois's plan were disputed, it would be sustained because it has not produced large and durable levels of partisan asymmetry. None of this is especially complicated; a test that requires partisan intent *and* partisan impact is not satisfied if one of the elements is missing.

What seems to be driving defendants' confusion is an implicit view that partisan intent and partisan impact should always go hand in hand. But purpose and effect are distinct issues, and it is improper to conflate them. *See Bandemer*, 478 U.S. at 127 (plurality opinion) (gerrymandering plaintiffs are "required to prove both intentional discrimination against an identifiable political group and an actual discriminatory effect on that group"); Opinion at 16 ("Generally, an equal protection claim requires a showing of a discriminatory intent and a discriminatory effect."). It is true enough that partisan intent is often a driver of partisan impact, as Professor Goedert's work shows. *See* Goedert, *Gerrymandering or Geography*, *supra*, Goedert Dep. Ex. 20 (Dkt. 65-2) at p. 6 (finding that unified party control over redistricting leads to a large efficiency gap boost in favor of that party); Goedert, *Disappearing Bias*, *supra*, Goedert Dep. Ex. 21 (Dkt. 65-3) at p. 13 (same); APFOF ¶ 157. But partisan impact is also a function of redistricting skill, political geography, electoral swings, and other factors. This is precisely why it is necessary to separate the inquiries, and to insist that both purpose and effect be independently demonstrated.

Moreover, while defendants have focused on cases where partisan intent and partisan impact point in opposite directions, there are many more examples where they are perfectly aligned. In the current cycle, the Florida, Georgia, Indiana, Michigan, North Carolina, Ohio, Rhode Island, Tennessee, Vermont, Wisconsin, and Wyoming plans were all enacted by a single party with unified control over redistricting, and all exhibited efficiency gaps above 7% in 2012.

Likewise, the Alaska, California, Colorado, Connecticut, Hawaii, Iowa, Kentucky, Maine, Minnesota, Montana, Nevada, New Mexico, and Washington plans were all enacted by some other institution (a court, a commission, or divided government), and all had efficiency gaps below 7% in 2012. Jackman Rpt. (Dkt. 62) at pp. 7, 73; Jackman Rebuttal Rpt. (Dkt. 63) at pp. 18-20; Jackman Decl. Ex. F (Dkt. 58-6); APFOF ¶ 174. One of the strengths of plaintiffs' proposed test is that it is easily able to distinguish between these two groups of plans, focusing judicial attention on the former and diverting it from the latter.

D. The Test Would Not Result in the Invalidation of Too Many Plans.

Defendants further argue that plaintiffs' proposal is unmanageable because it would result in too many plans being struck down. *See* Defs' Br. at 44-46. This claim, however, is once again based only on the test's second prong, and entirely overlooks its first and third elements. Defendants assert that the test would "find[] unconstitutional gerrymandering in one plan out of three" *solely* by counting the share of plans that "fail Jackman's standard of a 7% *EG* in the first election following redistricting." Defs' Br. at 44. Not only does this approach pay no heed to the test's first and third prongs, it also misapplies the second one. As noted earlier, plaintiffs' position is that an efficiency gap threshold need not be set in this case, but rather should be allowed to emerge over time. In no way have plaintiffs suggested that Professor Jackman's 7% proposal be treated as ironclad.

Since defendants' figures are flawed, how many plans would actually be in jeopardy under plaintiffs' proposed test? It is impossible to say with certainty because only litigation can determine whether a plan was designed with partisan intent, whether the plan's initial efficiency gap was large and durable relative to historical norms, and whether this significant asymmetry was avoidable. Still, plaintiffs have paired efficiency gap data with information about the

institution responsible for redistricting to produce some rough estimates. To recap: Only 11 current plans had initial efficiency gaps above 7% and were designed by a single party with unified control over redistricting (a number that drops to 7 if the threshold is increased to 10%). Only 43 plans over the entire modern redistricting era satisfied both of these conditions (32 if the cutoff is raised to 10%). APFOF ¶ 73, 75, 69. And even these figures overstate the test's impact, since not every party with unified control seeks to benefit itself, and not every large efficiency gap is avoidable.

