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

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PLAINTIFFS' PROPOSED FINDINGS OF FACT

In accordance with the Court's October 15, 2015 Scheduling Order (Dkt. 33) and Civil L.R. 16(c)(1), the plaintiffs, through their undersigned counsel, submit the following proposed findings of fact.[1]

[1] The Plaintiffs' Proposed Findings of Fact includes both the stipulated facts that appear in the parties' contemporaneously filed Pretrial Report, as well as facts that the Plaintiffs ask the Court to find, which the Defendants dispute. All stipulated facts in this document are indicated by italicized type face and are labeled as "stipulated."

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I. PARTIES

a) Plaintiffs are Democrats across Wisconsin

1. Plaintiffs are qualified, registered voters in the State of Wisconsin, who reside in various counties and legislative districts. [Stipulated Fact 1]

2. Plaintiffs are all supporters of the Democratic party and of Democratic candidates, and they almost always vote for Democratic candidates in Wisconsin elections. [Stipulated Fact 2]

3. Plaintiff William Whitford, a citizen of the United States and of the State of Wisconsin, is a resident and registered voter in the 76th Assembly District in Madison in Dane County, Wisconsin. [Stipulated Fact 3]

4. Plaintiff Roger Anclam, a citizen of the United States and of the State of Wisconsin, is a resident and registered voter in the 31st Assembly District in Beloit in Rock County, Wisconsin. [Stipulated Fact 4]

5. Plaintiff Emily Bunting, a citizen of the United States and of the State of Wisconsin, is a resident and registered voter in the 49th Assembly District in Viola, Richland County, Wisconsin. [Stipulated Fact 5]

6. Plaintiff Mary Lynne Donohue, a citizen of the United States and of the State of Wisconsin, is a resident and registered voter in the 26th Assembly District in Sheboygan, in Sheboygan County, Wisconsin. [Stipulated Fact 6]

7. In addition to the injury suffered by all Democrats in Wisconsin, Ms. Donohue was harmed when the City of Sheboygan was split into Districts 26 and 27, and District 26 was cracked and converted from a Democratic to a Republican district. Tr. Ex. 1.

8. Plaintiff Helen Harris, a citizen of the United States and of the State of Wisconsin,

is a resident and registered voter in the 22nd Assembly District in Milwaukee, in Milwaukee County, Wisconsin. [Stipulated Fact 7]

9. Plaintiff Wayne Jensen, a citizen of the United States and of the State of Wisconsin, is a resident and registered voter in the 63rd Assembly District in Rochester, in Racine County, Wisconsin. [Stipulated Fact 8]

10. Plaintiff Wendy Sue Johnson, a citizen of the United States and of the State of Wisconsin, is a resident and registered voter in the 91st Assembly District in Eau Claire, in Eau Claire County, Wisconsin. [Stipulated Fact 9]

11. In addition to the injury suffered by all Democrats in Wisconsin, Ms. Johnson was harmed when Democratic voters were packed into District 91, wasting their votes and diluting the influence of Ms. Johnson's vote, as part of a partisan gerrymander that reduced the number of Democratic seats in her region. Tr. Ex. 1.

12. Plaintiff Janet Mitchell, a citizen of the United States and of the State of Wisconsin, is a resident and registered voter in the 66th Assembly District in Racine, in Racine County, Wisconsin. [Stipulated Fact 10]

13. In addition to the injury suffered by all Democrats in Wisconsin, Ms. Mitchell was harmed when Democratic voters were packed into District 66, wasting their votes and diluting the influence of Ms. Mitchell's vote, as part of a partisan gerrymander that reduced the number of Democratic seats in her region. Tr. Ex. 1.

14. Plaintiffs James and Allison Seaton, citizens of the United States and of the State of Wisconsin, are residents and registered voters in the 42nd Assembly District in Lodi, in Columbia County, Wisconsin. [Stipulated Fact 11]

15. Plaintiff Jerome Wallace, a citizen of the United States and of the State of

Wisconsin, is a resident and registered voter in the 23rd Assembly District in Fox Point, in Milwaukee County, Wisconsin. [Stipulated Fact 12]

16. In addition to the injury suffered by all Democrats in Wisconsin, Mr. Wallace was harmed when Democrats in District 22 were cracked so that his previously Democratic district is now a Republican district. Tr. Ex.1.

17. Plaintiff Don Winter, a citizen of the United States and of the State of Wisconsin, is a resident and registered voter in the 55th Assembly District in Neenah, in Winnebago County, Wisconsin. [Stipulated Fact 13]

b) Defendants are the G.A.B., though the legislature is the real party of interest

18. Defendant Gerald C. Nichol is the Chair of the Wisconsin Government Accountability Board ("G.A.B.") and is named solely in his official capacity as such. The G.A.B. is a state agency under Wis. Stat. § 15.60, which has "general authority" over and "responsibility for the administration of . . . [the State's] laws relating to elections and election campaigns," Wis. Stat. § 5.05(1), including the election every two years of Wisconsin's representatives in the Assembly. [Stipulated Fact 14]

19. Defendants Thomas Barland, John Franke, Harold V. Froehlich, Elsa Lamelas, and Timothy Vocke are all members of the G.A.B., and are named solely in their official capacities as such. [Stipulated Fact 15]

20. Defendant Kevin J. Kennedy is the Director and General Counsel of the G.A.B., and is named solely in his official capacity as such. [Stipulated Fact 16]

II. PARTISAN INTENT

21. All redistricting work was done in Michael Best's office before the file (the redistricting plan that became Act 43) was sent to the Legislative Reference Bureau for drafting and the "map room" where all redistricting work was done was located in Michael Best's office. [Stipulated Fact 23]

22. A formal written policy provided that only the Senate Majority Leader, the Speaker of the House, and their aides Tad Ottman and Adam Foltz, and Michael Best attorney Eric Mcleod and legal staff designated by Mr. McLeod would have unlimited access to to the "map room." [Stipulated Fact 24]

23. The access policy provided for limited access by rank and file legislators:

> *"Legislators will be allowed into the office [mapping room] for the sole purpose of looking at and discussing their district. They are only to be present when an All Access member is present. No statewide or regional printouts will be on display while they are present (with the exception of existing districts). They will be asked at each visit to sign an agreement that the meeting they are attending is confidential and they are not to discuss it."*

But only Republican legislators were allowed even this limited access. [Stipulated Fact 25]

24. Three computers were deployed by the Legislative Technology Services Bureau ("LTSB") to the "map room" at Michael Best & Friedrich for use in drafting the redistricting plan. Each computer contained two mirrored internalhard drives and one external hard drive. On July 17, 2010, a computer coded for identification purposes as WRK32587 was deployed to Michael Best & Friedrich for use by Tad Ottman. Computer WRK32587 was deployed with an external hard drive with the identification code of HDD32575. On June 4, 2012, computer

WRK32587 was moved from Michael Best & Friedrich to the legislative office of Senator Scott Fitzgerald in the Capitol Building. On May 21, 2015 the hard drives from computer WRK32587 and its external hard drive HDD32575 were shredded pursuant to the established policy and procedures for disposal established by the LTSB. Ylvisaker Dep. (Dkt. 106)at 14:18-15:12, 23:7-26:17, 28:7-31:17; Tr. Ex. 183, Tr. Ex. 184 *at 12.* [Stipulated Fact 26]

25. Also on July 15, 2010, a computer coded WRK32586 was deployed to Michael Best & Friedrich for use by Adam Foltz. Computer WRK32586 was deployed with an external hard drive with the identification code of HDD32574. On September 13, 2012 computer WRK32586 was returned to the LTSB. On May 21, 2015 the hard drives from computer WRK32586 and its external hard drive HDD32574 were shredded pursuant to the established policy and procedures for disposal established by the LTSB. Ylvisaker Dep. (Dkt. 106) at 14:18-15:12, 23:7-26:17, 28:7-31:17; Tr. Ex. 183, Tr. Ex. 184 *at 12.* [Stipulated Fact 27]

26. On March 21, 2011, a third computer coded WRK32864 was deployed to Michael Best & Friedrich for use by Joseph Handrick. Computer WRK32864 was deployed with an external hard drive with the identification code of HDD32579. On June 4, 2012, computer WRK32864 was moved from Michael Best & Friedrich to the legislative office of Senator Scott Fitzgerald in the Capitol Building. On May 21, 2015 the hard drives from computer WRK32864 and its external hard drive HDD32579 were shredded pursuant to the established policy and procedures for disposal established by the LTSB. Ylvisaker Dep. (Dkt. 106) at 14:18-15:12, 23:7-26:17, 28:7-31:17; Tr. Ex. 183, Tr. Ex. 184 at 12. [Stipulated Fact 28]

a) The plan's drafters overtly expressed their partisan intent

i. <u>The drafters</u>

27. In 2011 Adam Foltz was a legislative aide to the Republican then-Speaker of the

Wisconsin Assembly. [Stipulated Fact 17]

28. In 2011 Tad Ottman was a legislative aide to Republican Majority Leader of the Wisconsin Senate. [Stipulated Fact 18]

29. In 2011 Adam Foltz and Tad Ottman worked with consultants, including Joseph Handrick and Professor Keith Gaddie as well as others, to develop a redistricting plan for Wisconsin's legislative districts. [Stipulated Fact 19]

30. In January 2011, Scott Fitzgerald, Republican member of the Wisconsin State Senate and Wisconsin Senate Majority Leader, and Jeff Fitzgerald, Republican member of the Wisconsin State Assembly and Speaker of the Assembly, hired attorney Eric McLeod ("McLeod") and the law firm of Michael Best to represent the entire Wisconsin State Senate and Wisconsin State Assembly in connection with the reapportionment of the state legislative districts after the 2010 Census. [Stipulated Fact 20]

31. On January 3, 2011, the Committee on Senate Organization approved the following motion with all three Republican members of the Committee (Senator Scott Fitzgerald, Senator Michael Ellis, and Senator Glenn Grothman) voting "Aye" and the single Democrat member (Senator Mark Miller) voting "No":

> *[MOTION] To authorize the hiring of the law firms of Michael Best & Friedrich, LLP and Troupis Law Office, LLC for services related to redistricting of legislative and congressional districts for the 2012 elections. The law firms shall perform work at the direction of the Majority Leader. This authorization includes the authority to provide the law frms with any redistricting software applications procured or developed by the Legislature that are necessary to facilitate participation in the redistricting drafting process. Upon adoption of this motion,*

the retention of the law firm of O'Neil, Cannon, Hollman, DeJong, S.C. is terminated. The Chief Clerk may pay the law firm of O'Neil, Cannon, Hollman, DeJong, S.C. for services rendered through the date on which this ballot is adopted but not for services rendered on any date thereafter."

[Stipulated Fact 21]

32. On January 4, 2011, the Assembly Organization Committee approved the following motion to:

"Authorize the Speaker of the Assembly, Jeff Fitzgerald, to retain legal counsel for the purpose of apportioning and redistricting the Legislative and Congressional Districts following the 2010 decennial Census as required by Article IV, Section 3, of the Wisconsin Constitution. Such counsel will be compensated under s. 20.765(1)(a)."

[Stipulated Fact 22]

33. On January 5, 2011, Senate Democratic Leader, Mark Miller, and Assembly Democratic Leader, Peter Barca, sent a hand-delivered letter to the Senate Majority Leader, Scott Fitzgerald, and Speaker of the Assembly, Jeff Fitzgerald, which stated as follows:

"We write today to urge you to reconsider your recent actions to retain outside, exclusive legal counsel for Republicans in the Senate and Assembly for purposes of legislative redistricting. At our inaugural just this Monday the Governor and you both spoke of working together, focusing on jobs and changing business as usual. Yet just minutes after the Senate adjourned, a paper ballot began circulating to provide a blank check for partisan legal counsel exclusive to Republicans. The Assembly Organization Committee acted yesterday to adopt a

> similar partisan political position. Your actions raise serious concerns. We can only conclude from the partisan nature of your actions that your intention is to gerrymander legislative districts to gain an unfair political advantage. Your actions are counter to the needs of the citizens of this state, who are counting on us to get to work on the issues they care about like jobs and the economy. Instead you have begun the legislative session with raw partisan politics and backroom dealing. In difficult fiscal times one of your first official actions is to give a blank check to outside lawyers for redistricting. Rather than continue down this road we ask you to join us in authorizing our Legislative Council to take on additional staff to serve the legislature in a nonpartisan fashion to meet our duty and fashion a redistricting plan. If you truly are interested in living up to the standards called for by Governor Walker and yourselves in your inaugural speeches, we ask you to rescind your actions and join us in creating a fair, responsible and frugal redistricting process."

Tr. Ex. 357.

34. On April 11, 2011, Professor Ronald Keith Gaddie entered into a Consulting Services Agreement with Michael Best & Friedrich. The agreement stated that Professor Gaddie was to serve as a consultant to Michael Best & Friedrich in connection with its representation of the Wisconsin State Senate and the Wisconsin State Assembly on "matters relating to the reapportionment of the Wisconsin Senate, Assembly and Congressional Districts arising out of the 2010 census." The agreement described Professor Gaddie's "duties" as including "service as an independent advisor on the appropriate racial and/or political make-up of legislative and congressional districts in Wisconsin," and would include "providing advice based on certain

statistical and demographic information and on election data or information." Additionally, the Consulting Services Agreement stated "Any work papers or materials prepared by you, or under your direction, belong to the Senate pursuant to the Representation, and every page must be sealed or otherwise stamped "Attorney/Client Work-Product Privilege Confidential." [Stipulated Fact 31]

ii. Establishing a partisanship analysis

35. The Consulting Services Agreement between Professor Keith Gaddie and Michael Best & Friedrich outlined that Professor Gaddie's responsibilities would includ analyzing "the appropriate . . . political make-up of legislative and congressional districts in Wisconsin," "based on . . . election data or information." Tr. Ex. 169.

36. In the course of drafting the Redistricting Plan enacted by Act 43 (the Current Plan) for Wisconsin's legislative districts, Adam Foltz, Tad Ottman and Keith Gaddie examined the past partisan performance of voters in the existing legislative districts, as well as the expected future partisan performance of voters in various configurations of potential new districts. [Stipulated Fact 29]

37. Specifically, in the course of developing the Current Plan for Wisconsin's legislative districts, Adam Foltz, Tad Ottman, and Keith Gaddie examined whether past districts were likely to vote majority Republican or majority Democratic, and whether past districts were likely to vote majority Republican or majority Democratic, and whether various configurations of potential new districts were likely to vote majority Republican or majority Democratic. [Stipulated Fact 30]

38. On April 17, 201, Keith Gaddie drafted a note to himself while he was in Madison, Wisconsin providing consulting services for the development of a redistricting plan.

The document stated in full:

> *"The measure of partisanship should exist to establish the change in the partisan balance of the district. We are not in court this time; we do not need to show that we have created a fair, balanced, or even a reactive map. But, we do need to show to lawmakers the political potential of the district.*
>
> *I have gone through the electoral data for state office and built a partisan score for the assembly districts. It is based on a regression analysis of the Assembly vote from 2006, 2008, and 2010, and it is based on prior election indicators of future election performance.*
>
> *I am also building a series of visual aides to demonstrate the partisan structure of Wisconsin politics. The graphs will communicate the top-to-bottom party basis of the state politics. It is evident, from the recent Supreme Court race and also the Milwaukee County executive contest, that the partisanship of Wisconsin is invading the ostensibly non-partisan races on the ballot this year." Gaddie Dep. (Dkt. 108) at 95:6-96:2.*

[Stipulated Fact 32]

39. On March 9, 2016, during his deposition, Keith Gaddie was asked the following question:

> *"Q: You said something to the effect that is important to understand the partisan effect. Why is it important to understand the partisan effect?"*

Professor Gaddie responded to that question:

> *"A: Well, again, I was writing as a political scientist. If you're going to redistrict it's important to understand the consequences of it. Lawmakers are going to be*

concerned about a variety of different consequences of a redistricting. The impact on their constituency, the impact on other constituencies.

If a lawmaker comes in and wants to know what you did to his district, it would be nice to be able to tell him we've got an estimate of what your district used to look like in terms of partisanship and here's what it looks like now. So this kind of technique allows us to generate a measure that you can show to somebody and explain to them, this is what we think the net electoral impact is on your constituency.

In the aggregate, it means you can look at an entire map and ascertain the extent to which you have moved the partisan balance one way or the other."

Gaddie Dep. (Dkt. 108) at 98:24-99:24.

"Q: And you use the word "potential" there. What did you mean by the word potential?

A: If you had an election in the future, how might it turn out. So when I say potential, what I'm saying is that if we ran an election, this is our best estimate of what a non-incumbent election would look like given a particular set of circumstances, depending on whether one party is stronger or weaker.

Q. And that's what your regression model was designed to do, to show that potential of the district?

A. Yeah, it was designed to tease out a potential estimated vote for the legislator in the district and then allow you to also look at that and say, okay, what if the Democrats have a good year? What if the Republicans have a good year? How does it shift? Okay?

The other thing is we know that districts don't correspond precisely to our statistical models all the time. So we're not concerned just with the crafting of the district or a point estimate of the vote. It's only an estimate. There's error. Right? There's going to be a range within which the outcome might occur.

The idea was to give to those people that were mapping, those people that were making choices, as much knowledge as we could glean about each district by giving them the most leverage on the least amount of data." Gaddie Dep. (Dkt. 108) at 100:22-102:3.

[Stipulated Fact 33]

40. On March 9, 2016, during his deposition, Keith Gaddie was asked the following question:

"Q:But a significant part of your work that you were retained to do and that you did perform in 2011 had to do with the – with building a regression model to be able to test the partisan makeup and performance of districts as they might be configured in different ways, correct?"

Professor Gaddie responded to that question:

"A: Yes, that's correct."

Gaddie Dep. (Dkt. 108) at 46:12-19. [Stipulated Fact 34]

41. Professor Gaddie identified two measures to estimate the partisan change that would occur due to redistricting:

"There are basically two ways you can measure or you can estimate a partisan change when you redistrict. One is to use what's called a reconstituted election

technique where we take either one or an index with several statewide elections, exongenous elections, which are elections that occur outside a district. Right? Higher levels of office. And we attempt to get a sense of a partisan average from that.

Or what you can do is you can take the actual election results, okay, the actual outcomes of previous elections, you turn those into a dependent variable, an outcome of interest, and then you regress using linear regression those results on these larger statewide measures.

The other thing you do is you attempt to take into account whether or not there's an incumbent running so that you can account for the incumbency impact. Again, it's been four years since I did this. But what we did is I had proposed to the map drawers that if they wanted to present a best estimate of partisan impact so the lawmakers can understand the consequence of different maps, that a regressions driven technique is the best approach. So I set about building a regression equation using data that should have been produced to generate estimates of partisanship, partisan behavior in those districts for different district proposals.

So what this – what this spreadsheet is, is the consequence of applying one of those models. If it is what I think it is, it's the consequence of applying one of those models to a map generated by a map maker where what we know is, we know the statewide election results, and we then put those data for each district into the regression equation and that gives us an estimated vote value for each district. And that's what reported here, assuming no incumbent."

Gaddie Dep. (Dkt. 108) 43:16-45:8. [Stipulated Fact 35]

iii. Creating iterations of the assembly plan

42. "WRK32586 Responsive Spreadsheets File Detail Report" is a spreadsheet with a summary of the metadata for the files contained on the hard drive WRK32586 recovered by Mark Lanterman. Tr. Ex. 225.

43. "WRK32586 Responsive Spreadsheets File Detail Report" lists File Names for spreadsheets, including "Composite_Adam_Assertive_Curve.xlsx," "Composite_Current_Curve.xlsx," "Composite_Joe_Assertive_Curve.xlsx," "Composite_Joe_Base_Curve.xlsx," and "TadAggressiveCurve.xlsx" recovered by Mark Lanterman. Tr. Ex. 225.

44. On March 9, 2016, during his deposition, Professor Gaddie was asked the following question:

"Q: Now, I note that the file name is Tad Senate Assertive Curve."

Professor Gaddie responded to that question:

"A: Yes"

Professor Gaddie was then asked:

"Q: Does that have any meaning for you?"

Professor Gaddie responded to that question:

"A: This was an aggressive map. It's an assertive map. This is a map that, indeed if you look at it, it is a map that makes an assertive move towards Republican advantage."

Gaddie Dep. (Dkt. 108) at 129:19-130:2.

45. "summaries.xlsx," a document saved on the disc Amended Lanterman Decl., Ex. B (Dkt. 97-2), and located in the "WRK32864 Responsive Spreadsheets Deduplicated file," It is a true and correct copy of a spreadsheet found by Mark Lanterman on the computer deployed to Michael Best & Friedrich for use by Joseph Handrick. Tr. Exs. 225, 283.

46. The metadata for "summaries" is shown here:

File Name	summaries.xlsx
Extension	xlsx
Created (Central)	5/25/2011 12:01:14 PM (2011-05-25 17:01:14 UTC)
Accessed (Central)	6/13/2011 5:42:11 PM (2011-06-13 22:42:11 UTC)
Modified (Central)	6/13/2011 5:42:11 PM (2011-06-13 22:42:11 UTC)
File Path	/Users/tad/Documents/summaries.xlsx
File Size	30.74 KB
Author	tad
Last Saved By	tad
Office Created Date	5/25/2011 10:50:30 AM (2011-05-25 15:50:30 UTC)
Office Last Printed Date	6/9/2011 12:50:43 PM (2011-06-09 17:50:43 UTC)
Office Last Saved Date	6/13/2011 5:42:11 PM (2011-06-13 22:42:11 UTC)
Hidden Columns or Rows	TRUE
Track Changes	FALSE
MD5 Hash Value	6271e27b44b53e67f73471b5dcf155aa

Tr. Exs. 225, 283.

47. "summaries" includes references to maps titled "Current Map" (e.g., cell AA6-7); "Base Map" (e.g., cell D6-7); "Adam Aggressive" (e.g., cell AP3-4); "Joe Assertive" (e.g., cell

AL3-4); "Tad Aggressive" (e.g., cell AN3-4); and "Team Map" (e.g., cell AJ3-4). Tr. Exs. 225, 283.

48. In the spreadsheet "summaries," "Current Map," "Team Map," "Adam Aggressive," "Joe Assertive," and "Tad Aggressive" are shown heading columns that divide 99 districts into categories, under the heading "Tale of the Tape" (cell AG1), with titles "Strong GOP (55%+)" (cell AG6); "Lean GOP (52.1-54.9%) (cell AG7); "TOTAL GOP (strong + lean)" (cell AG8); "Lean DEM (45.1-47.9%)" (cell AG14); "Strong DEM (45% and below)" (cell AG15); and "TOTAL DEM (strong + lean)" (cell AG16). Tr. Exs. 225, 283.

49. In the spreadsheet "summaries," there is a text box placed at cells AK6-12 that states "Current map: 49 seats are 50% or better. Team map: 59 Assembly seats are 50% or better." Tr. Exs. 225, 283.

50. In the spreadsheet "summaries," the section titled "Good outcomes" (cell AW2) includes the following definitions: "statistical pickup = seat that is currently held by DEM that goes to 55% or more" (cell AU18); "GOP incumbent strengthened = positive movement on composite" (cell AU21); "DEM incumbent weakened = positive GOP movement on composite" (cell AU23); and "GOP Donors = those who are helping the team" (cell AU25). Tr. Exs. 225, 283.

51. In the spreadsheet "summaries," the section titled "Bad outcomes" (cell BG2) includes the following definitions: "statistical loss = seat that is currently held by GOP that goes to 45% or below" (cell AU33); "GOP incumbent weakened = those 55% and below who have negative movement on composite" (cell AU31); "DEM incumbent strengthened = DEM over 45% who has negative movement on composite" (cell AU29); and "GOP non-donors = those over 55% who do not donate points" (cell AU36). Tr. Exs. 225, 283.

52. "summary.xlsx," a document saved on the disc Amended Lanterman Decl., Ex. B (Dkt. 97-2), and located in the "WRK32864 Responsive Spreadsheets Deduplicated file," it is a true and correct copy of a spreadsheet found by Mark Lanterman on the computer deployed to Michael Best & Friedrich for use by Joseph Handrick. Tr. Exs. 225, 284.

53. The metadata for "summary" is shown here:

File Name	summary.xlsx
Extension	xlsx
Created (Central)	6/10/2011 9:25:45 AM (2011-06-10 14:25:45 UTC)
Accessed (Central)	12/17/2011 5:13:32 PM (2011-12-17 23:13:32 UTC)
Modified (Central)	12/17/2011 5:13:32 PM (2011-12-17 23:13:32 UTC)
File Path	/Users/tad/Desktop/summary.xlsx
File Size	16.34 KB
Author	jhandric
Last Saved By	tad
Office Created Date	6/8/2011 8:29:14 PM (2011-06-09 01:29:14 UTC)
Office Last Printed Date	12/17/2011 11:54:45 AM (2011-12-17 17:54:45 UTC)
Office Last Saved Date	12/17/2011 5:13:32 PM (2011-12-17 23:13:32 UTC)
Hidden Columns or Rows	FALSE
Track Changes	FALSE
MD5 Hash Value	29b0ea1e424aaa71d59783d4bf05fd7a

Tr. Exs. 225, 284.

54. The spreadsheet "summary.xlsx" compared an iteration of the Assembly Plan along multiple partisan dimensions. Five districts (13, 15, 22, 37, and 62) are listed as "Statistical Pick Up[s]" for Republicans, or "Currently held DEM seats that move to 55% or better." Fourteen districts (21, 23, 26, 36, 42, 44, 51, 55, 68, 72, 87, 88, 93, and 96) are listed as "GOP seats strengthened a lot," or "Currently held GOP seats that start at 55% or below that improve

by at least 1%." Eleven districts (4, 5, 25, 28, 30, 34, 35, 49, 69, 75, 86) are listed as "GOP seats strengthened a little," or "Currently held GOP seats that start at 55% or below that improve less than 1%." In all five cases in which Democratic and Republican incumbents were paired, it was in districts (14, 22, 33, 60, and 61) whose partisan scores were higher than 57% Republican. And twenty Republican legislators were identified as "GOP Donors to the Team," or "Incumbents with numbers above 55% that donate to the team" by allowing their districts to be made less safe. Tr. Exs. 225, 284.

iv. Statements about partisan intent by the plans' drafters

55. In early July 2011, Ottman prepared notes for remarks he delivered to the Republican caucus in the Legislature. These notes stated, "The maps we pass will determine who's here 10 years from now." They added, "We have an opportunity and an obligation to draw these maps that Republicans haven't had in decades." Tr. Ex. 241.

56. Also in early July 2011, Ottman prepared notes for the public hearing that was held on July 13. One of the questions he anticipated was "What is the partisan makeup of these districts?" His planned response was:

> "The election data for the last 10 years was made available by the Government Accountability Board to the Legislature. All four caucuses were provided this information along with the hardware and software to use it. Everyone has the ability todraw their own conclusions and interpret how past elections may play out in the newdistricts. But no one has a crystal ball that will tell you how elections may play out inthese districts next year, or 10 years from now when these districts will still be in effect. 10 years ago, different experts reached different conclusions about the proposed maps."

Another question Ottman anticipated was "Why were Republican Attorneys hired to draw maps but Democrats were not allowed attorneys to draw maps?" His planned response was:

> "Attorneys did not draw these maps. Staff drew them. Attorneys merely advised on the legal principles that have to be followed. Your staff has had all the same hardware, software and data available to them for over a year. The census data has been available since the end of March. I don't know what your staff has been doing with all that equipment and data. Our staff has been working on this bill."

Tr. Ex. 237.

57. *Page 62 of 63 in document 156-1 filed on 2/14/12 in Baldus v Brennan, 2:11-cv-00562-JPS-DPW-RMD is a true and correct copy of an email from Tad Ottman to Jim Troupis, Raymond Taffora, Eric M McLeod, and Adam Foltz, sent on July 12, 2011 at 10:00PM with the subject line "Hearing memos" and attaching "sb148 committee memos.docx."* [Stipulated Fact 92]

58. Page 62 of 63 in document 156-1 filed on 2/14/12 in *Baldus v Brennan*, 2:11-cv-00562-JPS-DPW-RMD states as follows:

> Attached is most of the information for the memos for the hearing tomorrow.
>
> Adam will be sending another sheet. The idea is to print each section as a separate memo and lable them SB 148 MEMO 1 through X.
>
> One thing I would recommend changing is the enumeration of the County splits, since it doesn't tell a great story and there is not information from 10 years ago to compare it to. The municipal splits are a better comparison and a higher priority.
>
> The other attachment that isn't provided here is the summary of population changes and deviations. This is simply a printout from the LRB analysis that we

will submit.

Let us know if there is further information you think needs to be prepared for the committee."

Tr. Ex. 362.

59. Adam Foltz, Joseph W. Handrick, and Tad Ottman did not save any compactness analyses for the draft maps they drew, and did not receive any such analyses from Gaddie until the end of the drafting process. Foltz Dep. (Dkt. 113) at 49:23-50:14; Gaddie Dep. (Dkt. 108) at 239:23-240:5; Ottman Dep. (Dkt. 118) at 43:3-44:17.

60. "TROUPISLAWOFFICE000091.PDF" is a true and correct copy of an email sent by Joseph W. Handrick to Adam Foltz, Tad Ottman, Raymond P. Taffora, Jim Troupis, and Cced to Eric M. McLeod on July 20, 2011, with the subject line "from Wispolitics" produced by the Legislature in *Baldus v. Brennan*, 2:11-cv-00562-JPS-DPW-RMD.

61. TROUPISLAWOFFICE000091.PDF includes the following statements "State Rep. Fred Kessler says his analysis of GOP plan to redistrict Assembly lines suggests Republicans would have a built-in 59-40 advantage in a normal election" and "'In a landslide, we could win 50 seats,' Kessler said. 'In a normal year, we're going to get 40.'"

62. "Handrick000352" is a true and correct copy of an email from Tad Ottman to Joseph W. Handrick and Cced to Adam Foltz, on Wednesday August 3, 2011 with the subject line "Re:." The email refers to a congressional map at the link: http://www.redracinghorses.com/diary/516/wicked-republican-gerrymander-of-wi. The text of Ottman's email states "That is impressive. When are you coming to build it?" Tr. Ex. 346.

63. "Foltz001075" is a true and correct copy of a chart prepared by Adam Foltz in 2011. [Stipulated Fact 98]

64. "Foltz001075" sets out the population deviations for the seats that were held following the 2010 elections by the "GOP," by "Indp" and by "Dem" in separate categories. [Stipulated Fact 99]

65. In Foltz001075 the population of each district is color coded such that green indicates overpopulation and red indicates underpopulation. Tr. Ex. 363.

66. Page 21-22 of 63 in Doc. 156-1, produced by the Legislature in *Baldus v. Brennan*, 2:11-cv-00562-JPS-DPW-RMD is a true and correct copy of a Privileged/Confidential memo from Jim Troupis to Tad Ottman & Adam Foltz and Cced to Eric McLeod, dated December 15, 2011 with the subject "Map Evaluation."

67. Page 21-22 of 63 in Doc. 156-1, filed by Legislature in *Baldus v. Brennan*, 2:11-cv-00562-JPS-DPW-RMD includes a statement: "Note: When there are other issues about criteria, e.g. political gerrymandering & race, will will want to make sure that those districts that may be most questioned meet Population criteria as closely as possible." It also includes a summary of topics under a heading "Political Change:" "a.) Determination of Political criteria applied b.) Incumbent protection who is and is not protected/jeopardized c.) Alternative political criteria applied d.) R pairs/D pairs-what number? Is it a leader? e.) Defense showing that D's can still win a majority-i.e. sufficient districts in the winnable category."

68. On March 31, 2016 Ottman testified in a deposition that:

"In evaluating the districts that became part of Act 43, we looked at partisan data as part of our evaluation of the maps."

. . .

"The partisan considerations came into play in evaluating what we had drawn."

. . .

"We used . . . the partisan analysis to evaluate what had been drawn."

. . .

"The partisan scores were something that we used to evaluate the maps."

Ottman Dep. (Dkt. 118) at 47:21-23, 49-3-4, 50:2-3, 62:13-16.

b) The plan's drafters painstakingly assessed its partisan effects

i. Establishing partisan baseline data

69. Ottman000118.PDF, produced by the Legislature in *Baldus v. Brennan*, 2:11-cv-00562-JPS-DPW-RMD, is a true copy of a series of emails between Andy Speth, a staffer for Congressman Paul Ryan, and Tad Ottman, between April 5 and April 17, 2011 with the subject "Elections data." Tr. Ex. 238.

70. Ottman000118.PDF includes an email from Andy Speth to Tad Ottman on April 5, 2011 at 3:42 PM stating "Again excuse my ignorance if I am asking the wrong questions and please set me straight if I am. Which set of data and what races should I be using to create our political baseline numbers? I want to make sure we are using exactly the same data and races to draw our districts as you are." The response to that email came from Tad Ottman on April 5, 2011 at 3:45 PM stating "Not a problem. We are using a shorthand that appears to work, with the caveat that we are scheduling our political expert to come in and see if he agrees or would recommend different races. For now, we are using a 3-race composite of GOP Presidential in 2008 and 2004 plus Attorney General for 2010. I'll let you know if that changes for any reason." Tr. Ex. 238.

71. ADAMFOLZSUPPPROD000489.PDF is a true and correct copy of an email chain between Professor Gaddie and Joseph Handrick, forwarded to Adam Foltz and Tad

Ottman, all dated between April 19 and April 20, 2011 with the subject lines "Milwaukee county elections" and "from prof gaddie." Tr. Ex. 175

72. ADAMFOLZSUPPPROD000489.PDF includes an email from Joseph Handrick to Professor Gaddie dated April 19, 2011 at 9:33 PM, stating:

> "We looked at the different combos today.
>
> The 2006 and 2010 races combined tile too much to the GOP. I thought 06 and 10 would balance but they don't. The northern seats were especially out of whack.
>
> So I had Tad do a composite with the 2006 and 2010 state races and all the federal races from 04 to 2010 (in other words, all statewide races from 04 to 2010). This seems to work well both in absolute terms as well as seats in relation to each other."

Tr. Ex. 175.

73. ADAMFOLZSUPPPROD000489.PDF includes an email reply from Professor Gaddie to Joseph Handrick dated April 20, 2011 at 3:47 AM, stating:

> Hey Joe-
>
> "I went ahead and ran the regression models for 2006, 2008, and 2010 to generate open seat estimates on all of the precincts. They (sic) expected GOP open seat assembly vote using the equations correlates at .96 with the 2004-2010 composite, and at a .93 level with the 2006-2010 state constitutional office composite. Both of them are running a little strong relative to one cluster of precincts – I'll look and see if they are up north.
>
> But, at this point, if you asked me, the power of the relationships indicates that the partisanship proxy you are using (all races) is an almost perfect proxy for the open seat vote, and the best proxy you'll come up with.

> This seems to pretty much wraps (sic) up the partisanship measure debate.
>
> Have Jim call me if he needs anything. Otherwise, I'll be tweaking the polarization analysis.
>
> Best
>
> Keith

Tr. Ex. 175, Gaddie Dep. (Dkt. 108) at 198:25-200:10.

74. Reassured by Gaddie that their composite measure was extremely highly correlated with the open seat baseline produced by his regression model, Foltz, Handrick, and Ottman used this composite in all of their subsequent analyses of draft plans. Foltz Dep. (Dkt. 113) at 80:19-21, 97:6-98:21; Ottman Dep. (Dkt. 118) at 73:10-17.

75. The composite was calculated at the ward level, thus enabling partisanship scores to be generated for each draft district based on the wards it contained. Wisconsin_Election_Data.xlsx, Tr. Ex. 225; Ottman Dep. (Dkt. 118) at 74:6-75:16.

76. At his deposition, Gaddie described Foltz, Handrick, and Ottman's methodology: They "use[d] what's called a reconstituted election technique where we take . . . several statewide elections, exogenous elections, which are elections that occur outside a district. And we attempt to get a sense of a partisan average from that." Gaddie Dep. (Dkt.108) at 43:18-15.

ii. Analyzing plans using partisan baseline data: district-by-district spreadsheets

77. Using the composite, Foltz, Handrick, and Ottman designed and then assessed a series of draft plans. Foltz Dep. (Dkt. 113) at 102:4-9; Ottman Dep. (Dkt. 118) at 61:4-62:5.

78. "joe base map numbers.xlsx" is a document saved on the disc Amended Lanterman Decl., Ex. B (Dkt. 97-2), and located in the "WRK32864 Responsive Spreadsheets Deduplicated file," and is a true and correct copy of a spreadsheet found by Mark Lanterman on the computer deployed to Michael Best & Friedrich for use by Joseph Handrick. Amended Lanterman Decl., Ex. B (Dkt. 97-2). [Stipulated Fact 36]

79. The metadata for "joe base map numbers" is shown here:

File Name	*joe base map numbers.xlsx*
Extension	*xlsx*
Created (Central)	*4/11/2011 5:09:21 PM (2011-04-11 22:09:21 UTC)*
Accessed (Central)	*5/12/2011 7:06:05 PM (2011-05-13 00:06:05 UTC)*
Modified (Central)	*5/12/2011 7:06:05 PM (2011-05-13 00:06:05 UTC)*
File Path	*/Users/tad/Documents/joe base map numbers.xlsx*
File Size	*22.91 KB*
Author	*tad*
Last Saved By	*tad*
Office Created Date	*4/11/2011 4:35:26 PM (2011-04-11 21:35:26 UTC)*
Office Last Printed Date	*5/12/2011 7:04:21 PM (2011-05-13 00:04:21 UTC)*
Office Last Saved Date	*5/12/2011 7:06:05 PM (2011-05-13 00:06:05 UTC)*
Hidden Columns or Rows	*FALSE*
Track Changes	*FALSE*
MD5 Hash Value	*9697f259cb6de2e7e838a4de973f2481*

Amended Lanterman Decl., Ex. B (Dkt. 97-2), "WRK32684 Responsive Spreadsheets File Detail Report."[Stipulated Fact 37]

80. The "joe base map numbers" spreadsheet lists district-by-district partisanship scores developed by Handrick, Foltz, and Ottman. Gaddie Dep. (Dkt. 108) at 40:12-24, 223:7-12. [Stipulated Fact 38]

81. The "joe base map numbers" spreadsheet lists district-by-district partisan scores, for three Assembly district plans: the "current map," "basemap BASIC," and "basemap

assertive." Amended Lanterman Decl., Ex. B (Dkt. 97-2), "WRK32864 Responsive Spreadsheets Deduplicated file." [Stipulated Fact 39]

82. "TADOTTMANSUPPPROD000094" is a true and correct copy of a spreadsheet created by Tad Ottman in 2011 and produced to the Court as part of the Legislature's Supplemental Production in Baldus v. Brennan (2:11-cv-00562-JPS-DPW-RMD; dated January 10, 2012). [Stipulated Fact 40]

83. "TADOTTMANSUPPPROD000094" lists district-by-district partisan scores developed by Handrick, Foltz, and Ottman. Gaddie Dep. (Dkt. 108) at 40:12-24, 223:7-12. [Stipulated Fact 41]

84. "TADOTTMANSUPPPROD000097" is a true and correct copy of a spreadsheet created by Tad Ottman in 2011 and produced to the Court as part of the Legislature's supplemental production in Baldus v. Brennan (2:11-cv-00562-JPS-DPW-RMD; dated January 10, 2012). [Stipulated Fact 42]

85. "TADOTTMANSUPPPROD000097" lists partisan scores developed by Handrick, Foltz, and Ottman. Gaddie Dep. (Dkt. 108) at 40:12-24, 223:7-12. [Stipulated Fact 43]

86. "Plancomparisons.xlsm," a document saved on the disc Amended Lanterman Decl., Ex. B (Dkt. 97-2), and located in the WRK32864 Responsive Spreadsheets Deduplicated file, is a true and correct copy of a spreadsheet found by Mark Lanterman on the computer deployed to Michael Best & Friedrich for use by Joseph Handrick. [Stipulated Fact 44]

87. The metadata for "PlanComparisons" is shown here:

File Name	*PlanComparisons.xlsm*
Extension	*xlsm*
Created (Central)	*5/13/2011 12:58:51 PM (2011-05-13 17:58:51 UTC)*

Accessed (Central)	*7/14/2011 1:32:51 PM (2011-07-14 18:32:51 UTC)*
Modified (Central)	*7/14/2011 1:32:51 PM (2011-07-14 18:32:51 UTC)*
File Path	*/Users/tad/Desktop/PlanComparisons.xlsm*
File Size	*69.10 KB*
Author	*afoltz*
Last Saved By	*tad*
Office Created Date	*5/2/2011 6:13:18 PM (2011-05-02 23:13:18 UTC)*
Office Last Printed Date	*6/15/2011 3:28:17 PM (2011-06-15 20:28:17 UTC)*
Office Last Saved Date	*7/14/2011 1:32:51 PM (2011-07-14 18:32:51 UTC)*
Hidden Columns or Rows	*FALSE*
Track Changes	*FALSE*
MD5 Hash Value	*8d0b9118f01010be5b553b0306e60037*

Amended Lanterman Decl., Ex. B (Dkt. 97-2), "WRK32684 Responsive Spreadsheets File Detail Report."[Stipulated Fact 45]

88. The "PlanComparisons" spreadsheet lists district-by-district partisan scores developed by Handrick, Foltz, and Ottman. Gaddie Dep. (Dkt. 108) at 40:12-24, 223:7-12. [Stipulated Fact 46]

89. The "PlanComparisons" spreadsheet lists district-by-district partisan proxy scores for four Assembly district plans: each tab includes an identical column for a "Current" plan, and there are three tabs labeled as "Joe Aggressive," "Joe Aggressive (2)," and "TeamMap 6-15-11." Amended Lanterman Decl., Ex. B (Dkt. 97-2), "WRK32864 Responsive Spreadsheets Deduplicated file." Gaddie Dep. (Dkt. 108) at 215:22-217-20. [Stipulated Fact 47]

90. A spreadsheet labeled "Final Map" is a true and correct copy of a spreadsheet created by Adam Foltz. Gaddie Dep. (Dkt. 108), Ex. 39 at 3; Foltz. Dep. (Dkt 109) at 128:14-16. [Stipulated Fact 48]

91. The metadata associated with the "Final Map" is written on Exhibit 39, as follows:

"Plan Comparisons.xlsm"

created 5/9/11 5:39PM

accessed 4/27/12 4:50PM

modified 4/27/12 4:50PM

file path: /users/afoltz/Desktop/projects/PlanComparisons.xlsm

Gaddie Dep. (Dkt. 108), Ex. 39 at 1; Amended Lanterman Decl., Ex. B (Dkt. 97-2). [Stipulated Fact 49]

92. The "Final Map" spreadsheet lists district-by-district partisan scores developed by Handrick, Foltz, and Ottman. Gaddie Dep. (Dkt. 108) at 40:12-24, 223:7-12. [Stipulated Fact 50]

93. The spreadsheets shown in "joe base map numbers," "PlanComparisons," TADOTTMANSUPPPROD000094," "TADOTTMANSUPPPROD000097," and "Final Map" all include district-by-district partisan scores for both the "current map" and a different version of a potential future plan. Gaddie Dep. (Dkt. 108) 220:25-221:13. [Stipulated Fact 51]

94. The "current map," referred to in "joe base map numbers," "PlanComparisons," TADOTTMANSUPPPROD000094," "TADOTTMANSUPPPROD000097," and "Final Map," denotes the existing map, the maps as constituted in the State of Wisconsin before the 2012 re-map. Gaddie Dep. (Dkt. 108), 234:22-24. [Stipulated Fact 52]

95. The district-by-district partisan scores for the "Current map" column in "joe base map numbers," and the "Current" column for the Assembly in "PlanComparisons," "TADOTTMANSUPPPROD000094," "TADOTTMANSUPPPROD000097," and "Final Map" are identical for all 99 districts. [Stipulated Fact 53]

96. "joe base map" is a document saved on the disc Amended Decl. of Lanterman, Ex. B (Dkt. 97-2), and located in the WRK32864 Responsive Spreadsheets Deduplicated file, and is a true and correct copy of a spreadsheet found by Mark Lanterman on the computer deployed to Michael Best & Friedrich for use by Joseph Handrick. Amended Lanterman Decl., Ex. B (Dkt. 97-2). [Stipulated Fact 54]

97. The district-by-district partisan scores for the "base map BASIC" columns (colums F and P) in "joe base map numbers" are identical to the district-by-district partisan scores listed in the column"ALL0410" (colum AU) in "joe base map." [Stipulated Fact 55]

98. The spreadsheets listing district-by-district partisan scores for all 99 Assembly and all 33 Senate districts include partisan composite scores (under the 2000s plan), their "New" scores (under the draft plan), and the "Delta" between the "Current" and "New" scores. The spreadsheets also included tables showing how the "Current Map" and "New Map" performed in terms of "Safe GOP (55%+)," "Lean GOP (52.1-54.9%)," "Swing (48-52%)," "Lean DEM (45.1-47.9%)," and "Safe DEM (-45%)" Assembly and Senate districts. Tr. Ex. 366, Foltz Dep. (Dkt. 113) at 129:13-142:7, 177:12-20 Ottman Dep. (Dkt. 118) at 99:1-103:15.

iii. Analyzing plans using partisan baseline data: S-Curves

99. Professor Gaddie produced "S-curves" for draft Assembly redistricting plans prepared by Adam Foltz, Tad Ottman, and Joe Handrick. Gaddie Dep. (Dkt. 108) at 126:2-10. [Stipulated Fact 57]

100. According to Professor Gaddie, "if you simply looked at it visually it would create something resembling . . . an S curve. You could see the point at which a party got stronger or weaker, the possibility of its district tipping in one direction or another." Gaddie Dep. (Dkt. 108) at 45:1-14, 126:18-129:18.

101. Professor Gaddie agreed "with Joe Handrick to provide these types of spreadsheets to Adam Foltz, to himself and Adam Foltz and Tad Ottman, for the legislature in the drafting process. So one thing we do, they would create a map, then there would be part -- there's electoral history data attached to it. Those data were used to generate spreadsheets of this sort that indicated how a district would perform on a partisan measure under different scenarios." Gaddie Dep. (Dkt. 108) at 40:14-24. [Stipulated Fact 58]

102. S-curves show "based upon an expected statewide vote for one party or the other which seats are going to tend more Democratic shaded in blue, more Republican shaded in red. Light blue means that they're Democratic tending, but competitive. Orange means they're Republican tending but competitive." Gaddie Dep. (Dkt. 108) at 128:10-16. [Stipulated Fact 59]

103. Professor Gaddie colored safe Republican districts (over 55% Republican) in red, Republican-leaning districts (50-55% Republican) in orange, Democratic-leaning districts (45-50% Republican) in teal, and safe Democratic districts (below 45% Republican) in blue. Gaddie Dep. (Dkt. 108) at 128:10-16.

104. Professor Gaddie's "uniform swing" analysis is meant to show the durability of a gerrymander, that is, whether it retains its partisan tilt even if the state's electoral environment changes. Gaddie Dep. (Dkt. 108) at 107:2-8.

105. S-Curves show "as you move the value of the vote for one party either up or down, you can see the responsiveness of the districts and how they shift and the number of seats that come into play for one party or fall away." Gaddie Dep. (Dkt. 108) at 129:6-11. [Stipulated Fact 60]

106. S-curves provide "a visualization of both the distribution of partisanship in the districts and the sensitivity of individual districts to changes and partisan strength across the

state, assuming that the entire state shifts in the same direction one way or the other." Gaddie Dep. (Dkt. 108) at 129:12-18. [Stipulated Fact 61]

c) The size and durability of the Republican advantage increased steadily over drafts of the plan

i. Increasing Republican advantage: district-by-district partisan analysis

107. The partisan scores for the 99 districts under the "current map" in "joe base map numbers," show that the Republican Party was predicted to receive a statewide vote share of 48.2% and receive 49.5% of the Assembly seats, yielding a 3% efficiency gap. Tr. Ex. 225.

108. The partisan scores for the 99 districts under the columns for "basemap BASIC" in the spreadsheet "joe base map numbers" show that the Republican Party was predicted to receive a statewide vote share of 48.6% and receive 52.5% of the Assembly seats, yielding a 5.4% efficiency gap. Tr. Ex. 225.

109. The partisan scores for the 99 districts under the columns for "basemap assertive" in the spreadsheet "joe base map numbers" show that the Republican Party was predicted to receive a statewide vote share of 48.6% and receive 56.6% of the Assembly seats, yielding a 9.4% efficiency gap. Tr. Ex. 225.

110. The partisan scores for the 99 districts under the column "New" in the spreadsheet "TADOTTMANSUPPPROD000094," titled "Tad MayQandD" show that the Republican Party was predicted to receive a statewide vote share of 48.6% and receive 57.6% of the Assembly seats, yielding a 10.4% efficiency gap. Tr. Ex. 364.

111. The partisan scores for the 99 districts under the column "New" in the spreadsheet "TADOTTMANSUPPPROD000097," titled "Joe Assertive" show that the Republican Party was

predicted to receive a statewide vote share of 48.6% and receive 58.6% of the Assembly seats, yielding a 11.5% efficiency gap. Tr. Ex. 366.

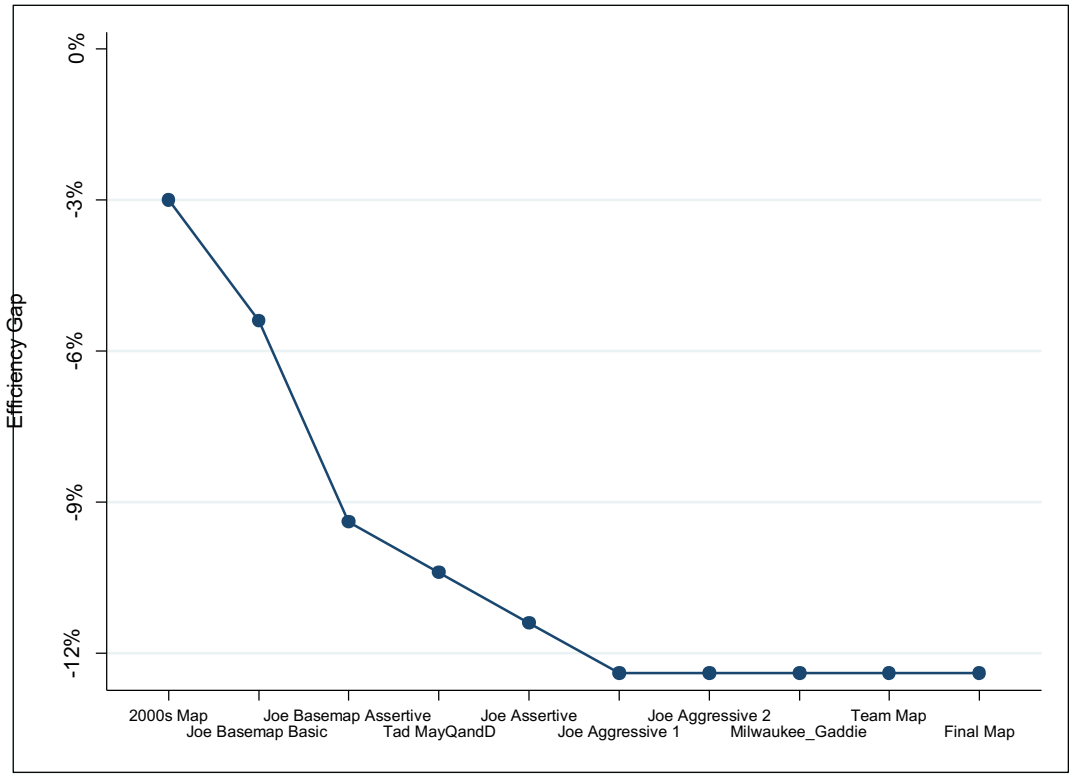
112. The partisan scores for the 99 districts under the columns for "Joe Aggressive" in the spreadsheet "PlanComparisons" show that the Republican Party was predicted to receive a statewide vote share of 48.6% and receive 59.6% of the Assembly seats, yielding a 12.4% efficiency gap. Tr. Exs. 172, 225.