Of course, judicial intervention on this scale is not trivial; if it were, there would be little point in trying to fashion a test for partisan gerrymandering. But two points are in order about the volume of potentially affected plans. The first is that it pales in comparison to the number of plans struck down during the reapportionment revolution of the 1960s (almost all of them), to the number of Voting Rights Act lawsuits filed since *Gingles* (at least 800), and even to the amount of litigation that occurs during each redistricting cycle. APFOF ¶ 77-78. In the current cycle alone, more than two hundred cases were filed in more than forty states, resulting in more than twenty plans (or two to three times more than those at risk under plaintiffs' proposed test) being invalidated or judicially designed. APFOF ¶ 79.

The second point is that if the courts began enforcing the constitutional ban on partisan gerrymandering, the volume of *other* redistricting litigation might decrease substantially. At present, the motivation for many one-person, one-vote, Voting Rights Act, and state law claims is partisan dissatisfaction at being the victim of gerrymandering. *See, e.g.*, Samuel Issacharoff, *Gerrymandering and Political Cartels*, 116 Harv. L. Rev. 593, 630-31 (2002), Earle Decl. Ex. E (Dkt. 57-5) at pp. 630-31 (noting that "the absence of any real constitutional vigilance over partisan gerrymandering" causes litigants to "squeeze all claims . . . into the suffocating category

of race"); Richard H. Pildes, *The Theory of Political Competition*, 85 Va. L. Rev. 1605, 1608 (1999), Earle Decl. Ex. F (Dkt. 57-6) at pp. 1608 (observing that "[t]he 'right' claimed" in many "political cases" is "obviously a stalking horse for other interests"); APFOF ¶ 158-159. So if gerrymandering became less prevalent thanks to judicial supervision, other kinds of lawsuits might become rarer too.

After raising the specter of excessive judicial intervention, defendants complain about plaintiffs' focus on the *first* election after redistricting. They call this focus "arbitrar[y]," and note that more plans exceed a 7% efficiency gap at some point during their lifetimes than in their initial values. *See* Defs' Br. at 45-46. But since Justice Kennedy's opinion in *LULAC* seems to rule out litigation before an election has occurred, the first election represents the first moment after which a lawsuit may be filed. *See* 548 U.S. at 420 (opinion of Kennedy, J.) (objecting to claims based on "a hypothetical state of affairs"). Litigants also have every incentive to bring suit as soon as an election has taken place, rather than suffering through multiple elections under a potentially unlawful plan. This is why, for decades, the vast majority of redistricting litigation has been resolved very early in the cycle. *See 2010 Litigation*, *supra* (showing that more than 85% of redistricting suits in the 2010 cycle have already been resolved); APFOF ¶ 160.

Lastly, defendants criticize Professor Jackman for setting his suggested threshold "based on whether a plan is likely to change sign during its existence." Defs' Br. at 46. In fact, in assessing what cutoff would be reasonable, he considered a much broader range of factors: (1) whether a plan's initial efficiency gap is "large relative to those observed in the previous 40 years of state legislative elections," Jackman Rpt. (Dkt. 62) at p. 65; APFOF ¶ 161; (2) what proportion of plans either fall below a given threshold, or if above, would exhibit an efficiency gap of the same sign throughout their lifetimes, Jackman Rpt. (Dkt. 62) at pp. 66-69; APFOF ¶

162; (3) what a series of prognostic tests reveal about the reliability of different thresholds, Jackman Rebuttal Rpt. (Dkt.63) at pp. 5-14; APFOF ¶ 163; (4) how a plan's initial efficiency gap is related to its average efficiency gap over its lifetime, Jackman Rebuttal Rpt. (Dkt. 63) at pp. 15-17; APFOF ¶ 164; and (5) what sensitivity testing demonstrates about the durability of plans' efficiency gaps in the current cycle, Jackman Decl. Ex. D (Dkt. 58-4) at pp. 1-6. APFOF ¶ 165. *All* of these analyses confirm that a threshold on the order of 7% would be sensible.

And to answer defendants' question, "why unconstitutional gerrymandering should be decided by whether a plan will change sign," Defs' Br. at 46, the durability of a plan's asymmetry has long been identified as an important consideration. In *Bandemer*, in particular, the plurality noted the absence of evidence that a particular election's "results were a reliable prediction of future ones," and observed that "had the Democratic candidates received an additional few percentage points of the votes cast statewide, they would have obtained a majority of the seats in both houses." 478 U.S. at 135 (plurality opinion); *see also id.* at 132-33 (requiring a plan to "*consistently* degrade" a party's influence and "*continued* frustration" of voters' preferences (emphasis added)). Thus, far from having "no basis in the Constitution," Defs' Br. at 46, plaintiffs' emphasis on the durability of gerrymandering is rooted in the Court's own pronouncements on the subject.