113. The partisan scores for the 99 districts under the columns for "Joe Aggressive (2)" in the spreadsheet "PlanComparisons" show that the Republican Party was predicted to receive a statewide vote share of 48.6% and receive 59.6% of the Assembly seats, yielding a 12.4% efficiency gap. Tr. Exs. 172, 225.

114. The partisan scores for the 99 districts under the columns for "TeamMap 6-15-11" in the spreadsheet "PlanComparisons" show that the Republican Party was predicted to receive a statewide vote share of 48.6% and receive 59.6% of the Assembly seats, yielding a 12.4% efficiency gap. Tr. Exs. 172, 225.

115. The partisan scores for the 99 districts under the columns for "Final Map" show that the Republican Party was predicted to receive a statewide vote share of 48.6% and receive 59.6% of the Assembly seats, yielding a 12.4% efficiency gap. Gaddie Dep. (Dkt. 108), Ex. 39 at 3, Tr. Exs. 172, 225.

116. The efficiency gap scores for the district-by-district spreadsheets are summarized in the chart below:



Tr. Exs. 225, 263-282.

117. "Final Map" was "probably the final map," and at minimum, "it's a safe assumption that [the map is] very near the completion of the process." Foltz Dep. (Dkt. 113) at 140:6-11, referring to Gaddie Dep. (Dkt. 108), Ex 39 at 3. [Stipulated Fact 56]

ii. Increasing Republican advantage: S-Curves

118. For each of these S-Curves, plaintiffs calculated the efficiency gap (using the simplified method) for the benchmark column, which assumed a Republican statewide vote share of about 49%, as well as for the All_46, All_47, All_48, All_50, All_51, and All_52 columns, which shifted this vote share by up to three percentage points in either direction. This sensitivity testing indicates how the plans were expected to perform under conditions including those of 2012 (which corresponded almost perfectly to the 49% benchmark), 2014 (a good Republican

year very close to All_52), and 2008 (a good Democratic year very close to All_46). Tr. Exs. 225, 263-282.

119. Professor Gaddie's sensitivity testing was somewhat less sophisticated than Professor Mayer's, since it assumed that seats would remain open throughout the decade. Mayer Rpt. (Dkt. 95) at 25-29.

120. "Composite_Current_Curve.xlsx" is located in the WRK32586 Responsive Spreadsheets Deduplicated file, and is a true and correct copy of an "S-Curve" found by Mark Lanterman on the computer deployed to Michael Best & Friedrich for use by Adam Foltz. Amended Lanterman Decl., Ex. B (Dkt. 97-2). [Stipulated Fact 62]

121. The metadata for "Composite_Current_Curve" is as follows:

File Name	*Composite_Current_Curve.xlsx*
Extension	*xlsx*
Created (Central)	*5/28/2011 12:03:01 PM (2011-05-28 17:03:01 UTC)*
Accessed (Central)	*6/1/2011 11:48:33 AM (2011-06-01 16:48:33 UTC)*
Modified (Central)	*6/1/2011 11:48:33 AM (2011-06-01 16:48:33 UTC)*
File Path	*/Users/afoltz/Desktop/Projects/Composite_Current_Curve.xlsx*
File Size	*447.98 KB*
Author	*Ronald Keith Gaddie*
Last Saved By	*afoltz*
Office Created Date	*5/28/2011 8:12:17 AM (2011-05-28 13:12:17 UTC)*
Office Last Printed Date	*6/1/2011 10:46:26 AM (2011-06-01 15:46:26 UTC)*
Office Last Saved Date	*6/1/2011 11:48:33 AM (2011-06-01 16:48:33 UTC)*
Hidden Columns or Rows	*FALSE*
Track Changes	*FALSE*
MD5 Hash Value	*2acd25783c0be60bbe563ab324024556*

Amended Lanterman Decl., Ex. B (Dkt. 97-2), "WRK32586 Responsive Spreadsheets File Detail Report."[Stipulated Fact 63]

122. In "Composite_Current_Curve," the total number of seats for which Republicans have a baseline over 50% using Professor Gaddie's regression model for statewide Republican vote shares between 46% and 52% is as follows:

46%	***47%***	***48%***	***49%***	***50%***	***51%***	***52%***
36	*42*	*46*	*53*	*58*	*62*	*64*

Amended Lanterman Decl., Ex. B (Dkt. 97-2).[Stipulated Fact 64]

123. The efficiency gaps associated with each statewide baseline from 46 to 52 in "Composite_Current_Curve" are shown in the following table:

Statewide Baseline	**46%**	**47%**	**48%**	**49%**	**50%**	**51%**	**52%**
No. of Seats	36	42	46	53	58	62	64
Seat Share	36.40%	42.40%	46.50%	53.50%	58.60%	61.60%	64.60%
Vote Share	45.80%	46.80%	47.80%	48.90%	49.80%	50.80%	51.80%
Efficiengcy Gap	5.10%	1.10%	1.00%	5.80%	9.10%	10.10%	11.10%

Tr. Exs. 225, 264, 273.

124. "Composite_Adam_Assertive_Curve" is located in the WRK32586 Responsive Spreadsheets Deduplicated file, and is a true and correct copy of an "S-Curve" found by Mark Lanterman on the computer deployed to Michael Best & Friedrich for use by Adam Foltz. Tr. Exs. 225, 263, 272.

125. The meta data for "Composite_Adam_Assertive_Curve" is as follows:

File Name	Composite_Adam_Assertive_Curve.xlsx
Extension	xlsx
Created (Central)	5/28/2011 3:50:09 PM (2011-05-28 20:50:09 UTC)
Accessed (Central)	5/28/2011 3:50:09 PM (2011-05-28 20:50:09 UTC)
Modified (Central)	5/28/2011 3:50:09 PM (2011-05-28 20:50:09 UTC)

File Path	/Users/afoltz/Desktop/Projects/Composite_Adam_Assertive_Curve.xlsx
File Size	443.96 KB
Author	Ronald Keith Gaddie
Last Saved By	afoltz
Office Created Date	5/28/2011 8:12:17 AM (2011-05-28 13:12:17 UTC)
Office Last Printed Date	
Office Last Saved Date	5/28/2011 3:50:09 PM (2011-05-28 20:50:09 UTC)
Hidden Columns or Rows	FALSE
Track Changes	FALSE
MD5 Hash Value	d296682bae3657016cf06ab5271ebba2

Tr. Exs. 225, 263, 272.

126. In "Composite_Adam_Assertive_Curve," the total number of seats expected for Republicans for statewide vote shares between 46% and 52% is as follows:

46%	**47%**	**48%**	**49%**	**50%**	**51%**	**52%**
46	48	51	54	56	47	60

Tr. Exs. 225, 263, 272.

127. The efficiency gaps associated with each statewide baseline from 46 to 52 in "Composite_Adam_Assertive_Curve" are shown in the following table:

Statewide Baseline	**46%**	**47%**	**48%**	**49%**	**50%**	**51%**	**52%**
No. of Seats	46	48	51	54	56	47	60
Seat Share	46.50%	48.50%	51.50%	54.50%	56.60%	57.60%	60.60%
Vote Share	46.10%	47.10%	48.10%	49.20%	50.10%	51.10%	52.10%
Efficiency Gap	-4.20%	-4.30%	-5.30%	-6.10%	-6.30%	-5.40%	6.40%

Tr. Exs. 225, 263, 272.

128. "Composite_Joe_Assertive_Curve.xlsx" is located in the WRK32586 Responsive Spreadsheets Deduplicated file, and is a true and correct copy of an "S-Curve" found by Mark Lanterman on the computer deployed to Michael Best & Friedrich for use by Adam Foltz. Amended Lanterman Decl., Ex. B (Dkt. 97-2). [Stipulated Fact 65]

129. The metadata for "Composite_Joe_Assertive_Curve" is as follows:

File Name	*Composite_Joe_Assertive_Curve.xlsx*
Extension	*xlsx*
Created (Central)	*5/28/2011 12:03:01 PM (2011-05-28 17:03:01 UTC)*
Accessed (Central)	*5/28/2011 12:49:55 PM (2011-05-28 17:49:55 UTC)*
Modified (Central)	*5/28/2011 12:49:56 PM (2011-05-28 17:49:56 UTC)*
File Path	*/Users/afoltz/Desktop/Projects/Composite_Joe_Assertive_Curve.xlsx*
File Size	*440.42 KB*
Author	*Ronald Keith Gaddie*
Last Saved By	*afoltz*
Office Created Date	*5/28/2011 8:12:17 AM (2011-05-28 13:12:17 UTC)*
Office Last Printed Date	
Office Last Saved Date	*5/28/2011 12:49:56 PM (2011-05-28 17:49:56 UTC)*
Hidden Columns or Rows	*FALSE*
Track Changes	*FALSE*
MD5 Hash Value	*4a25a4cc8403f9c9ffb61b1eb0bb0de5*

Amended Lanterman Decl., Ex. B (Dkt. 97-2), "WRK32586 Responsive Spreadsheets File Detail Report." [Stipulated Fact 66]

130. In "Composite_Joe_Assertive_Curve," the total number of seats for which Republicans have a baseline over 50%, using Professor Gaddie's regression model, for statewide Republican vote shares between 46% and 52% is as follows:

46%	***47%***	***48%***	***49%***	***50%***	***51%***	***52%***
44	*50*	*55*	*58*	*60*	*62*	*63*

Amended Lanterman Decl., Ex. B (Dkt. 97-2). [Stipulated Fact 67]

131. The efficiency gaps associated with each statewide baseline from 46 to 52 in "Composite_Joe_Assertive_Curve" are shown in the following table:

Statewide Baseline	**46%**	**47%**	**48%**	**49%**	**50%**	**51%**	**52%**
No. of Seats	44	50	55	58	60	62	63
Seat Share	44.40%	50.50%	55.60%	58.60%	60.60%	62.60%	63.60%
Vote Share	45.50%	46.50%	47.50%	48.60%	49.50%	50.50%	51.50%
Efficiency Gap	-3.50%	-7.60%	-10.60%	-11.50%	-11.70%	-11.70%	-10.70%

Tr. Exs. 225, 265, 274.

132. "TadAggressiveCurve" is located in the "WRK32586 Responsive Spreadsheets Deduplicated" file, and is a true and correct copy of an "S-Curve" found by Mark Lanterman on the computer deployed to Michael Best & Friedrich for use by Adam Foltz. Tr. Exs. 225, 267, 280.

133. The metadata for "TadAggressiveCurve" is as follows:

File Name	TadAggressiveCurve.xlsx
Extension	xlsx
Created (Central)	5/27/2011 4:40:20 PM (2011-05-27 21:40:20 UTC)
Accessed (Central)	5/27/2011 4:40:20 PM (2011-05-27 21:40:20 UTC)
Modified (Central)	5/27/2011 4:40:20 PM (2011-05-27 21:40:20 UTC)
File Path	/Users/afoltz/Desktop/Projects/TadAggressiveCurve.xlsx
File Size	26.67 KB
Author	afoltz
Last Saved By	afoltz
Office Created Date	5/27/2011 2:33:01 PM (2011-05-27 19:33:01 UTC)
Office Last Printed Date	5/27/2011 2:47:16 PM (2011-05-27 19:47:16 UTC)
Office Last Saved Date	5/27/2011 4:40:20 PM (2011-05-27 21:40:20 UTC)
Hidden Columns or Rows	FALSE
Track Changes	FALSE

MD5 Hash Value	15df088c8176b9bee4ef196786f92285

Tr. Exs. 225, 267, 280.

134. In "TadAggressiveCurve," the total number of seats expected for Republicans for statewide vote shares between 46% and 52% is as follows:

46%	**47%**	**48%**	**49%**	**50%**	**51%**	**52%**
44	51	57	57	59	60	62

Tr. Exs. 225, 267, 280.

135. The efficiency gaps associated with each statewide baseline from 46 to 52 in "TadAggressiveCurve" are shown in the following table:

Statewide Baseline	**46%**	**47%**	**48%**	**49%**	**50%**	**51%**	**52%**
No. of Seats	46	48	51	54	56	47	60
Seat Share	44.40%	51.50%	57.60%	57.60%	59.60%	60.60%	62.60%
Vote Share	45.50%	46.50%	48.50%	48.60%	49.50%	50.50%	51.50%
Efficiency Gap	-3.50%	-8.60%	-10.60%	-10.40%	-10.60%	-9.60%	-9.70%

Tr. Exs. 225, 267, 280.

136. "Team_Map_Curve.xlsx" is located in the WRK32586 Responsive Spreadsheets Deduplicated file, and is a true and correct copy of an "S-Curve" found by Mark Lanterman on the computer deployed to Michael Best & Friedrich for use by Adam Foltz. Amended Lanterman Decl., Ex. B (Dkt. 97-2). [Stipulated Fact 68]

137. The metadata for "Team_Map_Curve" is as follows:

File Name	*Team_Map_Curve.xlsx*
Extension	*xlsx*
Created (Central)	*6/14/2011 1:56:03 PM (2011-06-14 18:56:03 UTC)*
Accessed (Central)	*6/14/2011 1:56:03 PM (2011-06-14 18:56:03 UTC)*
Modified (Central)	*6/14/2011 1:56:03 PM (2011-06-14 18:56:03 UTC)*
File Path	*/Users/afoltz/Desktop/Projects/Team_Map_Curve.xlsx*
File Size	*35.70 KB*
Author	*Ronald Keith Gaddie*
Last Saved By	*afoltz*
Office Created Date	*6/14/2011 12:06:15 PM (2011-06-14 17:06:15 UTC)*
Office Last Printed Date	*6/14/2011 1:47:35 PM (2011-06-14 18:47:35 UTC)*
Office Last Saved Date	*6/14/2011 1:56:03 PM (2011-06-14 18:56:03 UTC)*
Hidden Columns or Rows	*FALSE*
Track Changes	*FALSE*
MD5 Hash Value	*5a79df0e25b95605c14ca7824dbb8614*

Amended Lanterman Decl., Ex. B (Dkt. 97-2), "WRK32586 Responsive Spreadsheets File Detail Report." [Stipulated Fact 69]

138. In "Team_Map_Curve," the total number of seats for which Republicans have a baseline over 50% using Professor Gaddie's regression model, for statewide vote shares between 46% and 52% is as follows:

46%	***47%***	***48%***	***49%***	***50%***	***51%***	***52%***
46	*50*	*54*	*56*	*58*	*60*	*64*

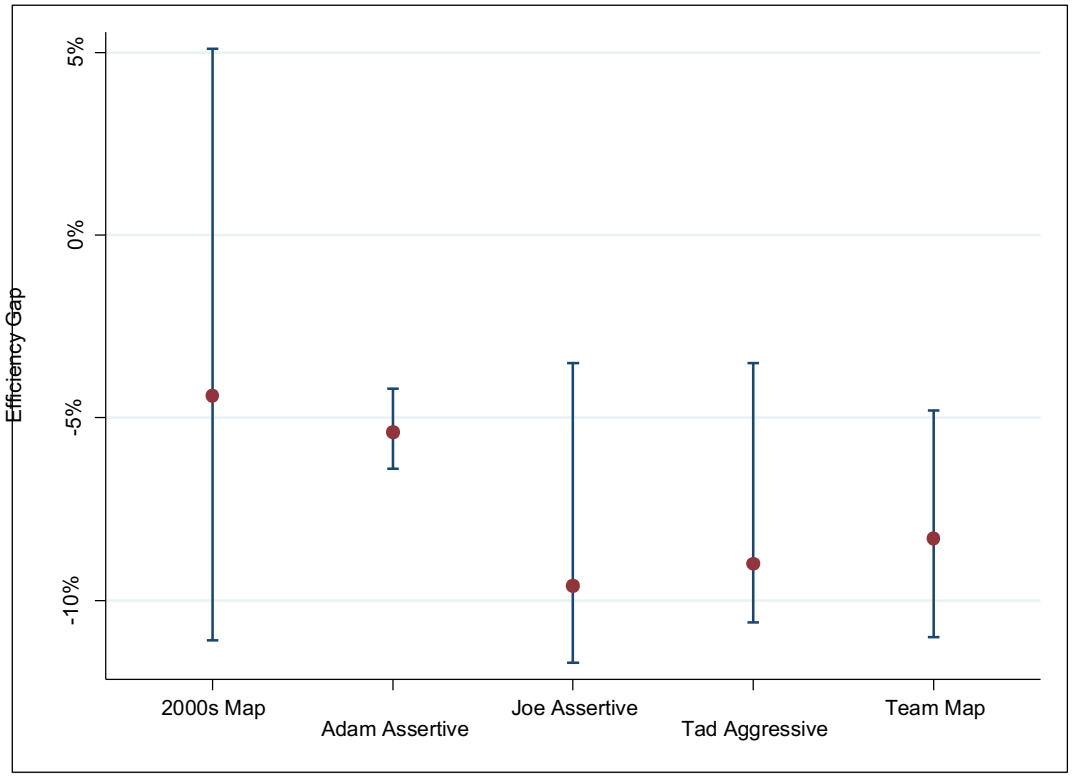
Amended Lanterman Decl., Ex. B (Dkt. 97-2). [Stipulated Fact 70]

139. The efficiency gaps associated with each statewide baseline from 46 to 52 in "Team_Map_Curve" are shown in the following table:

Statewide Baseline	**46%**	**47%**	**48%**	**49%**	**50%**	**51%**	**52%**
No. of Seats	46	48	51	54	56	47	60
Seat Share	46.50%	50.50%	54.50%	56.60%	58.60%	60.60%	64.60%
Vote Share	45.80%	46.80%	47.80%	48.90%	49.80%	50.80%	51.80%
Efficiency Gap	-4.80%	-6.90%	-8.90%	-8.70%	-8.90%	-9%	-11%

Tr. Exs. 225, 268, 282.

140. The below chart plots the efficiency gap ranges for each plan, as well as each plan's average efficiency gap across the different electoral environments.



Tr. Exs. 225, 272, 273, 274, 280, 282.

141. On March 9, 2016, during his deposition, Keith Gaddie was asked the following question:

Q. Is the Team Map Curve a more pro Republican map than a pro Democrat map?

Professor Gaddie responded to that question:

> *A. Let me look at it for a minute. Okay. At 50% of the expected vote statewide, of the 99 assembly districts it appears that 55 of them are either safely or leaning Republican with 21 of those seats being competitive Republican districts. At 53% Republican statewide vote of the 99 assembly districts, 46 of them appear to be districts that we would term safely Republican based upon the estimate. So there is a Republican lean in this map, yes.*

Gaddie Dep. (Dkt. 108) at 167:6-17. [Stipulated Fact 71]

142. Of the S-Curves, the Team Map was closest to the plan that was enacted. Foltz Dep. (Dkt. 113) at 144:18-23; Gaddie Dep. (Dkt. 108) at 164:21-22 ("[T]his would be a final version of a map that was agreed to by the mapmakers."); Ottman Dep. (Dkt. 118) at 111:14-23.

d) The plan was drafted in absolute secrecy

143. Prior to the introduction of Act 43, Republican legislators who had not been involved in drafting the map were allowed to see the boundaries of their district, but were not allowed to see the boundaries of any other district in the map. [Stipulated Fact 74]

144. Prior to the passage of Act 43, when Republican legislators were shown the boundaries of what would be their new legislative district, they were given information about the expected partisan voting patterns in the district, i.e., what percentage of voters were likely to vote for a Republican candidate and what percentage of voters were likely to vote for a

Democratic candidate. [Stipulated Fact 75]

145. Under the direction and supervision of Eric McLeod, Tad Ottman met with 17 Republican members of the Wisconsin State Senate, identified in Exhibit 4 attached to the Complaint. Each of the 17 Republican Senators signed a secrecy agreement entitled "Confidentiality and Nondisclosure Related to Reapportionment" before being allowed to review and discuss their districts. [Stipulated Fact 76]

146. The secrecy agreement stated that Eric McLeod had "instructed" Tad Ottman to meet with certain members of the Senate to discuss the reapportionment process and characterized such conversations as privileged communications pursuant to the attorney-client and attorney work product privileges. [Stipulated Fact 77]

147. Under the supervision of Eric McLeod, Adam Foltz met with 58 Republican members of the Wisconsin State Assembly, identified in Exhibit 4 attached to the Complaint. Each of the 58 Republican Representatives signed a secrecy agreement entitled "Confidentiality and Nondisclosure Related to Reapportionment" before being allowed to review and discuss their districts, which also improperly described their conversations as as privileged. [Stipulated Fact 78]

148. After each of the the 58 Republican members of the Wisconsin State Assembly signed the secrecy agreement entitled "Confidentiality and Nondisclosure Related to Reapportionment" they gave it it to Adam Foltz and none kept a copy for themselves. Foltz Dep. (Dkt. 110) at 357:16 -358:3. [Stipulated Fact 79]

149. Robin Vos participated in each of the meetings that Adam Foltz had with each of the 58 Republican members of the Wisconsin State Assembly listed in Exhibit 4 of the Complaint. Foltz Dep. (Dkt. 110) at 263:6-265:5. [Stipulated Fact 80]

150. The conversations between Adam Foltz, Robin Vos, and each of the 58 Republican members of the Assembly that were conducted pursuant to the secrecy agreement were confidential pursuant to an improper assertion of privilege. This proposed finding of fact is contested by the Defendants even though the Defendants admitted this fact in Defs. Amended Answer (Dkt. 56) to the third sentence of ¶ 40 of the Complaint. Tr. Ex. 73.

151. Exhibit 100 to the deposition of Adam Foltz dated 2/1/12, is an authentic copy (within the meaning of Fed. Evid. Rule 901(a)) of a one page memo addressed to Representative Garey Bies from Adam Foltz dated June 19, 2011, with copies to Speaker Jeff Fitzgerald, Majority Leader Scott Suder, and Representative Robin Vos, which is captioned "New Map for the 1st District" and which had attached to it a map of the new 1st Assembly District that became part of Act 43. The information contained in the memo identified the partisan performance of the new 1st Assembly District based on data from five prior elections (Scott Walker in 2010, J.B. Van Hollen in 2010, John McCain in 2008, J.B. Van Hollen in 2008, and George W. Bush in 2004). Similar one page memos with analogous partisan performance data with attached copies of the member's new district were sent to each of the 58 Republican members of the Wisconsin State Assembly on the same date, June 19, 2011. Foltz Dep. (Dkt. 110) at 266:10-267:15. [Stipulated Fact 81]

152. Exhibit 113 to the deposition of Adam Foltz dated 2/1/12, is an authentic copy (within the meaning of Fed. Evid. Rule 901(a)) of a one page memo created by Adam Foltz on June 20, 2011, at 12:34 p.m., and which was last saved on Adam Foltz's computer on July 7, 2011, at 2:40 p.m. and was a WORD document captioned "General Talking Points for Robin." Foltz Dep. (Dkt. 110) at 337:6-16, 347:22-351:4. [Stipulated Fact 82]

153. Exhibit 114 to the deposition of Adam Foltz dated 2/1/12, is an authentic copy

(within the meaning of Fed. Evid. Rule 901(a)) of a printout of the meta data associated with Exhibit 113 to the same deposition, which is a WORD document created on June 20, 2011, at 12:34 p.m. and which was last saved on Adam Foltz's computer on July 7, 2011, at 2:40 p.m. Foltz Dep. (Dkt. 110) at 337:6-16, 347:22-351:4. [Stipulated Fact 83]

154. "ADAMFOLZSUPPPROD000424" is a true and correct copy of a document titled "General Talking Points" drafted by Adam Foltz in 2011 in advance of the individual meetings held with Republican legislators in June, 2011, to discuss the redistricting plan that would become Act 43. [Stipulated Fact 90]

155. "ADAMFOLZSUPPPROD000424" includes a statement "Public comments on this map may be different than what you hear in this room. Ignore the public comments." Tr. Ex. 213.

156. "ADAMFOLZSUPPPROD000424" includes two statements under the heading "Confidentiality:" "Previously signed agreement applies to this meeting" and "Public comment will lead to depositions and being called to the witness stand." Tr. Ex. 213.

157. In Baldus v. Wisconsin Government Accountability Board, 843 F.Supp.2d 955, 959 (E.D. Wis. 2012), the Court held that the Legislature improperly asserted attorney-client and work product privileges to prevent discovery of information regarding the redistricting process. [Stipulated Fact 84]

158. In *Baldus v. Wisconsin Government Accountability Board*, the Court explicitly characterized the improper assertion of the attorney-client and work product privileges by the Wisconsin legislature regarding its redistricting process as follows: "Quite frankly, the Legislature and the actions of its counsel give every appearance of flailing wildly in a desperate attempt to hide from both the Court and the public the true nature of exactly what transpired in

the redistricting process. Having argued three times that much of the information regarding the process be shielded from discovery, the Legislature has made clear its intention not to make such information publicly available. Regardless of whether the Legislature has objected on grounds of privilege eleven times or forty-five times (Compare Leg. Reply in Supp. Mot. for Reconsid. 4 with Pl.'s Resp. Opp. Mot. for Reconsid. 7), and regardless of whether the Legislature claims privilege over the communications of two people or the communications of ten people (Compare Leg. Reply in Supp. Mot. for Reconsid. 4 with Pl.'s Resp. Opp. Mot. for Reconsid. 11), the fact does not change that the Legislature has continued its path of opposition to the plaintiffs' discovery efforts by claiming privilege at multiple turns. Those argued privileges, though, exist in derogation of the truth. And the truth here—regardless of whether the Court ultimately finds the redistricting plan unconstitutional—is extremely important to the public, whose political rights stand significantly affected by the efforts of the Legislature. On the other hand, no public good suffers by the denial of privilege in this case. Thus, as it has already done twice, the three-judge panel again declines to hold that Mr. Handrick or any of his documents are entitled to any of the privileges being asserted." 843 F. Supp. 2d 955, 959 (E.D. Wis. 2012) (citations omitted).

159. A three-judge court characterized claims by the Current Plan's drafters that they had not been influenced by partisan factors as "almost laughable" and concluded that "partisan motivation. . .clearly lay behind Act 43." *Baldus v. Wisconsin Government Accountability Board*, 849 F. Supp. 2d 840, 851 (E.D. Wis. 2012). Tr. Ex. 221.

160. On July 11, 2011, the Current Plan was introduced by the Committee on Senate Organization without any Democratic members of the Legislature having previously seen their districts or the plan as a whole. All Republican members of the Legislature had previously seen their individual districts along with visual aides demonstrating the partisan performance of these

districts, but had not seen the overall map. [Stipulated Fact 85]

161. A public hearing was held on July 13, 2011. The bill was then passed by the Senate on July 19, 2011, and by the Assembly the next day on July 20, 2011. Act 43 was published on August 23, 2011. [Stipulated Fact 86]

e) Democrats were completely excluded from the plan's drafting

162. No Democrats participated in the drafting process that led to the creation of the redistricting plan that was enacted in Act 43. [Stipulated Fact 72]

163. Prior to the introduction of Act 43, no Democrat was given an opportunity to see the boundaries of any legislative districts in the proposed map. [Stipulated Fact 73]

164. "ADAMFOLZSUPPPROD000431" is true and correct copy of a page from Adam Foltz's calendar for June 20, 2011 – June 24, 2011. [Stipulated Fact 88]

165. "ADAMFOLZSUPPPROD000431" shows meetings with twenty-nine individual Republican legislators during the week of June 20, 2011 – June 24, 2011. [Stipulated Fact 89]

166. "ADAMFOLZSUPPPROD000119" is a true an correct copy of a series of 59 memos addressed to each Republican Assembly member, and CCed to Speaker Jeff Fitzgerald, Majority Leader Scott Suder; and Rep. Robin Vos, from Adam Foltz – Assembly Redistricting Coordinator, dated 6/19/2011 with the subject lines "New Map for the 1st District," "New Map for the 2nd District" and so on until "New Map for the 99th District." [Stipulated Fact 91]

167. The 59 districts set out in "ADAMFOLZSUPPPROD000119" are the same or substantially the same as the corresponding districts in Act 43. Tr. Ex. 342.

168. Page 63 of 63 in document 156-1 filed on 2/14/12 in Baldus v. Brennan, 2:11-cv-00562-JPS-DPW-RMD is a true and correct copy of an email from Tad Ottman to Adam Foltz, sent on July 12, 2011 at 8:52PM with the subject line "committee memos" and listing

attachment titled "sb146 committee memos.docx." [Stipulated Fact 93]

169. Ottman000131.PDF is a true and correct copy of an email from Leah Vukmir to Tad Otman dated May 4, 2011 at 10:35 PM with the subject "Meeting today." The text of the email was:

> Tad,
>
> Thanks for the meeting today – I appreciate all you are doing. This is such a big task. So glad we are in control!
>
> Here is a summary of what we talked about and a few things I thought of after:
>
> Brookfield – yes (my hometown)
>
> Elm Grove – yes (Brookfield and Elm Grve have combined schools, joint holiday parades, etc.)
>
> Western Wauwatosa – yes (more GOP)
>
> West Allis – yes (Western more GOP but I am okay with all of it)
>
> West Milwaukee – No (forgot to mention this part of current district – VERY Dem)
>
> Milwaukee – cop wards if needed
>
> Menomonee Falls – No (fits better with Germantown, Sussex, Lannon and Butler)
>
> Greenfield – please No (it hates West Allis) Stone owns Greenfield and I think that really help him.
>
> New Berlin – sure, parts of it work okay with West Allis and Brookfield (Also, the West Allis School District oddly includes a small part of NB)
>
> If you need a way to take the Staskunas seat, put a little bit of my Senate seat into New Berlin (2-3 wards could make that a GOP Assembly seat). Western West Allis/Eastern Bkfd and New Berlin are areas of like interest. (The previous Duff seat had parts of New

Berlin, Elm Grove, Bkfd and West Allis)

Hope that helps!

Leah

Tr. Ex. 239.

170. This advice was apparently heeded; Staskunas's seat was identified by Handrick's "summary" spreadsheet as a "Statistical Pick Up" and one of the "Currently held DEM seats that move to 55% or better." Tr. Exs. 225, 284.

171. Page 36 of 63 in Doc. 156-1, produced by Legislature in *Baldus v. Brennan*, 2:11-cv-00562-JPS-DPW-RMD is a true and correct copy of two emails between Jim Troupis and Tad Ottman, Eric M. McLeod, Ray Taffora, Cced to Adam Foltz with the subject "Legislative drafts" dated Friday June 24, 2011. The first email from Jim Troupis to Ottman, McLeod, Taffora, and Cced to Foltz states:

"I like the summary at the outset and the numbers look good. Interesting that the census tracks read quite reasonably.

Any issues to date with members?"

Eric McLeod wrote an email responding to this email, to Troupis, Ottman, Taffora, and Cced to Foltz and it states:

"I think all the members are very happy with their new districts based on Tad's and Adam's reports to date."

f) The plan was rushed to passage with little opportunity for debate

172. The bill that would become Act 43 was introduced by the Committee on Senate Organization on July 11, 2011. The sole public hearing on the bill took place a mere two days later, on July 13, 2011. The bill was passed by the Senate just six days later, on July 19, 2011,

and by the Assembly the very next day, on July 20, 2011. Both of these votes were strictly along party lines. Defs' Amend. Answer (Dkt. 56) at 7. Tr. Ex. 73.

173. Andy Speth, in an e-mail to Foltz, Ottman, and others, described this "legislative agenda" as "very aggressive." Tr. Ex. 208.

174. "ADAMFOLZSUPPPROD000446.PDF" is a true and correct copy of an email from Dana Wolff to Tad Ottman and Adam Foltz and Cced to Tony Van Der Wielen sent on Monday May 9, 2011 at 12:32PM, wit the subject line "Letter" listing attachment titled "MCD_Letter.pdf." [Stipulated Fact 94]

175. "ADAMFOLZSUPPPROD000446.PDF" states as follows:

> Hello Tad and Adam,
>
> We have another letter that will be going out to the municipalities with over 10,000 people, hopefully sometime this week. This letter (attached) will let the municipalties know that their timeline to start creating their wards will begin around May 21st. I was wondering if you think that Senator Scott Fitzgerald and Rep. Jeff Fitzgerald would want to sign this letter?
>
> If you think they would be willing to sign the letter, I can have it prepared and read for signatures later this afternoon or tomorrow at the latest. If not, I think we would have Steve Miller and Jeff Ylvisaker sign them instead.
>
> At your convenience, could you please let me know your thoughts?
>
> Thank you
>
> Dana Wolff"

176. Page 56 of 63 63 in document 156-1 filed on 2/14/12 in Baldus v. Brennan, 2:11-cv-00562-JPS-DPW-RMD is a true and correct copy of an email from Tad Ottman to Jim

Troupis and Eric M McLeod, Cced to Adam Foltz, sent on Friday February 25, 2011 at 2:31PM, with the subject line "Redistricting timeline." [Stipulated Fact 95]

177. Page 56 of 63 in document 156-1 filed on 2/14/12 in *Baldus v. Brennan*, 2:11-cv-00562-JPS-DPW-RMD includes the following in the body of the email:

> "March to October
>
> Once the census data arrives, counties will have 60 days to form tentative supervisory districts. Municipalities will have 60 days after that to form ward boundaries, and then counties will have an additional 60 days to finalize supervisory districts.
>
> Assuming a mid to late March arrival of the data, this puts us in a late September/early October timeframe for receipt of the updated ward data that will be used to draw legislative maps."

Tr. Ex. 361.

178. Under the policy outlined in the "Redistricting Timeline" memo, it was anticipated that municipalities would draw their ward boundaries first, and congressional and legislative districts would then then preserved all of these wards intact. But in 2011, the districts were shaped first, and the Legislature then directed municipalities around the state to revise their wards to make them fit entirely within the districts. Indeed, the Legislature passed the statute containing this edict, Act 39, less than a week after enacting Act 43. Tr. Ex. 331 (Wisconsin Legislative Council Act Memo: 2011 Wisconsin Act 39); Handrick Dep. (Dkt. 119-15) at 35-36, 146-50, 169-70, 194-95, 220-21.

g) Additional facts

179. Eric McLeod and Michael, Best & Friedrich, LLP, were paid $431,000.00 in State taxpayer funds for their work on the Current Plan. [Stipulated Fact 87]

180. "MBF000217" is a true and correct copy of an email from Jim Troupis to Tad Ottman and Adam Foltz, Cced to Eric M McLeod and Sarah Troupis, sent on Monday, June 13, 2011 at 8:25AM, with the subject line "Gaddie & Hispanic." [Stipulated Fact 96]

181. "MBF000217" includes the following statement:

> Good Morning Tad and Adam,
>
> Sounds like the latest map went well with the leadersip. Congratulations on walking that fine line…

Tr. Ex. 351.

182. Page 3 of 63 in document 156-1 filed on 2/14/12 in Baldus v. Brennan, 2:11-cv-00562-JPS-DPW-RMD is a true and correct copy of an email from Tadd Ottman to Jim Troupis, Eric M McLeod, Raymond Taffora, and Adam Foltz sent on Wednesday July 13, 2011 at 1:45PM with the subject line "Latino voices will be there." [Stipulated Fact 97]

183. Page 3 of 63 in document 156-1 filed on 2/14/12 in *Baldus v. Brennan*, 2:11-cv-00562-JPS-DPW-RMD includes the following statement:

> "By using MALDEF's AD 8 and 9 and wildly gerrymandering the 7th Assembly District, I can move the HVAP in the Senate seat from 40.8 to about 42.6."

Trial Ex. 360.

184. To the extent that many maps would be endangered by a partisan gerrymandering test, it is because many *mapmakers* engage in deliberate and brazen gerrymandering. Illustrative of these efforts is a memorandum prepared by the Republican State Leadership Committee

("RSLC") after the 2012 elections, in which "voters pulled the lever for Republicans only 49 percent of the time in congressional races," but "Republicans [won] a 33-seat margin in the U.S. House." The memorandum stated that this "aberration" was only possible because "Republicans had an unquestioned advantage" in control over redistricting, and so were able "to erect a Republican firewall . . . that paved the way to Republicans retaining a U.S. House majority." The memorandum also detailed how the RSLC raised and spent tens of millions of dollars on "a strategy to keep or win Republican control of state legislatures with the largest impact on congressional redistricting." Wisconsin's was one of these targeted legislatures. "[T]he RSLC spent $1.1 million to successfully flip both chambers of the Wisconsin legislature," resulting in "a 5-3 Republican majority to Congress" even though "Wisconsin voters . . . reelected President Obama by nearly seven points." RSLC, 2012 REDMAP Summary Report (Jan. 4, 2013), http://www.redistrictingmajorityproject.com/ ?p=646.

185. It is no more difficult to calculate multiple measures of partisan symmetry than a single metric; all that is necessary is some basic arithmetic. If the various measures point in the same direction (and the electoral setting is competitive, so that partisan bias and the mean-median difference are applicable), then a court may be more confident in its appraisal of a plan's asymmetry. Conversely, if the metrics point in different directions, then a court may decide that a plan's asymmetry is not clear enough to warrant invalidation. There are dozens of cases in which courts use two distinct methods to estimate racial polarization in voting. D. James Greiner, *Ecological Inference in Voting Rights Act Disputes: Where Are We Now, and Where Do We Want to Be?*, 47 Jurimetrics 115, 155-57 (2007).

III. PARTISAN EFFECT

a) The efficiency gap generally

186. Partisan gerrymandering is achieved by the advantaged party through the packing and cracking of the disadvantaged party's supporters. Jackman Rpt. (Dkt. 62) at 8, 15.

187. A party's supporters can be cracked among a large number of districts so that they fall somewhat short of a majority in each one. These voters' preferred candidates then predictably lose each race. Jackman Rpt. (Dkt. 62) at 8, 15.

188. A party's backers can be packed into a small number of districts in which they make up enormous majorities. These voters' preferred candidates then prevail by overwhelming margins. Jackman Rpt. (Dkt. 62) at 8, 15.

189. Packing and cracking cause the disadvantaged party to convert its popular support into legislative representation less efficiently than the favored party. Jackman Rpt. (Dkt. 62) at 8, 15.

190. The efficiency gap measures the extent to which one party's voters are more cracked and packed than the other party's voters, 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 8, 15-16.

191. 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 2.

192. The efficiency gap is the difference between the parties' respective wasted votes in an election, divided by the total number of votes cast. Jackman Rpt. (Dkt. 62) at 8, 15-16.

193. The efficiency gap is not based on the principle that parties have a right to proportional representation based on their share of the statewide vote, nor does it measure the deviation from seat-vote proportionality. Jackman Rpt. (Dkt. 62) at 9, 16-17.

194. The efficiency gap indicates the extra proportion of seats that an advantaged party wins relative to a baseline where the parties are wasting equal numbers of votes. Jackman Rpt. (Dkt. 62) at 19. [Stipulated Fact 100]

195. In a model where party seat share is the dependent variable and party vote share and the efficiency gap are the independent variables, the efficiency gap perfectly predicts party seat share. This is not the case if partisan bias is substituted for the efficiency gap. Tr. Ex. 98, Eric McGhee, *Measuring Partisan Bias in Single-Member District Electoral Systems*, 39 Legis. Stud. Q. 55, 67, 69 (2014).

196. There are two methods that can be used to calculate the efficiency gap, but the underlying concept remains the same no matter how it is computed. Jackman Rpt. (Dkt. 62) at 16; Goedert Rpt. (Dkt. 51) at 5; Goedert Dep. (Dkt. 65) at 70:17-73:2.

197. 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 5-6.

198. The district-by-district aggregation of votes to calculate the efficiency gap is unnecessary when districts have equal turnout. In this case, the efficiency gap can be computed using the simplified method, using the formula $EG = (S - 0.5) - 2(V - 0.5)$. Jackman Rpt. (Dkt. 62) at 16.

199. The simplified method 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. Jackman Rpt. (Dkt. 62) at 25; Jackman Dep. (Dkt. 53) at 40-41, 61-62; Tr. Ex. 96.

200. Defendants' 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. [Stipulated Fact 101]

201. Though districts are never exactly equal in their turnout, America's very strict equal population rule—the most rigid in the world—ensures that they are never too different either. Tr. Ex. 74 at 806.

202. 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. Mayer Rpt. (Dkt. 54) at 46); Jackman Rpt. (Dkt. 62) at 71; Trende Rpt. (Dkt. 55) at 59.

203. *Defendants' expert, Sean Trende, noted that in 2012 Professor Mayer calculated that the Current Plan had an efficiency gap of -11.7% using the full method and Mr. Trende calculated the efficiency gap for 2012 as -9.9% using the simplified method, a difference of 1.8 percentage points. Mayer Rpt. (Dkt. 54) at 46; Jackman Rpt. (Dkt. 62) at 71; Trende Rpt. (Dkt. 55) at 59.* [Stipulated Fact 102]

204. *Similarly, Mr. Trende noted that Professor Mayer calculated that the Demonstration Plan had an efficiency gap of -2.2% using the full method and M.r Trende calculated the efficiency gap for 2012 as -0.8% using the simplified method, a difference of 1.4 percentage points*. Mayer Rpt. (Dkt. 54) at 46; Jackman Rpt. (Dkt. 62) at 71; Trende Rpt. (Dkt. 55) at 60. [Stipulated Fact 103]

205. 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 24-25; Jackman Dep. (Dkt. 53) at 61:12-62:17; Jackman Decl., Ex. E (Dkt. 58-5), Tr. Ex. 96.

206. The efficiency gaps for the Michigan House in 1996 and 2014, the Minnesota House in 2008, and the Michigan Senate in 1994, 1998, 2002, 2006, 2010, and 2014, using the full method and the simplified method, and showing the difference between the two, are set out in the following chart:

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%

Tr. Ex. 96 at 1-17, 19-25.

207. Variations in turnout have only a minor im The efficiency gap for the Michigan House in the 1996 election using the full method was -6.7%, using the simplified method was -7.5%, and therefore the difference was 0.8 percentage points. Tr. Ex 96 at 1-5.

208. The efficiency gap for the Michigan House in the 2014 election using the full method was -13.4%, using the simplified method was -13.1%, and therefore the difference was 0.3 percentage points. Tr. Ex 96 at 5-10.

209. The efficiency gap for the Minnesota House in the 2008 election using the full method was 0.8%, using the simplified method was 1.4%, and therefore the difference was -0.6 percentage points. Tr. Ex 96 at 10-16.

210. The efficiency gap for the Michigan Senate in the 1994 election using the full method was -3.5%, using the simplified method was -4.1%, and therefore the difference was 0.6 percentage points. Tr. Ex 96 at 16-17.

211. The efficiency gap for the Michigan Senate in the 1998 election using the full method was -9.7%, using the simplified method was -10.3%, and therefore the difference was 0.6 percentage points. Tr. Ex 96 at 17-19.

212. The efficiency gap for the Michigan Senate in the 2002 election using the full method was -10.3%, using the simplified method was -10.4%, and therefore the difference was 0.1 percentage points. Tr. Ex 96 at 19-20.

213. The efficiency gap for the Michigan Senate in the 2006 election using the full method was -18.7%, using the simplified method was -18.4%, and therefore the difference was -0.3 percentage points. Tr. Ex 96 at 20-22.

214. The efficiency gap for the Michigan Senate in the 2010 election using the full method was -14.6%, using the simplified method was -14.4%, and therefore the difference was -0.2 percentage points. Tr. Ex 96 at 22-24.

215. The efficiency gap for the Michigan Senate in the 2014 election using the full method was -22.8%, using the simplified method was -21.8%, and therefore the difference was -1.0 percentage point. Tr. Ex 96 at 24-25.

216. 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 percentage point and exhibiting a correlation of 0.997. Jackman Rpt. (Dkt. 62) at 25; Jackman Dep. (Dkt. 53) at 40-41, 61-62; Tr. Ex 96.

217. *Under the simplified method only, 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 17-18.* [Stipulated Fact 104]

218. The 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. Jackman Dep. (Dkt. 53) at 32:4-9.

219. *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 6; Goedert Dep. (Dkt. 65) at 95:17-21.* [Stipulated Fact 105]

220. *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 Dep. Ex. 20 (Dkt. 65-2) at 7.* [Stipulated Fact 106]

221. 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." Tr. Ex. 132 at 2-3.

222. Eric McGhee 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), Tr. Ex. 98 at 67.

b) Other measures of partisan symmetry confirm that the current plan is an egregious outlier

i. Partisan bias

223. The partisan asymmetry of a redistricting plan has also been measured in the literature using the metric of partisan bias. 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 (2007), http://gking.harvard.edu/files/jp.pdf, Tr. Ex. 333 at 6.

224. 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," and so is compatible with any seat-vote relationship. "An electoral system may have any degree of partisan bias, no matter what level of responsiveness happens to exist." Grofman & King, *supra*, Tr. Ex. 333 at 9.

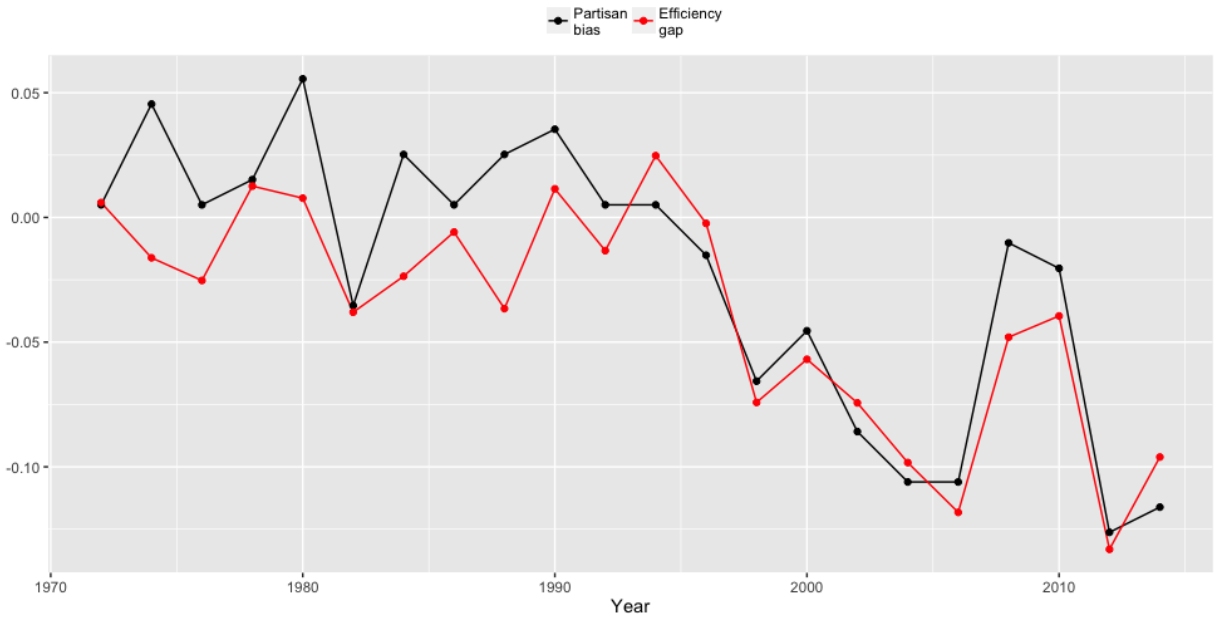
225. Partisan bias is the difference between the shares of seats that the parties would win if they each received the same share of the statewide vote (often set to 50% for the sake of convenience). Jackman Rpt. (Dkt. 62) at 11.

226. To calculate partisan bias, an analyst first obtains district-by-district electoral results as well as the statewide vote share for each party. Next, the analyst *shifts* the observed vote share in each district by the same amount: the amount necessary to simulate a tied statewide election (or alternatively an election in which the parties' respective vote shares flipped). The analyst then tallies how many districts each party would have won and lost in this hypothetical

election. The difference between the parties' seat shares in the hypothetical election is partisan bias. For instance, if Republicans won 47% of the statewide vote, then the observed vote share in each district would be increased by 3% to simulate a tied election. Partisan bias would be determined by comparing the parties' seat shares after this uniform swing was carried out. Jackman Rpt. (Dkt. 62) at 11-14.

227. Partisan bias is a less useful measure of partisan asymmetry than the efficiency gap because it requires predicting what would happen in a counterfactual election in which the parties switched vote shares (or both had vote shares equal to 50%). Jackman Rpt. (Dkt. 62) at 14-15.

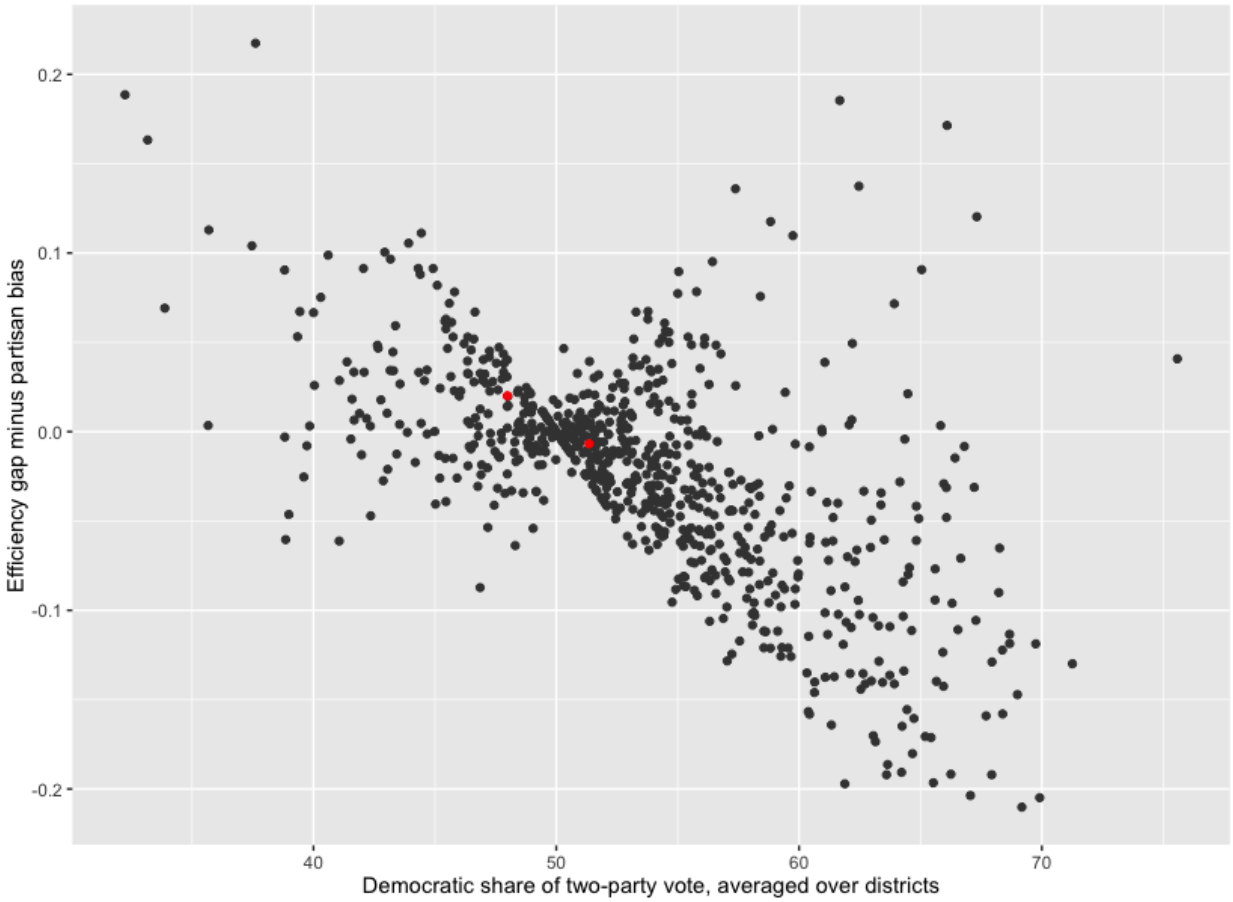
228. Partisan bias is especially inaccurate in uncompetitive states, because very large vote swings must be simulated to determine what would happen if the parties switched vote shares. In contrast, partisan bias and the efficiency gap are similar in competitive states. Nicholas O. Stephanopoulos & Eric M. McGhee, *Partisan Gerrymandering and the Efficiency Gap*, 82 U. Chi. L. Rev. 831 (2015), Tr. Ex. 141, at 858. The following chart shows the change in partisan bias and efficiency gap scores in Wisconsin from 1972 to 2014:



Tr. Ex. 329.