E. The Efficiency Gap Is Not Too Changeable to Be Reliable.

Finally, defendants claim in various places that the efficiency gap is too changeable a metric to serve as the basis for a test's partisan effect prong. *See id.* at 38 ("the gap will change over time"); *id.* at 45 ("A plan will produce a range of results depending on election conditions . . . ."); *id.* at 49 ("the efficiency gap is subject to wide swings"). In his initial report, Professor Jackman examined whether most variation in the efficiency gap is *within* plans (in which case

the metric would not be very trustworthy) or *between* plans (in which case it would amount to a durable plan characteristic). His results confirmed the latter thesis. "About 76% of the variation in the *EG* estimates is between-plan variation," indicating that "there is a moderate to strong 'plan-specific' component to variation in the *EG* scores," and that "the efficiency gap *is* measuring an enduring feature of a districting plan." Jackman Rpt. (Dkt. 62) at pp. 48; Jackman Dep. (Dkt. 53) at 75:10-76:4; APFOF ¶ 166. Defendants do not contest this conclusion.

The reliability of a plan's initial efficiency gap is as important as the measure's overall dependability, since most litigation will be based on this first score. Four separate types of evidence (items (2)-(5) in the above list) show that a plan that exhibits a large efficiency gap in the first election after redistricting is highly likely to remain asymmetric over its lifetime. First, about 95% of plans from 1972 to 2014 either had initial efficiency gaps below 7% or had larger initial efficiency gaps and never once favored the opposing party. Jackman Rpt. (Dkt. 62) at p. 67; Goedert Dep. (Dkt. 51) at 120: 24-121:1; APFOF ¶ 167. Second, Professor Jackman's prognostic tests indicate that there would be almost no false positives with a 7% threshold, that is, cases where a plan's average efficiency gap was expected to have the same sign as its initial efficiency gap, but this expectation turned out to be incorrect. Jackman Rebuttal Rpt. (Dkt. 63) at p. 12; APFOF ¶ 168. Third, there is a very strong relationship between a plan's initial efficiency gap and its average efficiency gap, with the former accounting for fully three-fourths of the variation in the latter. Jackman Rebuttal Rpt. (Dkt. 63) at pp. 15-17; APFOF ¶ 169. And fourth, this tight relationship applies not just retrospectively but also prospectively; if current plans with large efficiency gaps experienced electoral tides of up to five points in either direction, their new efficiency gaps would be extremely highly correlated with their original ones, and almost certain to have the same sign. Jackman Decl. Ex. D (Dkt. 58-4) at p. 4; APFOF ¶ 170.

In any event, defendants' changeability critique is inapplicable to plaintiffs' other measure of partisan symmetry, partisan bias. Because partisan bias is calculated based on counterfactual rather than actual elections, it is essentially unaffected by the electoral swings that in fact occur. *See* McGhee, *supra*, Jackman Decl. Ex. G (Dkt. 58-7) at p. 73 (noting that partisan bias exhibits "more persistence through time"); Stephanopoulos & McGhee, *supra*, at 864 (observing that "partisan bias is fairly stable" because "it shifts all actual results to the point of the hypothetical election"); APFOF ¶ 171. As plaintiffs have repeatedly pointed out, this Court may ask that partisan bias be used instead of or in addition to the efficiency gap.

CONCLUSION

With respect to all of the issues that bear on the discernibility and manageability of plaintiffs' proposed test, there remain genuine—indeed, heated—disputes as to material facts. A trial is the appropriate venue for resolving these disputes.

Respectfully submitted,

s/ Michele Odorizzi
One of the attorneys for plaintiffs

Peter G. Earle
LAW OFFICE OF PETER G. EARLE
839 North Jefferson Street, Suite 300
Milwaukee, WI 53202
(414) 276-1076

Michele Odorizzi
MAYER BROWN LLP
71 South Wacker Drive
Chicago, IL 60606
(312) 782-0600

Paul Strauss
Ruth Greenwood
Annabelle Harless
CHICAGO LAWYERS' COMMITTEE
FOR CIVIL RIGHTS UNDER LAW, INC.
100 N. LaSalle St., Suite 600
Chicago, IL 60602
(312) 202-3649

Nicholas O. Stephanopoulos
UNIVERSITY OF CHICAGO LAW SCHOOL
1111 E. 60th St., Suite 510
Chicago, IL 60637
(773) 702-4226

Dated: January 25, 2016