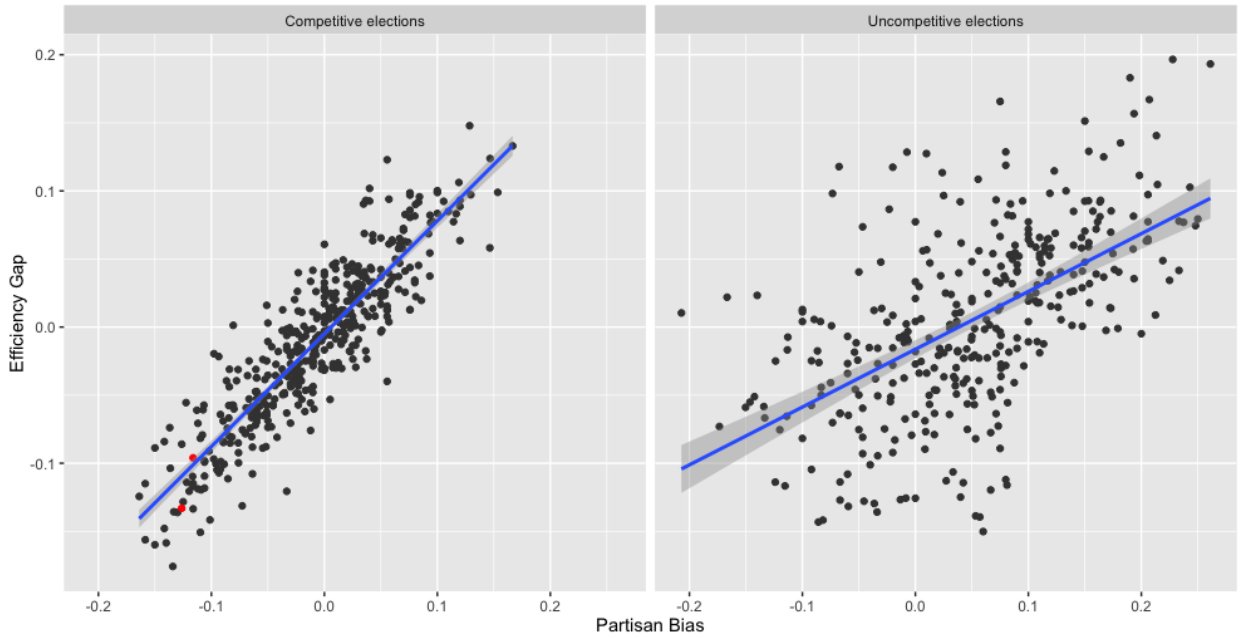
229. Advocates of partisan bias recommend applying the measure only to competitive statewide elections: "We therefore limit our analysis to 'competitive electoral systems' . . . ." Andrew Gelman & Gary King, *Enhancing Democracy Through Legislative Redistricting*, 88 Am. Pol. Sci. Rev. 541, 545 (1994); Grofman & King, *supra*, Tr. Ex. 333 at 19; (partisan bias is "intended only for jurisdictions where the politics is competitive enough").

230. The chart below plots the difference between the efficiency gap and partisan bias versus the Democratic share of the statewide vote in state house elections from 1972 to 2014. The data points resemble a bowtie, tightly bunched when elections are competitive but fanning in all directions when they are uncompetitive. State legislative election results database from 1967 to 2014, updated by Carl Klarner (Indiana State University and Harvard University), for the Inter-University Consortium for Political and Social Research (ICPSR study number 34297) (hereafter, "Klarner Database").



Tr. Ex. 325.

231. The chart below indicates how the efficiency gap and partisan bias are related in competitive (closer than 55% to 45%) and uncompetitive (further apart than 55% to 45%) state house elections from 1972 to 2014. In competitive elections, the measures are very highly correlated (r = 0.89) and cluster closely around the best fit line. But in uncompetitive elections, the metrics are only modestly correlated (r = 0.58) and diverge much more from the best fit line. Klarner Database.



Tr. Ex. 325.

232. Partisan bias is relatively stable from election to election. It exhibits "more persistence through time." Tr. Ex. 98 at 73.

233. "Partisan bias is fairly stable" because "it shifts all actual results to the point of the hypothetical election. Stephanopoulos & McGhee, *supra*, Tr. Ex. 141 at 864.

234. Partisan bias and the efficiency gap are mathematically identical in the special case where both parties receive 50% of the vote. Stephanopoulos & McGhee, *supra*, Tr. Ex. 141 at 856.

ii. The mean-median difference

235. Another measure of partisan asymmetry in the literature is the mean-median difference. This is the difference between the mean and the median vote shares for all districts in a plan. *See, e.g.*, Michael D. McDonald & Robin E. Best, *Unfair Partisan Gerrymanders in Politics and Law: A Diagnostic Applied to Six Cases*, 14 Election L.J. 312 (2015), Tr. Ex. 405.

236. The mean-median difference is very similar to partisan bias. Their principal difference is that the mean-median difference is measured in vote share, while partisan bias (like the efficiency gap) is measured in seat share. McDonald & Best, *supra*, Tr. Ex. 405 at 316.

237. In 2012, the mean Democratic vote share was 51.4% and the median Democratic vote share was 45.7%, resulting in a pro-Republican differential of 5.6%. In 2014, the mean Democratic vote share was 48.0% and the median Democratic vote share was 41.1%, for a pro-Republican differential of 6.9%.

238. Wisconsin's average mean-median difference from 1972 to 2010 was just 1.1%. Klarner Database.

c) Calculation of the efficiency gap

239. Professor Jackman's dataset used for his calculations of the efficiency gap in state legislative elections spans the period 1972 to 2014, representing the post-malapportionment era. Jackman Rpt. (Dkt. 62) at 19. [Stipulated Fact 107]

240. Professor Jackman's calculations of the efficiency gap rely on a dataset widely used in political science and freely available from the Inter-University Consortium for Political and Social Research (ICPSR study number 34297). The release of the dataset utilized by Professor Jackman covers state legislative election results from 1967 to 2014, updated by Carl Klarner (Indiana State University and Harvard University). Jackman Rpt. (Dkt. 62) at 20; Jackman Dep. (Dkt. 53) at 46:23-47:14. [Stipulated Fact 108]

241. Professor Jackman uses a subset of the original dataset for general elections since 1972 in states whose lower houses are elected via single-member districts, or where single-member districts are the norm. Professor Jackman treats multi-member districts "with

positions" as if they are single-member districts. Jackman Rpt. (Dkt. 62) at 20; Jackman Dep (Dkt. 53) at 44:24-46:22. [Stipulated Fact 109]

242. The total dataset used by Professor Jackman spans 83,260 district-level state legislative races, from 786 elections across 41 states. Jackman Rpt. (Dkt. 62) at 20-21, and Figure 5. Jackman Dep. (Dkt. 53) 48:1-3. [Stipulated Fact 110]

243. Professor Jackman groups the efficiency gap scores across the series of elections held under the same districting plan, using the unique identifier for the districting plan in place for each state legislative election provided by Stephanopoulos and McGhee, as shown in the following chart:

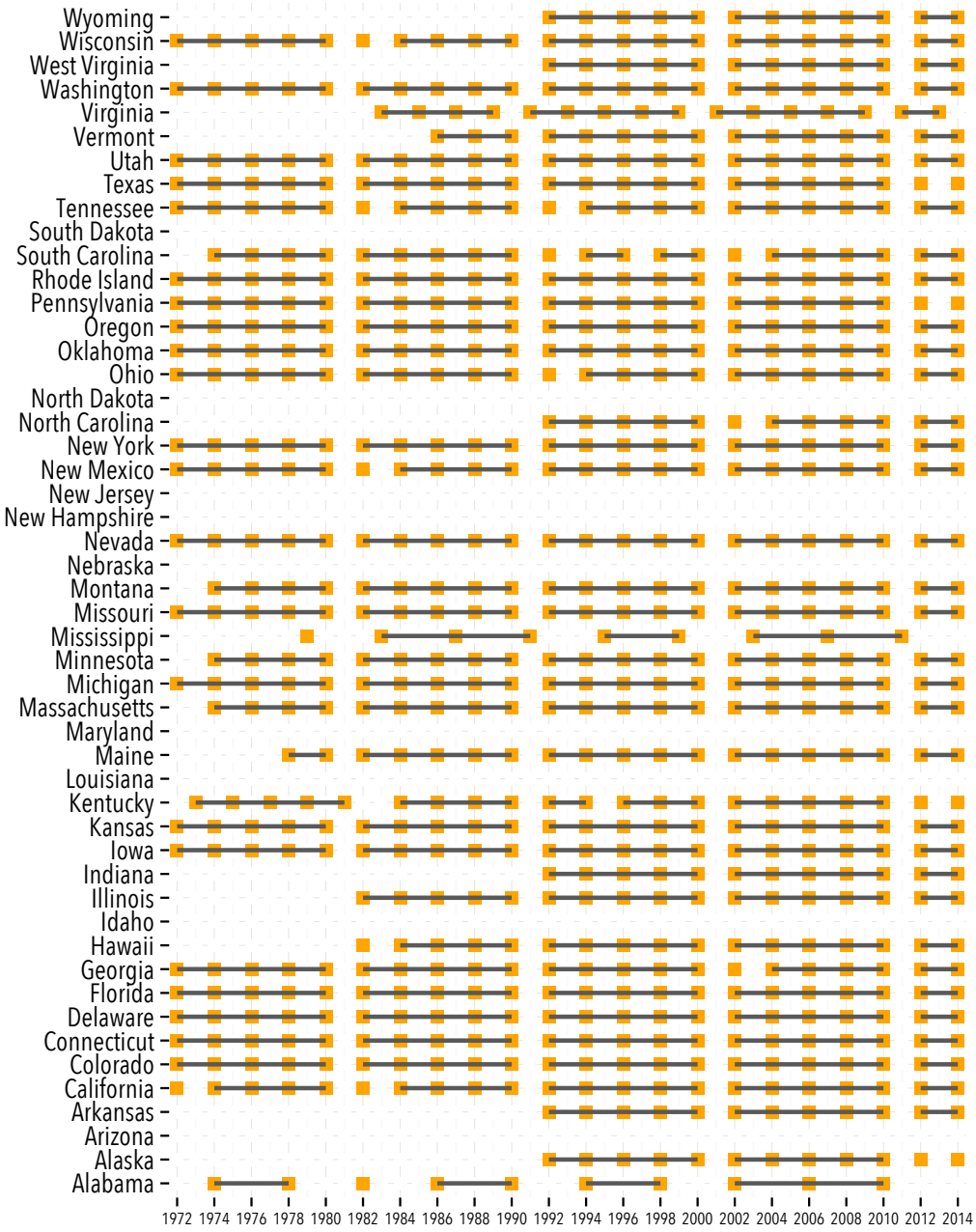


Figure 6: 786 state legislative elections available for analysis, 1972-2014, by state, grouped by districting plan (horizontal line).

Jackman Rpt. (Dkt. 62) at 22-23. [Stipulated Fact 111]

244. Professor Jackman used two different imputation strategies to estimate results for uncontested races, and then combined the two sets of imputations to create highly accurate

estimated two-party vote shares for all uncontested races in his database. Jackman Rpt. (Dkt. 62) at 22-29; Jackman Dep. (Dkt. 53) at 48:4-53:17.

245. The first imputation method ("Model 1") for determining two-party vote share in uncontested races used presidential vote shares to predict state legislative outcomes. Jackman Rpt. (Dkt. 62) at 26.

246. Professor Jackman fit a series of linear regressions using the Democratic share of the two-party vote for president in each state legislative district and the most temporally proximate presidential election for which data was available. Jackman Rpt. (Dkt. 62) at 26.

247. In Model 1, Professor Jackman ensured that if a Democratic candidate won the uncontested seat, the Democratic two-party vote share must lie above 50%, and similarly, if a Republican candidate won the uncontested seat, the Democratic two-party vote share must lie below 50%. Jackman Rpt. (Dkt. 62) at 26.

248. Model 1 fit the results very well, with an R-squared statistic of 0.82. Jackman Rpt. (Dkt. 62) at 26.

249. The second imputation method ("Model 2") for determining two-party vote share in uncontested races used a combination of: (1) previous and future results for a given district; (2) statewide swing in a given state election; and (3) change in the incumbency status of a given district. Jackman Rpt. (Dkt. 62) at 29.

250. In Model 2, Professor Jackman ensured that if a Democratic candidate won the uncontested seat, the Democratic two-party vote share must lie above 50%, and similarly, if a Republican candidate won the uncontested seat, the Democratic two-party vote share must lie below 50%. Jackman Rpt. (Dkt. 62) at 29.

251. Model 1 and Model 2 correlate at 0.99. Jackman Rpt. (Dkt. 62) at 29.

252. Where there was an imputation available from Model 1, that imputation was used. Where presidential vote shares were not available by state legislative district, Professor Jackman used Model 1 to adjust the imputations from Model 2 to create an imputation that better matched the imputations from Model 1. Jackman Rpt. (Dkt. 62) at 29-30.

253. Using the combined imputations from Model 1 and Model 2, Professor Jackman was able to generate statewide vote shares (V) and statewide seat shares (S) for all 786 state elections in the database. Jackman Rpt. (Dkt. 62) at 32; Jackman Dep. (Dkt 53) at 55:9-19.

254. 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. Professor Jackman did not aggregate wasted votes district by district, but rather used a simplified computation method based on statewide electoral data, with the formula EG = (S – 0.5) – 2(V – 0.5), where EG is the efficiency gap, S is the statewide Democratic seat share, and V is the statewide Democratic vote share. Jackman Rpt. (Dkt. 62) at 16-17. [Stipulated Fact 112]

255. Using the simplified method for Wisconsin's Current Plan, Professor Jackman arrived at an efficiency gap of -13% in 2012 and -10% in 2014. Jackman Rpt. (Dkt. 62) at 4.

256. Professor Jackman 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 4-5, 63-73.

257. All of Professor Jackman's calculations made no adjustments for incumbency. Jackman Rpt. (Dkt. 62) at 19-32.

d) Setting a threshold: reliability of the efficiency gap

258. In assessing what cutoff would be reasonable, Professor Jackman considered 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 66-69.

259. In assessing what cutoff would be reasonable, Professor Jackman considered what a series of prognostic tests reveal about the reliability of different thresholds. Jackman Rebuttal Report (Dkt. 63) at 5-14.

260. In assessing what cutoff would be reasonable, Professor Jackman considered how a plan's initial efficiency gap is related to its average efficiency gap over its lifetime. Jackman Rebuttal Report (Dkt. 63) at 15-17.

261. In assessing what cutoff would be reasonable, Professor Jackman considered what sensitivity testing demonstrates about the durability of plans' efficiency gaps in the current cycle. Jackman Decl. Ex. D (Dkt. 58-4) at 1-6.

262. About 76% of the variation in the efficiency gap estimates is between-plan variation (rather than within-plan variation). Jackman Rpt. (Dkt. 62) at 48; Jackman Dep. (Dkt. 53) at 75:10-76:4; Jackman Rebuttal Rpt. (Dkt. 63) at 15-17.

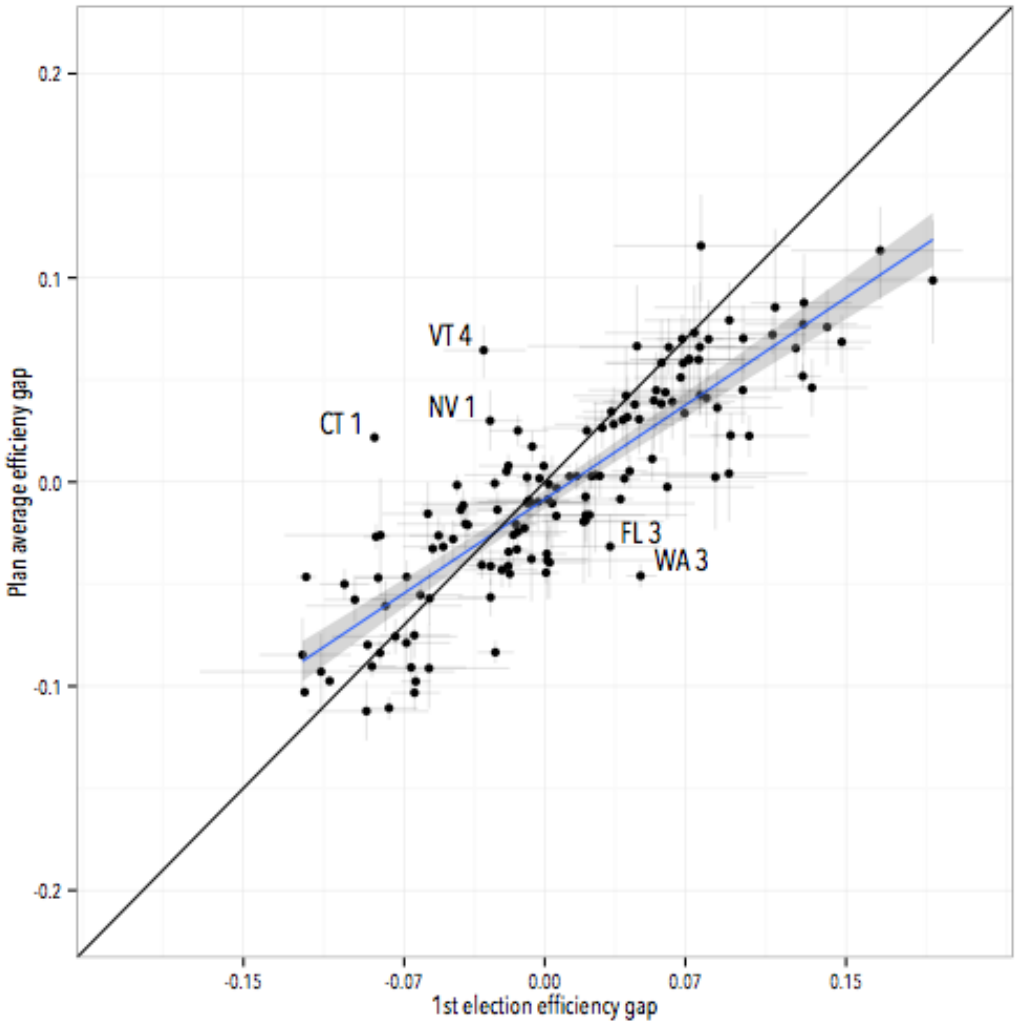
263. There is a moderate to strong "plan-specific" component to variation in the efficiency gap scores. Jackman Rpt. (Dkt. 62) at 48; Jackman Dep. (Dkt. 53) at 75:10-76:4; Jackman Rebuttal Rpt. (Dkt. 63) at 15-17.

264. The efficiency gap measures an enduring feature of a districting plan. Jackman Rpt. (Dkt. 62) at 48; Jackman Dep. (Dkt. 53) at 75:10-76:4; Jackman Rebuttal Rpt. (Dkt. 63) at 15-17.

265. The initial efficiency gap exhibited by a plan is a strong and reliable indicator of the plan's average efficiency gap over its lifetime. Jackman Rpt. (Dkt. 62) at 56-69; Jackman Rebuttal Rpt. (Dkt. 63) at 5-17.

266. Plans' initial efficiency gaps explain three-fourths of the variation in their average efficiency gaps. Jackman Rebuttal Rpt. (Dkt. 63) at 15-17.

267. The below scatter plot displays the relationship between state house plans' intial 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 15-17, Tr. Ex. 90.

268. Professor Jackman's analysis found that for a plan with an initial efficiencgy gap of -7%, the average efficiency gap over the life of the plan is estimated to be -5.3%. Jackman Rebuttal Rpt. (Dkt. 63) at 16. [Stipulated Fact 113]

269. Professor Jackman's analysis found that for a plan with an initial efficiency gap of -7%, there is more than a 96% likelihood that the average will be pro-Republican. Jackman Rebuttal Rpt. (Dkt. 63) at 16.

270. Similarly, Professor Jackman's analysis found that for a plan with an initial efficiency gap of 7%, the average efficiency gap over the life of the plan is estimated to be 3.7%. Jackman Rebuttal Rpt. (Dkt. 63) at 16. [Stipulated Fact 114]

271. Professor Jackman's anslysis found that for a plan with an initial efficiency gap of 7%, there is roughly a 90% likelihood that the average will be pro-Democratic. Jackman Rebuttal Rpt. (Dkt. 63) at 16.

272. 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 16.

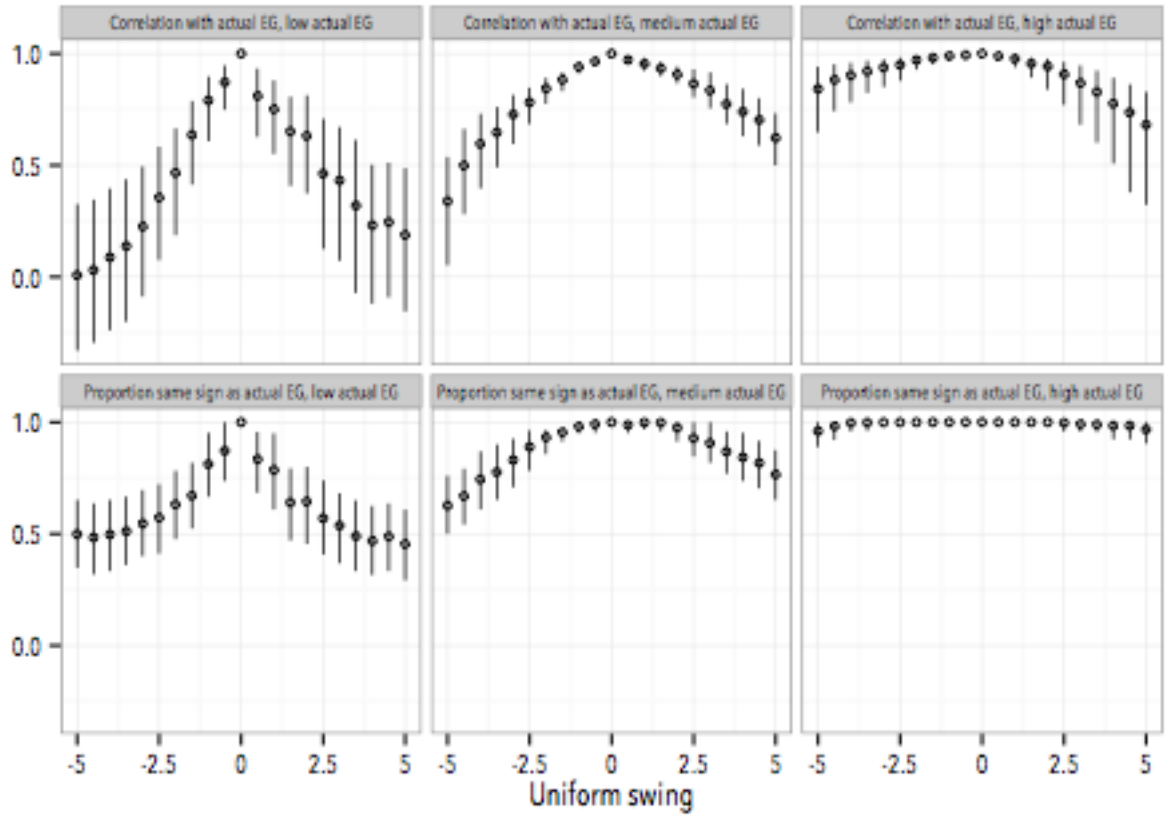
273. To determine how the efficiency gaps of the plans currently in effect would vary under different electoral environments, Professor Jackman carried out the sensitivity testing recommended by defendants' expert, Professor Goedert. Goedert Rpt. (Dkt. 51) at 15.

274. Professor Jackman also used the uniform swing methodology employed and endorsed by Professor Goedert. Goedert Rpt (Dkt. 51) at 22; Goedert Dep. (Dkt. 65) at 123:12-20; Tr. Ex. 93.

275. 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. Tr. Ex. 93 at 1-2.

276. Election swings of up to five points in each direction encompass the vast majority of state legislative elections from 1972 to 2012, and thus illustrate how the plans would perform under almost all plausible electoral conditions. Tr. Ex. 93; Goedert Dep. (Dkt. 65) at 126:16-127:10.

277. The below figure 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%). 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.



Tr. Ex. 93 at 4, Tr. Ex.95.

278. Small efficiency gaps (less than 3% in magnitude) are less resistant to perturbations from uniform swing; at high levels of uniform swing for small actual efficiency gaps, the correlation between actual efficiency gaps and simulated efficiency gaps approaches zero. Tr. Ex. 93 at 5.

279. Larger values of the efficiency gap are much more resistant to perturbations from uniform swing. In fact, for large actual efficiency gaps (greater than 7% in magnitude), the correlation between actual and simulated efficiency gaps stays impressively large over the entire range of uniform swing levels considered. Tr. Ex. 93 at 5.

280. Large efficiency gaps (those greater than 7% in magnitude) show great resistance to flipping signs even in the face of moderate or even large hypothetical statewide swings. None

of the large efficiency gaps flip signs when swings are below 2.5 percentage points and barely any flip signs even when larger statewide swings are considered. Tr. Ex. 93 at 5.

281. Just 11% of actual efficiency gaps greater than 7% in magnitude flip signs when exposed to a very large, hypothetical statewide swing of minus five percentage points and only 9% flip signs when we consider a statewide swing of positive five percentage points. Tr. Ex. 93 at 5.

282. 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. Tr. Ex. 93 at 1-6.

283. Prognostic tests of the average efficiency gap of a plan over its lifespan, based on the value of the initially exhibited efficiency gap, confirm that an initial efficiency gap of greater than 7% in magnitude is a very reliable indicator of a durable partisan advantage. Tr. Ex. 93 at 11-14.

284. An initial efficiency gap greater than 7% in magnitude would result in a false positive (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) less than 5% of the time. Jackman Rebuttal Rpt. (Dkt. 63) at 12.

285. An initial efficiency gap of greater than 8% would reduce the rate of false positives to zero. Jackman Rebuttal Rpt. (Dkt. 63) at 12.

286. Over the 1972-2014 period, ninety-six percent of plans either had initial efficiency gaps smaller than -7%, or if they had larger initial efficiency gaps, continued to exhibit an efficiency gap of the same (pro-Republican) sign throughout their lifetimes. Jackman Rpt. (Dkt. 62) at 67.

287. Over the 1972-2014 period, ninety-three percent of plans either had initial efficiency gaps smaller than 7%, or if they had larger initial efficiency gaps, continued to exhibit an efficiency gap of the same (pro-Democratic) sign throughout their lifetimes. Jackman Rpt. (Dkt. 62) at 67.

288. 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 7, 73; Jackman Rebuttal Rpt. (Dkt. 63) at 18-20; Tr. Ex. 97.

e) National political geography

289. Over the entire 1972-2014 period, the distribution of state house plans' efficiency gaps has been almost perfectly normal and has had a median of -0.5%, or nearly zero. Jackman Rpt. (Dkt. 62) at 35, 61; Stephanopoulos & McGhee, *supra*, Tr. Ex. 141 at 869-71.

290. Over the entire 1972-2014 period, the distribution of congressional plans' efficiency gaps has been almost perfectly normal and has had a median of nearly zero. Stephanopoulos & McGhee, *supra*, Tr. Ex. 141 at 869-71.

291. The average *absolute* efficiency gap (i.e., the mean of the absolute values of all plans' efficiency gaps in a given year) has recently increased sharply. This metric stayed roughly constant from 1972 to 2010. But in the current cycle it spiked to the highest level recorded in the

modern era: over 6% for state house plans. Jackman Rpt. (Dkt. 62) at 47; Stephanopoulos & McGhee, *supra*, Tr. Ex. 141 at 873.

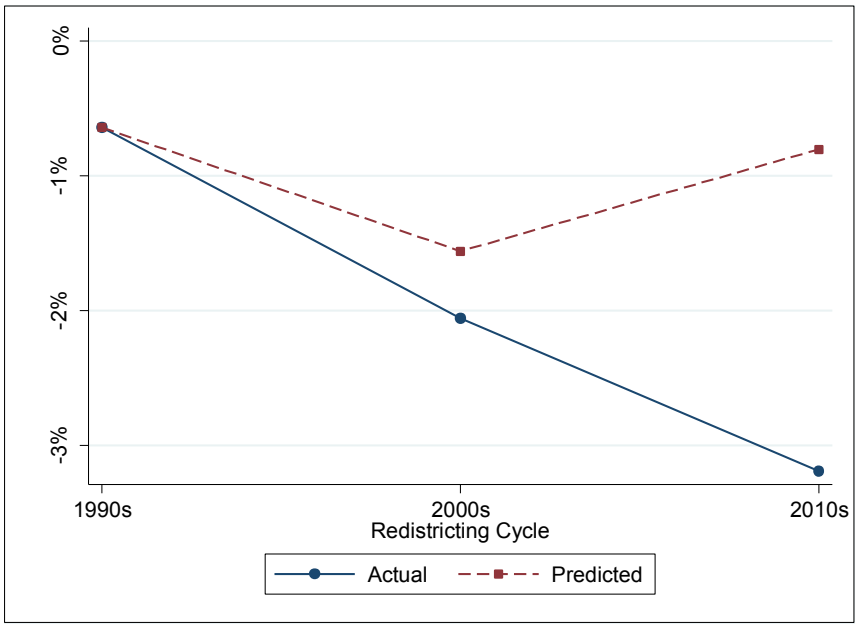
292. The average net efficiency gap (i.e., the mean of the actual values of all plans' efficiency gaps in a given year) has recently trended in a Republican direction. This metric was mildly pro-Democratic from the early 1970s to the mid-1990s, but has been moderately pro-Republican from the mid-1990s to the present. Jackman Rpt. (Dkt. 62) at 44-45; Stephanopoulos & McGhee, supra, at 873. [Stipulated Fact 115]

293. The explanation for the recent pro-Republican trend in the average net efficiency gap 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 19; Trende Dep. (Dkt. 66) at 79:11-23.

294. If the distribution of party control over redistricting had remained unchanged since the 1990s, the average net efficiency gap would barely have changed over this period. The average net efficiency gap in the 1990s was -0.6%, and it would have been -0.8% in the 2010s if the distribution of party control had not shifted. Jackman Rebuttal Rpt. (Dkt. 63) at 20; Tr. Ex. 97.

295. Almost all of the pro-Republican trend in the average net efficiency gap thus stems from greater Republican control over redistricting. Jackman Rebuttal Rpt. (Dkt. 63) at 20; Tr. Ex. 97.

296. 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:



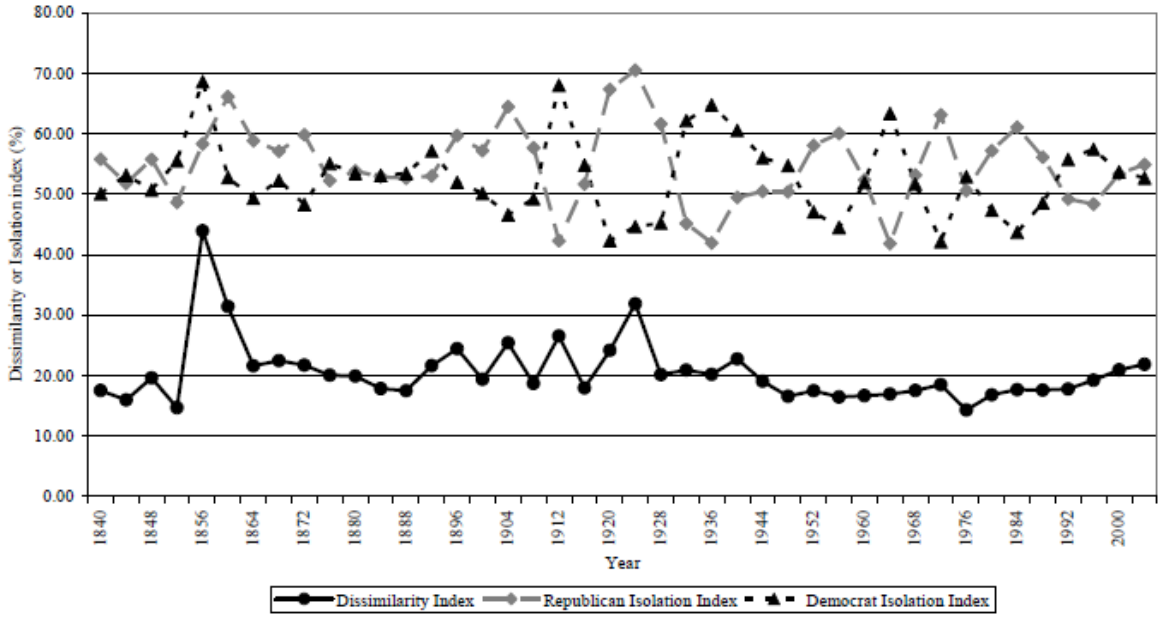
Jackman Rebuttal Rpt. (Dkt. 63) at 20; Tr. Ex. 92.

297. Partisan intent is often a driver of partisan impact, as shown by Professor Goedert's work finding that unified party control over redistricting leads to a large efficiency gap boost in favor of that party. Goedert, *Gerrymandering or Geography*, *supra*, Tr. Ex. 312 at 6; Goedert, *Disappearing Bias*, *supra*, Tr. Ex. 133 at 13.

298. The isolation index indicates, for the average Democratic or Republican voter, the share of his or her fellow county residents that are also Democrats or Republicans. Tr. Ex. 118 at 5-6, 39.

299. Over the period from 1840 to 2004, the isolation index scores for both Democratic and Republican voters nationwide have been close to 50%, oscillating over a range from roughly

40% to 60%, as shown in the chart below. Thus neither party's voters are more geographically isolated than the other's.



Tr. Ex. 118 at 5-6, 39.

300. In the final election covered by the Glaeser and Ward 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." Tr. Ex. 118 at 6.

301. For both 2012 and 2014, Professor Goedert 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. Tr. Ex. 132 at 6, Tr. Ex. 133 at 13; Goedert Dep. (Dkt. 65) at 77:7-79:21.

302. Both of Professor Goedert's 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. Tr. Ex. 132 at 6; Tr. Ex. 133 at 13; Goedert Dep. (Dkt. 65) at 79:24-80:3.

303. 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. Mayer Rebuttal Rpt. (Dkt. 95) at 15-16; Goedert Dep. (Dkt. 65) at 90:12-18.

304. Plugging the appropriate values of the independent variables into Profesor Goedert's 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. 95) at 15-16; Goedert Dep. (Dkt. 65) at 90:12-18.

305. The district plan simulations carried out by Jowei Chen and Jonathan Rodden in their article, *Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures*, 57 Q.J. Pol. Sci. 239 (2013), are inapplicable to this case for several reasons. Jackman Rebuttal Rpt. (Dkt. 63) at 20.

306. Chen and Rodden's simulated plans are not lawful because they ignore the Voting Rights Act and state redistricting criteria, such as respect for political subdivisions and respect for communities of interest, that are in effect in a majority of states. Jackman Rebuttal Rpt. (Dkt. 63) at 20-21; Goedert Dep. (Dkt. 65) at 154:20-55:3; Trende Dep. (Dkt. 66) at 67:10-21.

307. 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 21.

308. It is unknown whether Chen and Rodden's simulated maps actually constitute a representative sample of all possible maps that satisfy their selection criteria. Because of flaws in their simulation algorithm, their maps may only capture an arbitrary subset of the relevant plan universe. Jackman Rebuttal Rpt. (Dkt. 63) at 21; Tr. Ex. 99 at 2-3; Jackman Dep. (Dkt. 98) at 103:24-105:3.

309. Chen and Rodden's results are 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]." 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), Tr. Ex. 131; Jackman Rebuttal Rpt. (Dkt. 63) at 21.

310. The only proper baseline for measuring plans' efficiency gaps is an efficiency gap of zero. This is the only baseline that treats the parties equally and results in equal wasted votes for each party. Jackman Dep. (Dkt. 98) at 29:2-4.

311. The efficiency gap distribution over the entire 1972-2014 period, which has a mean of almost exactly zero, also supports a zero baseline. Jackman Rpt. (Dkt. 62) at 35, 61; Stephanopoulos & McGhee, *supra*, at 869-71, Tr. Ex. 141.

312. Even if the efficiency gap of the mean or median simulated plan could be reliably determined, it would be legally and normatively irrelevant. There would be no reason to

privilege this value over the zero baseline that corresponds to equal treatment for both parties. Jackman Dep. (Dkt. 98) at 29:3-4.

313. Mr. Trende's analysis does not contradict the voluminous evidence that there is no significant difference between the clustering of Democratic voters and that of Republican voters nationwide. Mayer Rebuttal Rpt. (Dkt 95) 3-11.

314. Mr. Trende's analysis of nationwide trends in partisan clustering relies solely on a series of maps showing county-level presidential election results in the West South Central region of the country. Trende Rpt. (Dkt. 55) at 66-68.

315. Mr. 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. [Stipulated Fact 292]

316. Mr. Trende admitted that the maps he relied upon make no adjustment for counties' very different populations. Trende Dep. (Dkt. 66) at 52:25-53:3; Goedert Dep. (Dkt. 65) at 186:5-7. [Stipulated Fact 293]

317. Mr. Trende admitted that the maps he relied on do not display each party's margin of victory in each county. Trende Dep. (Dkt. 66) at 52:3-6. [Stipulated Fact 294]

318. Mr. Trende admitted that the maps he relied on are based on presidential rather than state legislative election results. Trende Dep. (Dkt. 66) at 53:25-54:13, 56:9-58:9. [Stipulated Fact 295]

319. Mr. Trende admitted that the maps he relied on 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.

f) Volume of plans affected

320. It is not possible to pinpoint the number of plans historically that would have failed plaintiffs' proposed test because that number depends on: (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 justified by each state's political geography and legitimate redistricting goals. Jackman Rebuttal Rpt. (Dkt. 63) at 2-3, 25; Jackman Dep. (Dkt. 98) at 6:12-15.

321. Professor Goedert has recommended a proxy for partisan intent: 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. Tr. Ex. 132 at 3; Goedert Dep. (Dkt. 65) at 39:19-40:5.

322. There are 206 distinct plans in Professor Jackman's database. Of these, 70 plans (or 34%) had an initial efficiency gap greater than 7% in magnitude, and 32 plans (or 16%) had an initial efficiency gap greater than 10% in magnitude. Jackman Rpt. (Dkt. 62) at 7; Jackman Rebuttal Rpt. (Dkt. 63) at 18-20; Jackman Decl., Ex. F (Dkt. 58-6). [Stipulated Fact 116]

323. *Of the 70 plans that had an initial efficiency gap greater than 7% in magnitude, 43 plans (or 21%) were designed by a single party that had unified control over redistricting. Jackman Rpt. (Dkt. 62) at 7; Jackman Rebuttal Rpt. (Dkt. 63) at 18-20; Jackman Decl., Ex. F (Dkt. 58-6).* [Stipulated Fact 117]

324. Of the 32 plans that had an initial efficiency gap greater than 10% in magnitude, 20 plans (or 10%) were designed by a single party that had unified control over redistricting. Jackman Rpt. (Dkt. 62) at 7; Jackman Rebuttal Rpt. (Dkt. 63) at 18-20; Jackman Decl., Ex. F (Dkt. 58-6). [Stipulated Fact 118]

325. Of the 43 plans from the current redistricting cycle in Professor Jackman's database, 16 (or 37%) had initial efficiency gaps above 7% in magnitude, and of these, 11 plans (or 26%) were designed by a single party that had unified control over redistricting. Jackman Rpt. (Dkt. 62) at 7; Jackman Rebuttal Rpt. (Dkt. 63) at 18-20; Jackman Decl., Ex. F (Dkt. 58-6). [Stipulated Fact 119]

326. Of the 43 plans from the the current redistricting cycle in Professor Jackman's database, 11 plans (or 26%) had initial efficiency gaps greater than 10% in magnitude and of these, 7 plans (or 16%) were designed by a single party that had unified control over redistricting. Jackman Rpt. (Dkt. 62) at 7; Jackman Rebuttal Rpt. (Dkt. 63) at 18-20; Jackman Decl., Ex. F (Dkt. 58-6). [Stipulated Fact 120]

327. The following chart identifies: (i) the number of plans, historically and currently, in Professor Jackman's database that had an initial efficiency gap above 7%; (ii) the number of plans with an initial efficiency gap above 7% and unified party control; (iii) the number of plans with an initial efficiency gap above 10%; and (iv) the number of plans with an initial efficiency gap above 10% and unified party control:

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

Jackman Rpt. (Dkt. 62) at 7; Jackman Rebuttal Rpt. (Dkt. 63) at 18-20; Jackman Decl., Ex. F (Dkt. 58-6). [Stipulated Fact 121]

328. Professor Goedert finds that a single party with unified control over redistricting does not always seek to benefit itself: "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. (Dkt. 51) at 10.

329. The proportion of plans creatd by Republicans in full control of the state government increased from about 10% in the 1990s, to about 20% in the 2000s, to about 40% in the 2010s (in 49 states, excluding Nebraska). 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 19; Trende Dep. (Dkt. 66) at 79:11-23. [Stipulated Fact 122]

330. The number of plans that could potentially be struck down under plaintiffs' test for partisan gerrymandering is far smaller than the number of plans struck down following the reapportionment revolution of the 1960s. Tr. Ex. 101 at 4.

331. The reapportionment revolution of the 1960s resulted in the invalidation of almost every state house, state senate, and congressional plan in the country. Jackman Decl., Ex. J (Dkt. 58-10) at 4. [Stipulated Fact 123]

332. 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. This is also a far larger volume of litigation than would occur under plaintiffs' proposed test. Tr. Exs. 75-76 at 655.

333. In the current redistricting cycle, 224 cases were filed in 42 states, resulting in 23 plans being invalidated or designed by the courts. Plaintiffs' proposed test would not appreciably increase this volume, and could reduce it by eliminating parties' incentives to file other kinds of suits. *Litigation in the 2010 Cycle*, All About Redistricting, http://redistricting.lls.edu/cases.php, Tr. Ex. 332.

g) Wisconsin partisan asymmetry

334. The average efficiency gap of the Wisconsin State Assembly redistricting plan from 1972-1980 was -0.3%, and it was drawn by divided government. Jackman Rpt. (Dkt. 62) at 72; Jackman Decl., Ex. F (Dkt. 58-6) at 3. [Stipulated Fact 194]

335. The average efficiency gap of the Wisconsin State Assembly redistricting plan from 1982-1990 was -1.9%. Jackman Rpt. (Dkt. 62) at 72; Jackman Decl., Ex. F (Dkt. 58-6) at 11. [Stipulated Fact 194]

336. In the 1980s, a federal court drew the State Assembly districts. Wisc. State AFL-CIO v. Elections Bd., 543 F. Supp. 630 (E.D. Wis. 1982). The districts were amended by a legislature and Governor with unified Democratic control in 1983 and used for the period 1984-1990. [Stipulated Fact 189]

337. The average efficiency gap of the Wisconsin State Assembly redistricting plan from 1992-2000 was -2.4%. Jackman Rpt. (Dkt. 62) at 72; Jackman Decl., Ex. F (Dkt. 58-6) at 18. [Stipulated Fact 190]

338. In the 1990s, a federal court drew the State Assembly districts. 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. [Stipulated Fact 191]

339. The average efficiency gap of the Wisconsin State Assembly redistricting plan from 2002-2010 was -7.6%. Jackman Rpt. (Dkt. 62) at 72; Jackman Decl. Ex. F (Dkt. 58-6) at 25. [Stipulated Fact 192]

340. In the 2000s, a federal court drew the State Assembly districts. See Baumgart v. Wendelberger, 2002 WL 34127471 (E.D. Wis. May 30, 2002). [Stipulated Fact 193]

341. Page 17 of 64 in 11-CV-562 DISC 2012-02-17 Legislature Released Docs_MBF 000202.PDF is a true and correct copy of an email from Jim Troupis to Eric M. McLeod, Cced to Adam Foltz, Tad Ottman, and Sarah Troupis on June 21, 2011 with the subject "Experts." The email includes the following statement "I strongly believe Prof. Grofman is essential to our efforts as he brings to any three judge panel three decades of national and international redistricting work on both sides of the aisle. He has been recognized by courts as perhaps the single most respected political scientist addressing matters of redistrict. There is not doubt we will end up in Court of (sic) whatever is passed, and so having a table of powerful experts is essential. Without Grofman in 2001 we would not have succeeded in getting the map we did get as Easterbrook followed his direction in drawing the map." Tr. Ex. 348.

342. The average efficiency gap for the Demonstration Plan drawn by Professor Mayer is calculated by averaging the efficiency gaps for the three scenarios that Professor Mayer considered in conducting his sensitivity testing. These are "D minus 5" (0.14%); "My Plan Incumbent Baseline" (-3.89%); and "D plus 3" (-3.75%), resulting in an average efficiency gap of -2.50%. Mayer Rebuttal Rpt. (Dkt. 95) at 27.

343. A summary of the various Wisconsin plans' efficiency gaps and the designer of each plan is shown below:

Cycle	***Designer***	***Average Efficiency Gap***
1970s	*Divided government*	*-0.3%*
1980s	*Court drawn, then unified Democratic control*	*-1.9%*
1990s	*Court*	*-2.4%*
2000s	*Court*	*-7.6%*

Jackman Rpt. (Dkt. 62) at 72; Jackman Decl., Ex. F (Dkt. 58-6) at 3, 11, 18, 25. [Stipulated Fact 194]

344. Using the same simplified method for calculating the efficiency gap that Professor Jackman used for all other plans in his database, Wisconsin's Act 43 (the "Current Plan") had an efficiency gap of -13% in 2012 and -10% in 2014. Jackman Rpt. (Dkt. 62) at 60-63.

345. Between 1972 and 2014, fewer than four percent of all state house plans nationwide had an efficiency gap with an absolute value of 13% or higher. Jackman Rpt. (Dkt. 62) at 5-6. [Stipulated Fact 195]

346. Between 1972 and 2010, no state house plan anywhere in the United States had an efficiency gap as large as the Current Plan in the first two elections after redistricting. Jackman Rpt. (Dkt. 62) at 4. [Stipulated Fact 196]

347. The 2012 figure for the Current Plan represents the 28th-worst score in modern American history (out of nearly 800 total plans), placing the Plan in the worst 4% of this distribution, more than two standard deviations from the mean, as shown in the following chart:

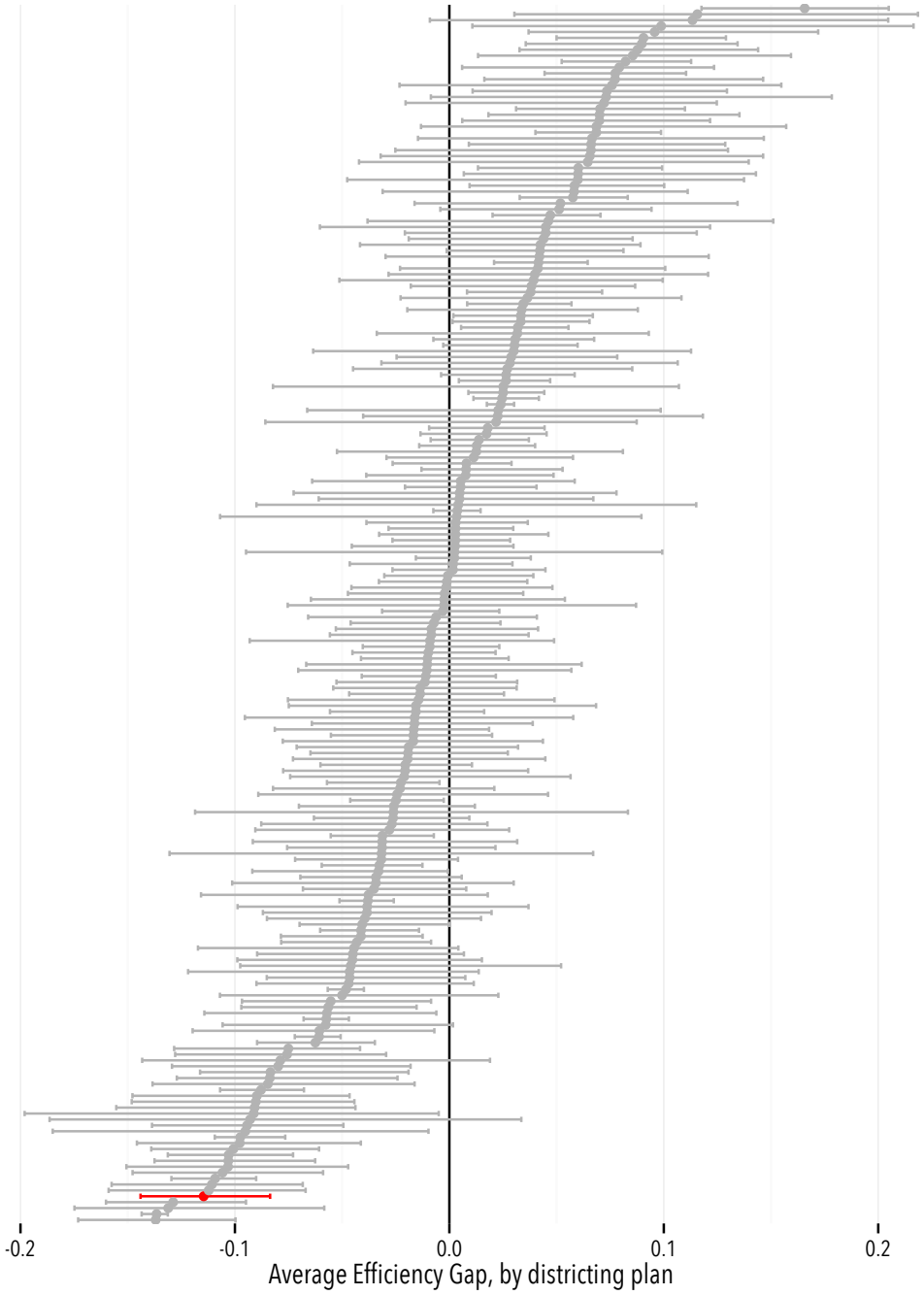


Figure 1: Average efficiency gap score, 206 districting plans, 1972-2014. Plans have been sorted from low average *EG* scores to high. Horizontal lines cover 95% confidence intervals. Negative efficiency gap scores are plans that disadvantage Democrats; positive efficiency gap scores favor Democrats. The Current Wisconsin Plan is shown in red. See also Figure 36.

Jackman Rpt (Dkt. 62) at 4, 7, Tr. Ex. 35.

348. Using the full district-by-district method for calculating the efficiency gap, and taking into account incumbency so as to maximize comparability with Professor Jackman's calculations, the Current Plan had an efficiency gap of -14.2% in 2012. This value is nearly identical to (though slightly *worse* than) the -13% calculated by Professor Jackman. Mayer Rebuttal Rpt. (Dkt. 95) at 24.

349. In 2012, the Current Plan exhibited a partisan bias of -13%. In other words, in a tied election, Republicans would have won 63% of the Assembly seats and Democrats 37%. Klarner Database.

350. In 2014, the Current Plan exhibited a partisan bias of -12%. In other words, in a tied election, Republicans would have won 62% of the Assembly seats and Democrats 38%. Klarner Database.

351. The Current Plan's partisan bias scores are also dramatic outliers relative to the historical distribution. Klarner Database.

352. In 2012, the Current Plan exhibited a mean-median difference of -5.6%. In other words, the plan's median district (45.8% Democratic) was 5.6% more Republican than the plan's mean district (51.4% Democratic). Klarner Database.

353. In 2014, the Current Plan exhibited a mean-median difference of -5.9%. In other words, the plan's median district (42.1% Democratic) was 5.9% more Republican than the plan's mean district (48.0% Democratic). Klarner Database.

354. The Current Plan's mean-median differences are also dramatic outliers relative to the historical distribution. Klarner Database

355. Under the Current Plan, Democratic voters were cracked so that Republican candidates were far more likely to prevail in close races (where the winner had 60% or less of the

vote). According to Professor Mayer's baseline model, Republicans were likely to win 42 such districts, while Democrats would win only 17. According to Professor Gaddie's projections, Republicans were likely to win 45 such districts, while Democrats would win only 21. Mayer Rpt. (Dkt. 59) at 40-41.

356. Under the Current Plan, Democratic voters were packed into a number of districts where they would win overwhelmingly (by getting 80% or more of the vote). According to Professor Mayer's baseline model, there were eight districts where Democrats would win by this margin, compared to zero districts for Republicans. According to Professor Gaddie's projections, there were seven districts where Democrats would win by this margin, compared to zero districts for Republicans. Mayer Rpt. (Dkt. 59) at 38-41.

357. According to Professor Jackman's analysis of the relationship between plans' initial and lifetime average efficiency gaps, the Current Plan is likely to have a lifetime average efficiency gap of -9.5%, and there is more than a 99.9% probability that its lifetime average will be pro-Republican. Jackman Rebuttal Rpt. (Dkt. 63) at 16-17.

358. According to Professor Jackman's prognostic tests, there is essentially a 0% probability that the Current Plan's efficiency gaps to date are a false positive, i.e., that the Current Plan will end up having a pro-Democratic lifetime average efficiency gap despite its large pro-Republican efficiency gaps to date. Jackman Rebuttal Rpt. (Dkt. 63) at 12.

359. According to Professor Jackman's sensitivity testing for all plans currently in effect, even if Wisconsin experiences large vote swings of up to 5% in either direction, the Current Plan's efficiency gaps will remain highly correlated with, and in favor of the same party as, its observed efficiency gaps to date. Tr. Ex. 93 at 3-4.

360. Professor Mayer's analysis shows that the Current Plan's extreme pro-Republican efficiency gap is robust to whether incumbents are taken into account. When they are not (as in the baseline model), the Plan's efficiency gap is -11.7% using 2012 data. When they are, the Plan's efficiency gap is -14.2% using 2012 data, or somewhat *worse*. Mayer Rebuttal Rpt. (Dkt. 95) at 24.

361. Professor Mayer's sensitivity testing shows that the Current Plan's efficiency gap would remain highly pro-Republican under both Democratic and Republican wave scenarios. In the event of a Democratic wave (D+3), the Plan would have an efficiency gap of -14.9%. In the event of a Republican wave (D-5), the Plan would have an efficiency gap of -6.1%. Mayer Rebuttal Rpt. (Dkt. 95) at 28.

362. Professor Mayer's sensitivity testing thus shows that even if the Democrats obtained over 54% of the statewide Assembly vote—equal to their best performance in a generation—they still would not capture a majority of the Assembly, gaining only 45 seats, as shown in the table below:

	Table G Efficiency Gap Estimates, Uniform Swing Act 43 Districts		
	D Minus 5 (all incumbents)	**Act 43 Actual**	**D Plus 3 (all incumbents)**
Party Split (R-D)	60-39	60-39	54-45
Rep share of Seats	61%	61%	55%
Wasted Republican Votes	622,966	509,747	500,607
Wasted Democratic Votes	795,844	911,954	924,690
Gap	172,878	402,207	424,083
Total Democratic Votes	1,317,061	1,452,132	1,551,205
Total Republican Votes	1,520,560	1,391,269	1,299,388
Total Votes	2,837,621	2,843,401	2,850,593
Efficiency Gap (gap/total votes)	**6.09%**	**14.15%**	**14.88%**

Mayer Rebuttal Rpt. (Dkt. 95) at 26, 28; Tr. Ex. 117.

IV. LACK OF JUSTIFICATION

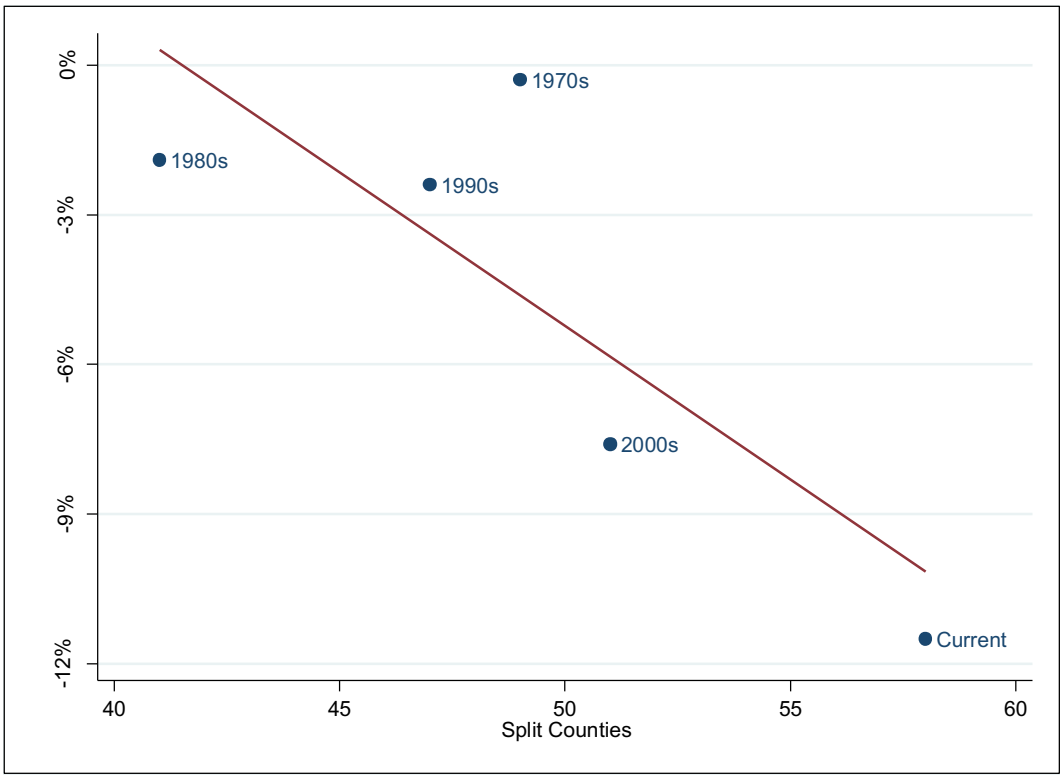
a) Wisconsin's prior plans

363. The following chart contains a summary of municipal splits, county splits and compactness scores for Act 43 and prior plans.

	Municipal Splits	*County Splits*	*Reock (mean)*	*Polsby-Popper (mean)*
1972 Plan		*49*		
1982 Plan		*41*		
1992 Plan	*72*	*47*		
2002 Plan	*50*	*51*	*0.41*	*0.29*
Act 43	*62*	*58*	*0.39*	*0.28*

[Stipulated Fact 221]

364. The chart below plots the average efficiency gap of each Assembly plan from the 1970s to the present versus the number of counties split by each plan. The Current Plan is clearly the worst along both dimensions, exhibiting an average efficiency gap of -11.5% and splitting 58 of Wisconsin's 72 counties. All earlier plans both exhibited less extreme efficiency gaps and split fewer counties. The chart also demonstrates that, in Wisconsin at least, there is no conflict between respecting county boundaries and designing a symmetric map. In fact, the relationship runs in exactly the opposite direction; greater respect for county lines is strongly associated with a *smaller* efficiency gap.



Jackman Report (Dkt. 62) at 72, Tr. Ex. 323.

b) The demonstration plan

365. There is no legitimate justification for the Current Plan's extreme partisan asymmetry because it was possible for Wisconsin to enact an Assembly plan that complied at least as well with all federal and state requirements while treating both parties symmetrically. Mayer Rpt. (Dkt. 54) at 46-47.

366. The Demonstration Plan designed by Professor Mayer would have had an efficiency gap of just -2.2% in 2012 (assuming all contested districts and no incumbents). Mayer Rpt. (Dkt. 54) at 46.

367. On the criteria listed below, the Demonstration Plan performs as shown in the table below:

		Demonstration Plan	**Act 43**
Population Deviation		0.86%	0.76%
Average Compactness (Reock)		0.41	0.39
Number of Municipal Splits	County	55	58
	City Town Village	64	62

Mayer Rpt. (Dkt. 54) at 37. [Stipulated Fact 226]

368. The Demonstration Plan has a marginally larger population deviation than the Current Plan (0.86% versus 0.76%), but is well below even the strictest standards applied to state legislative plans. Mayer Rpt. (Dkt. 54) at 37.

369. The Demonstration Plan's districts are significantly more compact on average than the Current Plan's, with an average Reock score of 0.41, compared to 0.28 for the Current Plan. Mayer Rpt. (Dkt. 54) at 37.

370. The Demonstration Plan has fewer municipal splits than the Current Plan (119 versus 120). Mayer Rpt. (Dkt. 54) at 37.

371. The Current Plan created six black-majority districts (districts 10-12 and 16-18), ranging from 56.7% to 67.6% black population, and from 51.1% to 61.8% black voting age population. The Demonstration Plan retains six black-majority districts, ranging from 60.0% to 63.4% black population, and from 56.2% to 60.5% black voting age population. Mayer Rpt. (Dkt. 54) at 37. [Stipulated Fact 197]

372. In Baldus v. Wisc. Gov't Accountability Bd., 849 F. Supp. 2d 840 (E.D. Wis. 2012), a federal court created a majority-Latino district in Milwaukee (district 8). The

Demonstration Plan retains the boundaries of this district. Mayer Rpt. (Dkt. 54) at 38. [Stipulated Fact 198]

373. If incumbents are taken into account in Professor Mayer's analysis, the efficiency gap for the Demonstration Plan remains small, at -3.9%. Mayer Rebuttal Rpt. (Dkt. 95) at 24.

374. If incumbents are taken into account *and* the vote is swung by five points in a Republican direction (thus simulating the largest Republican wave of the last generation), the efficiency gap for the Demonstration Plan remains small, at 0.1%. Mayer Rebuttal Rpt. (Dkt. 95) at 27.

375. If incumbents are taken into account *and* the vote is swung by three points in a Democratic direction (thus simulating the largest Democratic wave of the last generation), the efficiency gap for the Demonstration Plan remains small, at -3.8%. Mayer Rebuttal Rpt. (Dkt. 95) at 27.

376. The efficiency gap for the Demonstration Plan thus remains well below the plaintiffs' suggested 7% threshold, even when the statewide vote reaches the most extreme values either party has seen over the last three decades, as shown in the table below:

	Table F Efficiency Gap Estimates, Uniform Swing Demonstration Plan		
	D Minus 5 (all incumbents)	**My Plan Incumbent Baseline**	**D Plus 3 (all incumbents)**
party split (R-D)	51-48	50-49	43-56
Rep share of Seats	52%	49%	43%
Wasted Republican Votes	711,621	655,733	660,706
Wasted Democratic Votes	707,789	766,234	767,927
Gap	(3,833)	110,501	107,221
Total Democratic Votes	1,334,535	1,455,846	1,571,786
Total Republican Votes	1,504,285	1,388,087	1,285,480
Total Votes	2,838,820	2,843,933	2,857,266
Efficiency Gap (gap/total votes)	**-0.14%**	**3.89%**	**3.75%**

Mayer Rebuttal Rpt. (Dkt. 95) at 26-27, Tr. Ex. 116.

c) Professor Chen's analysis

377. Using a simulation technique that defendants have repeatedly praised, Professor Chen created 200 randomly drawn Assembly plans for Wisconsin. His algorithm used four line-drawing criteria: (1) equal population, so that no district deviates by more than 1% from the ideal population; (2) the preservation of county boundaries; (3) the preservation of municipal boundaries; and (4) smallest-circle (also known as Reock) compactness. Additionally, Professor Chen froze in place the Current Plan's six black-majority districts (10, 11, 12, 16, 17, 18) and one Hispanic-majority district (8) to ensure compliance with the Voting Rights Act. And he did not consider electoral data in any way when programming and running his algorithm. Tr. Ex. 156 at 5-8.

378. Professor Chen's simulated plans preserved anywhere from 18 to 25 counties intact, compared to just 14 for the Current Plan. Tr. Ex. 156 at 5.

379. Professor Chen's simulated plans preserved anywhere from 1,837 to 1,853 municipalities intact, compared to just 1,825 for the Current Plan. Tr. Ex. 156 at 7.

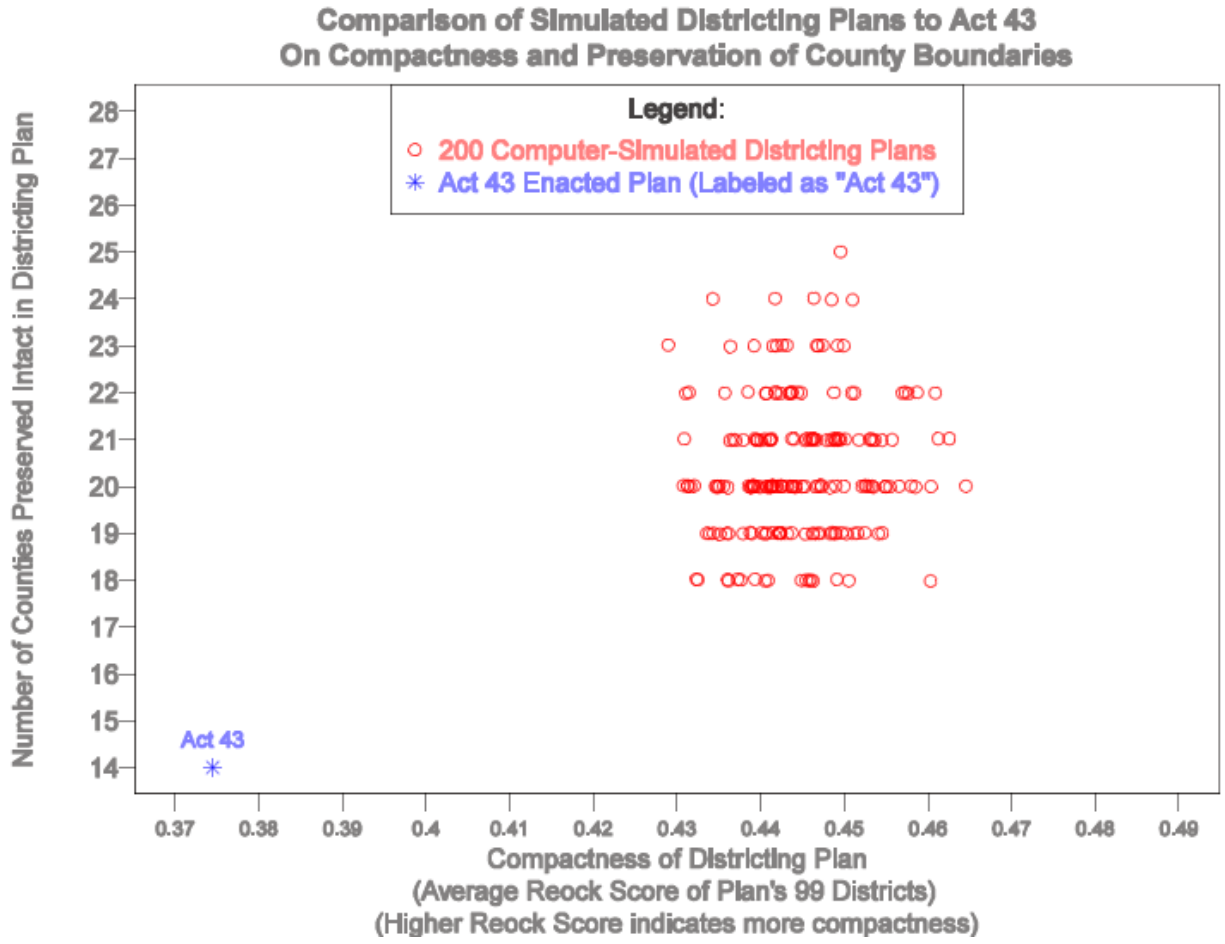
380. Professor Chen's simulated plans have average Reock compactness scores ranging from 0.43 to 0.46, or about 15% to 25% better than the Current Plan. Tr. Ex. 156 at 7-8.

381. About 72% of Professor Chen's simulated plans have efficiency gaps within 3% of zero. About 23% of the simulated plans have efficiency gaps within 1% of zero. Numerous simulated plans have pro-Democratic efficiency gaps ranging from 0% to 3%. Tr. Ex. 156 at 10.

382. The Current Plan's efficiency gap is more than *twice* as large as the *most* pro-Republican simulated plan's. Tr. Ex. 156 at 11.

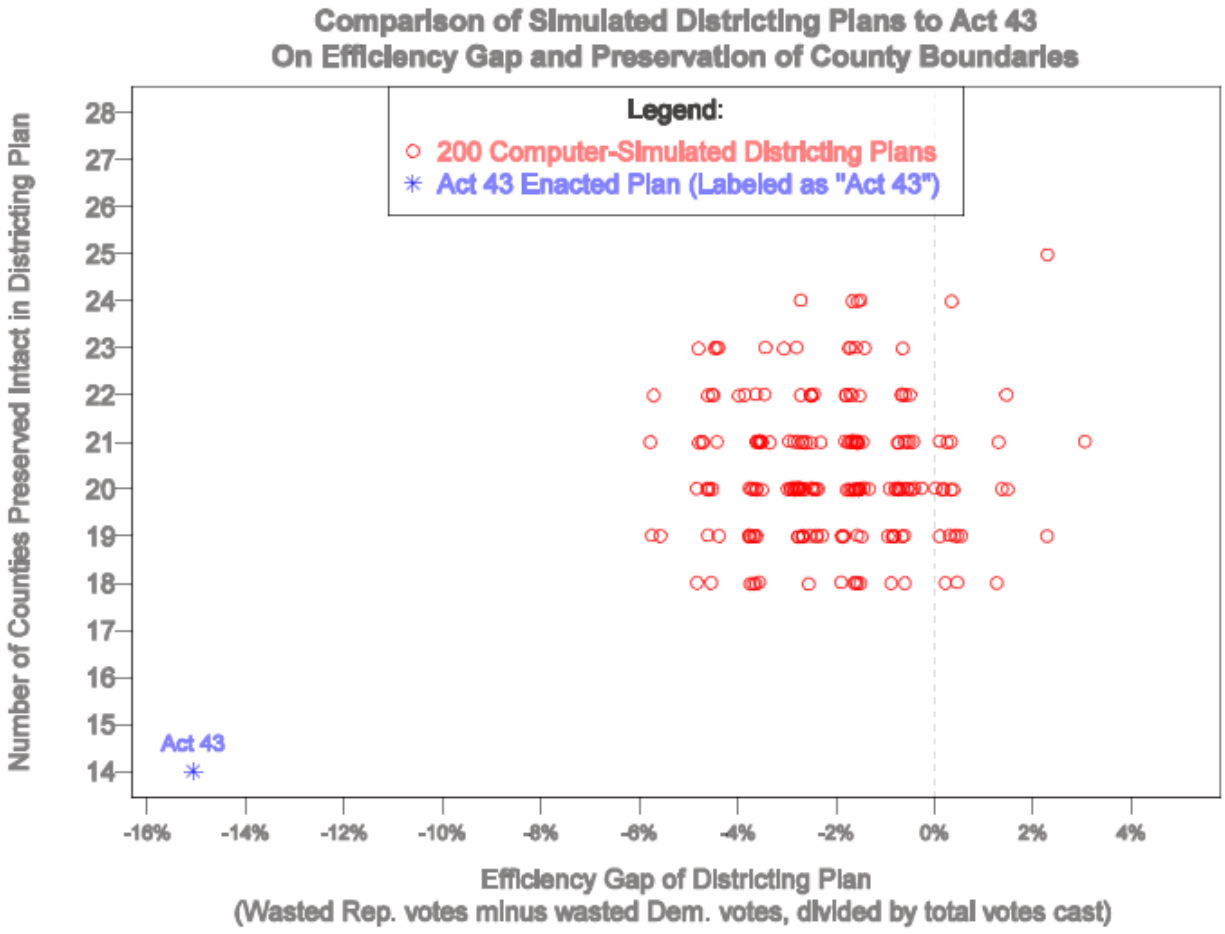
383. The Current Plan is thus a negative outlier, with respect to the distribution of simulated plans, in terms of its compactness, preservation of county and municipal boundaries, and efficiency gap. This is illustrated graphically in the following charts:

FIGURE 2



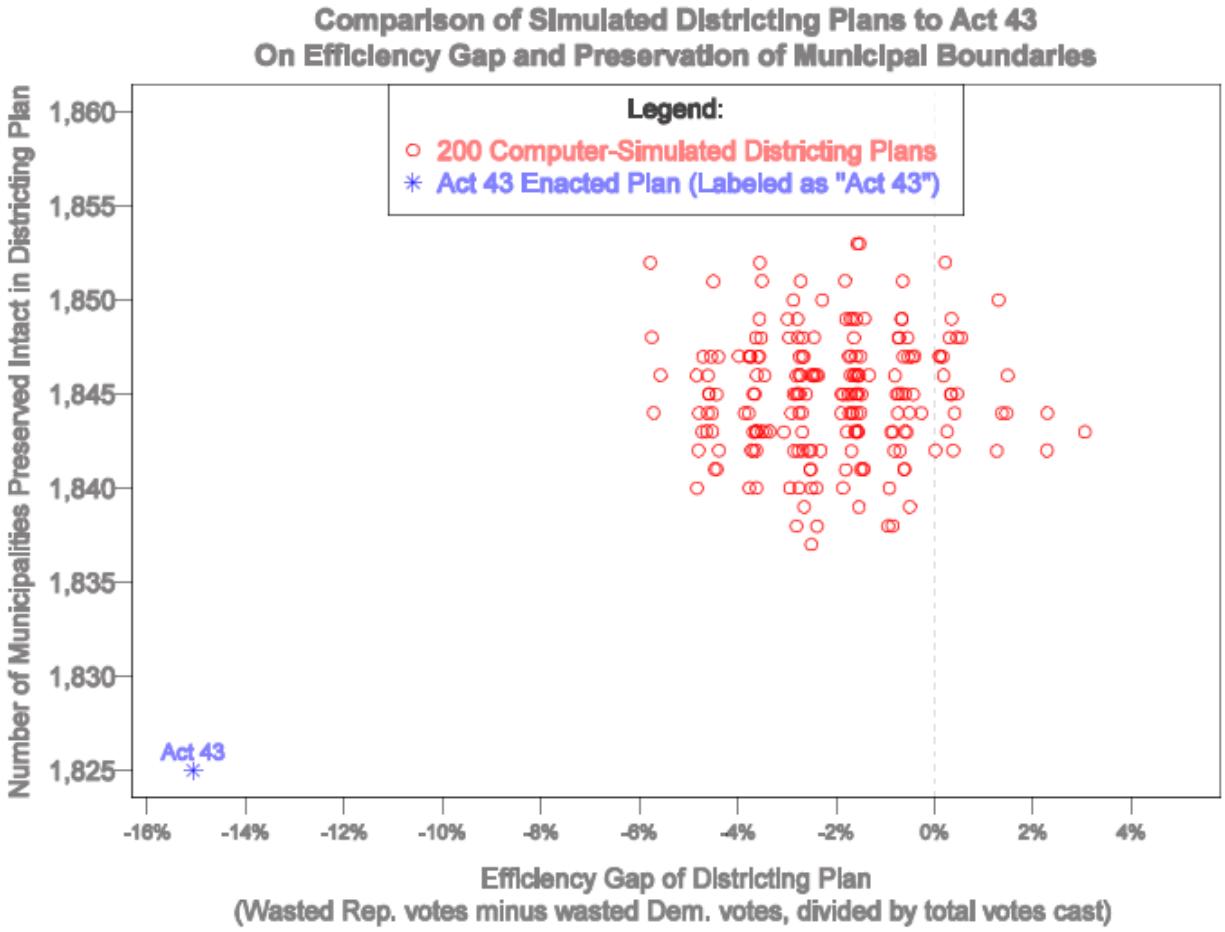
Tr. Ex. 157.

FIGURE 3



Tr. Ex. 158.

FIGURE 4

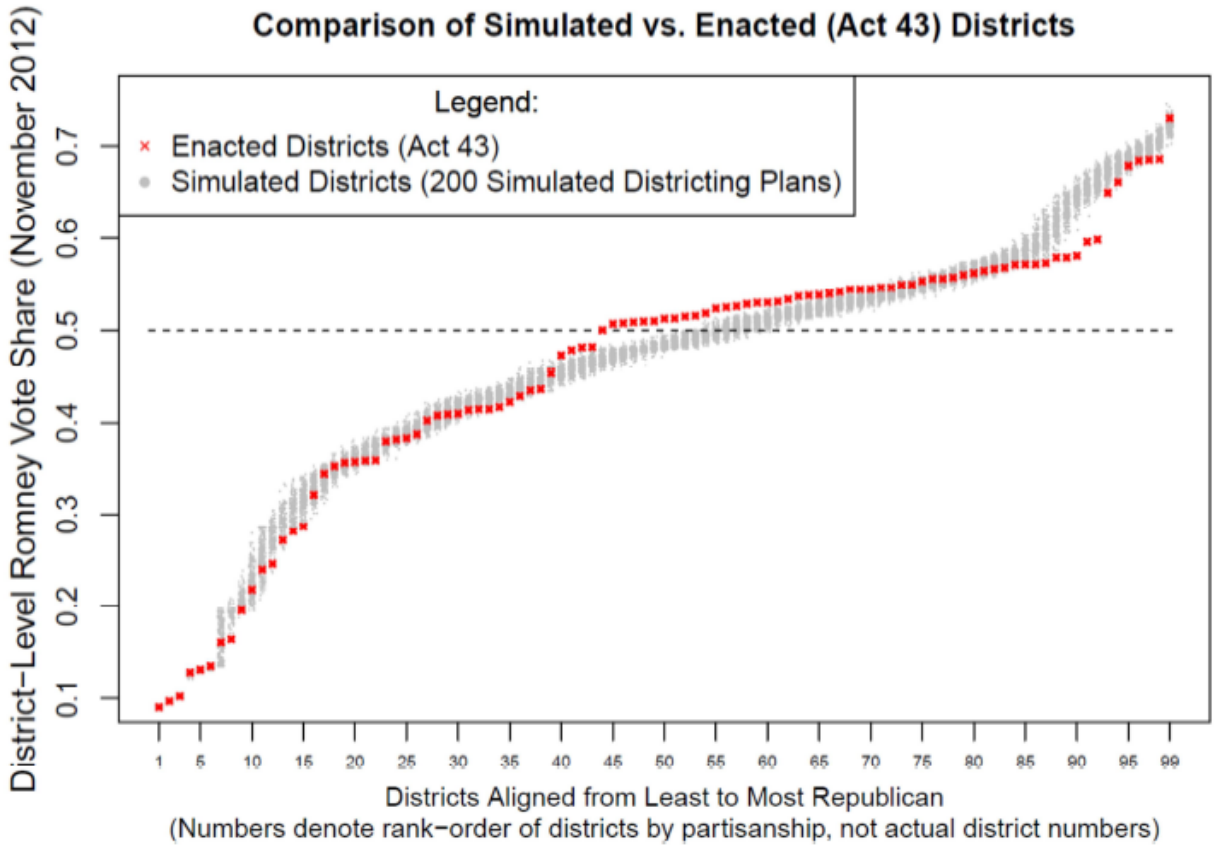


Tr. Ex. 159.

384. That the Current Plan falls so far outside the distribution of simulated plans in every respect both supports the inference that it was designed with partisan intent and indicates that its extreme partisan asymmetry was unjustified by legitimate factors. Further evidence for both of these propositions comes from comparing the rank order of the Current Plan's districts (from least to most Republican) to that of the mean simulated plan's districts. As shown below, the Current Plan includes many more districts with modest Republican majorities (where Democratic voters are cracked), somewhat more districts with overwhelming Democratic

majorities (where Democratic voters are packed), and somewhat fewer districts with overwhelming Republican majorities (where Republican voters would have been packed).

FIGURE 7



Tr. Ex. 160.

d) Wisconsin's political geography

385. Democratic and Republican voters in Wisconsin are about equally spatially isolated and concentrated. Mayer Rebuttal Rpt. (Dkt. 95) at 16-18.

386. The isolation index 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. Mayer Rebuttal Rpt. (Dkt. 95) at 16-17; Tr. Ex. 119 at 3.

387. The Global Moran's I shows how spatially clustered Democratic or Republican voters are. It varies from -1 (perfect dispersion) to +1 (perfect clustering). Mayer Rebuttal Rpt. (Dkt. 95) at 16-17; Tr. Ex. 120 at 322.

388. The Democratic and Republican isolation index scores for 2004-2014 and the Democratic and Republican Global Moran's I scores for 2012 and 2014 are shown in the following table:

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

Mayer Rebuttal Rpt. (Dkt. 95) at 17-18, Tr. Ex. 123.

389. The Democratic Isolation Index for 2004 was 20%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

390. The Republican Isolation Index for 2004 was 21%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

391. The Democratic Isolation Index for 2006 was 16%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

392. The Republican Isolation Index for 2006 was 17%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

393. The Democratic Isolation Index for 2008 was 15%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

394. The Republican Isolation Index for 2008 was 14%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

395. The Democratic Isolation Index for 2010 was 15%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

396. The Republican Isolation Index for 2010 was 17%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

397. The Democratic Isolation Index for 2012 was 14%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

398. The Republican Isolation Index for 2012 was 12%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

399. The Democratic Isolation Index for 2014 was 23%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

400. The Republican Isolation Index for 2014 was 20%. Mayer Rebuttal Rpt. (Dkt. 95) at 17.

124. The Global Moran's I for Democrats in 2012 was 0.68. Mayer Rebuttal Rpt. (Dkt. 95) at 18.

401. The Global Moran's I for Democrats in 2014 was 0.75. Mayer Rebuttal Rpt. (Dkt. 95) at 18.

402. The Global Moran's I for Republicans in 2012 was 0.69. Mayer Rebuttal Rpt. (Dkt. 95) at 18.

403. The Global Moran's I for Republicans in 2014 was 0.68. Mayer Rebuttal Rpt. (Dkt. 95) at 18.

404. At all times from 2004 to 2014, 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. 95) at 17-18.

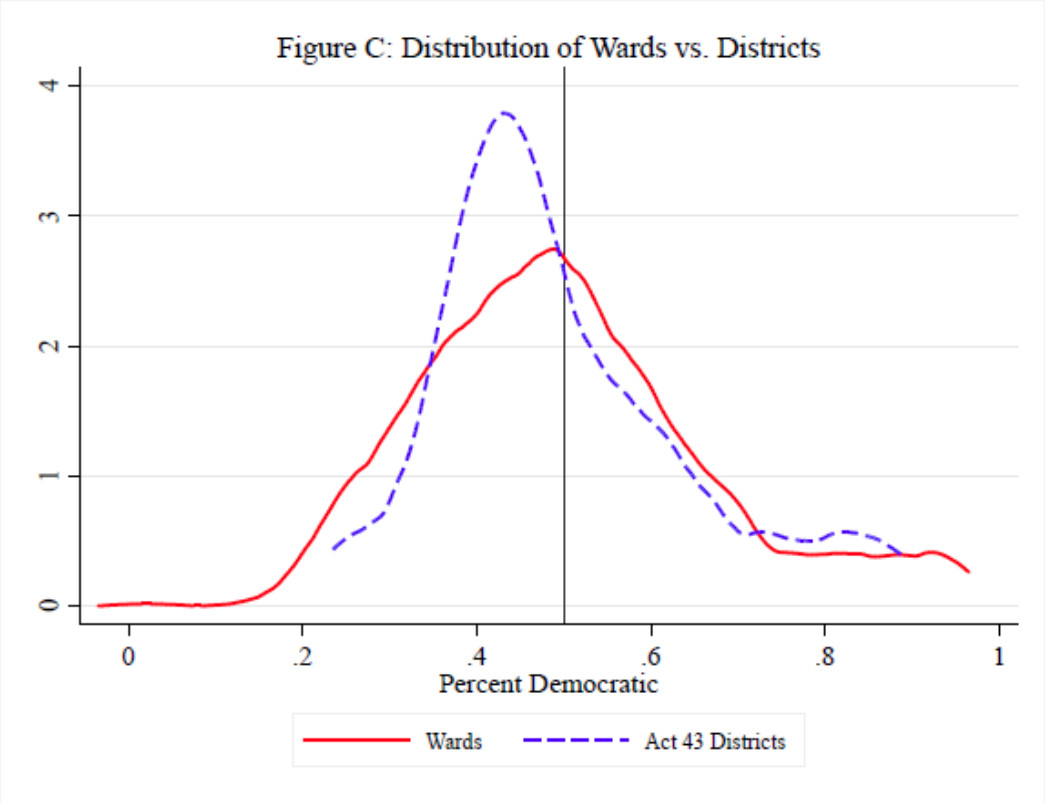
405. Professor Goedert's models for the 2012 and 2014 elections show that if a neutral institution (a commission, court, or divided government) drew Wisconsin's district plan, the efficiency gap would be slightly pro-Democratic, with a value of 1.9% in 2012 and 4.4% in 2014. Mayer Rebuttal Rpt. (Dkt. 95) at 15-16; Goedert Dep. (Dkt. 65) at 85:7-20.

406. According to the 2010 Census,Wisconsin is 70.2% urbanized, and according to the 2014 update to the Census, Wisconsin is 6.6% black, and 6.5% Hispanic. [Stipulated Fact 199]

407. Wisconsin was 50.8% Democratic in 2012 and 47.2% Democratic in 2014. The variables in these two paragraphs are those needed to calculate the efficiency gap in Professor Goedert's models. Mayer Rebuttal Rpt. (Dkt. 95) at 15-16.

408. If Wisconsin had an intrinsic pro-Republican political geography, the partisan distribution of Wisconsin's wards should look very similar to the partisan distribution of the Current Plan's districts. Mayer Rebuttal Rpt. (Dkt. 95) at 11-12.

409. Professor Mayer compares the partisan distribution of Wisconsin's *wards* with that of the Current Plan's *districts*:



Mayer Rebuttal Rpt. (Dkt. 95) at 11-12, Tr. Ex. 107.

410. The partisan distribution of the Current Plan's districts peaks at around 42% Democratic (indicative of Democratic "cracking"), and has a long Democratic tail (indicative of Democratic "packing"). Mayer Rebuttal Rpt. (Dkt. 95) at 11-12.

411. In contrast, the partisan distribution of Wisconsin's wards is almost perfectly symmetric in its shape, with a peak close to 50% Democratic. Mayer Rebuttal Rpt. (Dkt. 95) at 11-12. Goedert Dep. (Dkt. 65) at 169:3-15.

412. This suggests that there is no natural packing or cracking of Democatic voters in Wisconsin. Mayer Rebuttal Rpt. (Dkt. 95) at 11-12.

413. The wards and Act 43 disttricts histograms relvea 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. 95) at 12; Goedert Dep. (Dkt. 65) at 166:7-13, 169:3-15.

414. The partisan index used by defense expert Sean Trende, is used "almost exclusively by political commentators," and is used "less frequently in academic research." Mayer Rebuttal Rpt. (Dkt. 95) at 5.

415. Mr. Trende made two errors in his calculation of the PVI. First while he states that his PVI is based on the top-of-the-ticket race in each year, he uses the gubernatorial elections as his top-of-the-ticket race in 2002, 2010, and 2014, but the U.S. Senate race in 2006, even though there was a gubernatorial race that year. Mayer Rebuttal Rpt. (Dkt. 95) at 5.

416. While scholars may differ on whether a gubernatorial or U.S. Senate election is the correct top-ticket race, there is no justification whatsoever for being inconsistent. Mayer Rebuttal Rpt. (Dkt. 95) at 5.

417. Mr. Trende's section error in his calculation of the PVI for 2014 is that he mistakenly subtracted the 2014 statewide percentages from the 2012 ward totals. Mayer Rebuttal Rpt. (Dkt. 95) at 5.

418. Trende offers no justification or support for why he is relying on the PVI measure rather than more direct indicators of ward partisanship; he merely asserts that it is a relevant quantity. Given that there are far more widely used and relevant measures of district level partisanship, his reliance on it in this context is unsupportable. Mayer Rebuttal Rpt. (Dkt. 95) at 6.

419. There are several problems with Mr Trende's "nearest neighbor" analysis. First, the proximity of similar wards is simply not a measure of geographic concentration or clustering. Trende's method tells us nothing about which wards are actually *adjacent* to wards of a certain

PVI. It only tells us how far these wards tend to be from other wards of the same partisan lean. It is entirely possible for wards of the same partisan makeup to be far apart but still easy to join in the same district (think of a sparsely populated but uniformly partisan area). Likewise, it is entirely possible that wards of the same partisan makeup are close together but quite difficult to combine in the same district (think of a densely populated but politically heterogeneous area). Trende's method cannot distinguish between these scenarios, and as a result it cannot tell us anything about the geographic patterns that actually matter for redistricting. Mayer Rebuttal Rpt. (Dkt. 95) at 7.

420. Second, Trende does not explicitly define in his report what a "similar partisan index" (paragraph 97) means. Clearly, Trende is classifying them in some way, defining "similar" as within some range, as his vague discussion of quantiles indicates (paragraph 98). But without specifying the range, it is impossible to know whether his measure has any meaning. Mayer Rebuttal Rpt. (Dkt. 95) at 7.

421. Third, in treating the geographic distances between wards as his quantity of interest, Trende does not take into account the fact that wards in Wisconsin are not uniform in area. Ward areas actually vary widely: some are very small, others are moderate in size, and still others are very large (wards are drawn within specified population limits, but their geographic areas are not similarly constrained). Mayer Rebuttal Rpt. (Dkt. 95) at 7.

422. Table A shows the mean and median areas (in square miles) of Wisconsin wards. The average is 8.41 mi^2, but the range is huge: the smallest ward with a nontrivial population is in the City of Middleton: ward 19, with 690 people in an area of 0.0071 mi^2. The largest ward in the state is in the Town of Winter: ward 2 (in Sawyer County), with 565 people in an area of 227.7 mi^2:

Table A 2012 Ward Sizes (square miles)[6]	Mean	Median
Statewide Average	8.41	1.12
City of Milwaukee	0.29	0.20
Rest of State	8.83	1.27
Democratic Wards	5.91	0.56
Republican Wards	10.96	3.45

Mayer Rebuttal Rpt. (Dkt. 95) at 8-9, Tr. Ex. 109.

423. In relying on the distance between wards, Trende is thus putting his thumb on the scale; all other things equal, this method will *always* show Democratic wards to be much closer than Republican wards, irrespective of whether this concentration is real or merely an artifact of ward area. Smaller Democratic wards will *always* appear closer than larger Republican wards. Mayer Rebuttal Rpt. (Dkt. 95) at 9.

424. Fourth, Mr. Trende's use of the median rather than the mean for his "nearest neighbor" analysis further exaggerates the difference between Republican ward distances and Democratic ward distances. The average Republican ward area is 1.9 times larger than the average Democratic ward area (10.96 vs. 5.91 mi^2). But the *median* Republican ward is 6.*2* times larger than the median Democratic ward (3.45 mi^2 vs. 0.56 mi^2). Mayer Rebuttal Rpt. (Dkt. 95) at 9.

e) Professor Mayer's methods

425. Professor Mayer's Demonstration 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 5-6.

426. To calculate comparable efficiency gap scores for the Current Plan and the Demonstration Plan, it is necessary to create a regression model that can predict the underlying baseline partisanship of any district, whether or not it was actually used in an election. Mayer Rpt. (Dkt. 54) at 8.

427. To generate his baseline partisanship estimates, Professor Mayer assumed that all districts were contested and that no incumbents were running. This removes the effect of incumbents, who may or may not be running in an alternative plan. The consultant retained by the state legislature, Professor Gaddie, used the same method. Mayer Rpt. (Dkt. 54) at 31; Mayer Dep. (Dkt. 52) at 63:15-24, 70:4-17; Gaddie Dep. (Dkt. 108) at 43:9-44:22. [Stipulated Fact 170]

428. Professor Mayer's regression model used wards as the unit of analysis to increase the number of observations and allow for more precise estimates. Mayer Rpt. (Dkt. 54) at 8. [Stipulated Fact 171]

429. Professor Mayer's regression model relied on demographic and electoral data provided by the LTSB and the G.A.B., both online and in the 2013 edition of the Wisconsin Blue Book. Mayer Rpt. (Dkt. 54) at 10. [Stipulated Fact 172]

430. Professor Mayer corrected all material errors in the LTSB and GAB data prior to running his regression model. Mayer Rpt. (Dkt. 54) at 10; Mayer Dep. (Dkt. 52) at 29:3-13.

431. A large literature has developed around the problem of estimating the likely election results in redistricting plan alternatives. 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. Mayer Rpt. (Dkt. 54) at 6; Tr. Ex. 102; and Tr. Ex. 100.

432. The full specification for the regression model that Professor Mayer used is:

$$\underset{i}{Assembly\ Vote} = \alpha + \beta_1 Total\ VEP_i + \beta_2 Black\ VEP_i + \beta_3\ Hispanic\ VEP_i$$

$$+\beta_4 \underset{i}{Democratic\ Presidential\ Vote} + \beta_5 \underset{i}{Republican\ Presidential\ Vote}$$

$$+\beta_6 \underset{i}{Democratic\ Incumbent} + \beta_7 \underset{i}{Republican\ Incumbent} + \sum_{j=1}^{71} \gamma_j County_j + \varepsilon_i$$

Where

Assembly Vote	Number of votes cast for the Republican or Democratic candidate in the 2012 Assembly election in ward *i*. I estimate separate equations for the Democratic and Republican candidates
Total VEP	Voting eligible population in ward *i*, as measured in the 2010 Census
Black VEP	Voting eligible Black population in ward *i*
Hispanic VEP	Voting eligible Hispanic population in ward *i*
Democratic Presidential Vote	Number of votes cast for Barack Obama in the 2012 presidential election in ward *i*
Republican Presidential Vote	Number of votes cast for Mitt Romney in the 2012 presidential election in ward *i*
Democratic Incumbent	1 if the Assembly election in ward *i* has a Democratic incumbent, 0 otherwise, multiplied by the VEP in ward *i*
Republican Incumbent	1 if the Assembly election in ward *i* has a Republican incumbent, 0 otherwise, multiplied by the VEP in ward *i*
County	Set of fixed effects dummy variables for each county. Dunn County is the excluded value.[9]

Mayer Rpt. (Dkt. 54) at 10-11, Tr. Ex. 3. [Stipulated Fact 173]

433. The full specification for the regression model that Professor Mayer used is consistent with how such regeressions are calculated in the literature. Mayer Rpt. (Dkt. 54) at 10-11.

434. The full specification for the regression model that Professor Mayer used includes the Assembly vote by ward as the dependent variable and the following as independent variables (each by ward): total voting eligible population; black voting eligible population; Hispanic voting eligible population; Democratic presidential vote; Republican presidential vote; Democratic incumbent; Republican incumbent; and a set of fixed effect dummy variables for each county, with Dunn County as the excluded value. Mayer Rpt. (Dkt. 54) at 10-11. [Stipulated Fact 174]

435. Professor Keith Gaddie used a regression model "very similar" to the one used by Professor Mayer in 2002 in the Baumgart litigation, stating that he "basically replicated [Professor Mayer's] model," to predict the Current Plan's partisan consequences prior to the Plan's enactment. Mayer Rpt. (Dkt. 54) at 29; Gaddie Dep. (Dkt. 108) at 43:9-44:22; 47:10-14, 53:3-7. [Stipulated Fact 175]

436. Professor Mayer's regression model is extremely accurate. The R-squared values are extremely high, and the standard errors (Root MSE) are low. When compared to actual ward votes, the average absolute error is only 356 votes for Democratic candidates and 344 votes for Republican candidates. Mayer Rpt. (Dkt. 54) at 19-20.

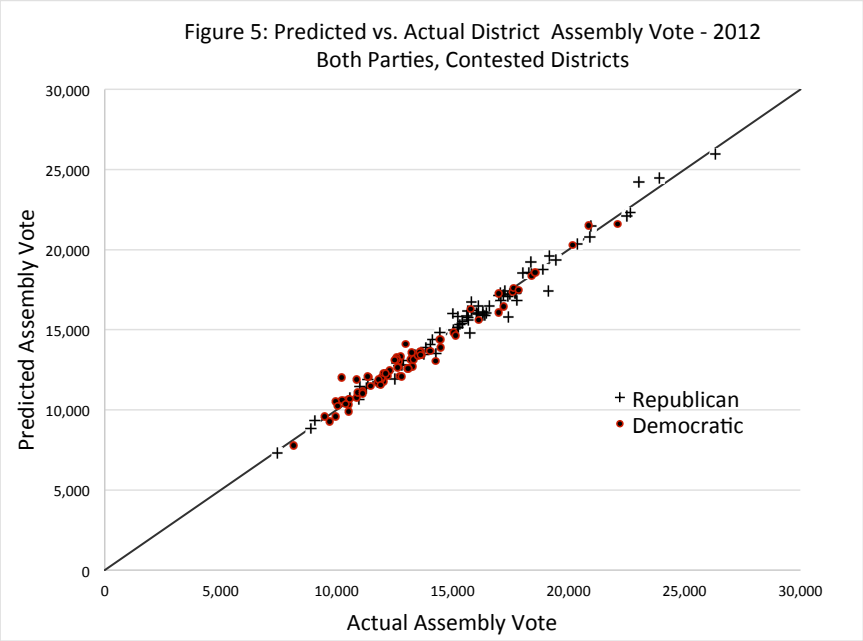
437. The R-squared value for the Republican Assembly Votes regression is 0.99, and the R-squared value for the Democratic Assembly Votes regression is 0.98. Mayer Rpt. (Dkt. 54) at 21.

438. In Table 2, Professor Mayer's regression model incorrectly predicted the outcomes of only two extremely competitive districts: 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 24-25; Mayer Dep. (Dkt. 52) at 87:22-23. [Stipulated Fact 176]

439. According to Table 2, 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 24-25. [Stipulated Fact 177]

440. The precision of Professor Mayer's model is apparent in the following scatter plot, which compares the actual Assembly vote to the predicted Assembly vote for all contested districts. The fit between the actual and predicted values is essentially perfect, with the two sets of scores tightly hugging the regression line:



Mayer Rpt. (Dkt. 54) at 23, Tr. Ex. 8.

441. Table 8 of Professor Mayer's report shows a later permutation of his model that "sets all incumbency variables to zero." Mayer Rpt. (Dkt. 54) at 29.

442. Professor Mayer created the model whose results are shown in Table 8 for the same reason that the Legislature's consultant, Professor Gaddie, did: to determine "what the vote would usually do without an incumbent in the district." Mayer Rebuttal Rpt. (Dkt. 64) at p. 22; Tr. Ex. 134.

443. Professor Mayer also created the model to account for the facts 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." Mayer Rebuttal Rpt. (Dkt. 95) at p. 24.

444. The "no incumbents" version of the model was not intended to predict the winners of the Current Plan's districts in 2012. To make such predictions, it would render an analysis unreliable to discard relevant information about candidates, and the first form of the model, discussed above, did not do so. Mayer Dep. (Dkt. 52) at 52:19-53:19.

445. The "no incumbents" version of the model 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. "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.

446. Even though it is standard in the literature to assume that no incumbents are running when generating baseline partisanship estimates, Professor Mayer established in his rebuttal report that taking incumbency into account in no way changes his conclusions. As

shown in the below table, with incumbency included, the Current Plan's efficiency gap rises from 11.7% to 14.2%, and the Demonstration Plan's efficiency gap rises from 2.2% to 3.9%. The gulf between the two plans rises as well (from 9.5% controlling for incumbency to 10.3% taking it into account).

Table E **Efficiency Gap Calculations** **with Incumbents**		
	Demonstration Plan	**Act 43**
Baseline Efficiency Gap	2.20%	11.69%
Efficiency Gap with Incumbency	3.89%	14.15%

Mayer Rebuttal Rpt. (Dkt. 95) at 24, Tr. Ex. 113.

447. Professor Mayer's conclusions are also unchanged when simulating swings based on the largest Democratic and Republican waves of the last generation. The Current Plan retains its extreme pro-Republican efficiency gap under all conditions (averaging -11.7% across them), while the Demonstration Plan retains its far lower efficiency gap under all conditions (averaging -2.5% across them). Mayer Rebuttal Rpt. (Dkt. 95) at 27-28.

448. Professor Mayer's results were remarkably similar to those generated by Professor Jackman using actual results, with Professor Jackman calculating a -13% efficiency gap for the Current Plan in 2012 and Professor Mayer calculating a -12% efficiency gap for the Current Plan in 2012. Jackman Rpt. (Dkt. 62) at 72; Mayer Rpt. (Dkt. 54) at 46.

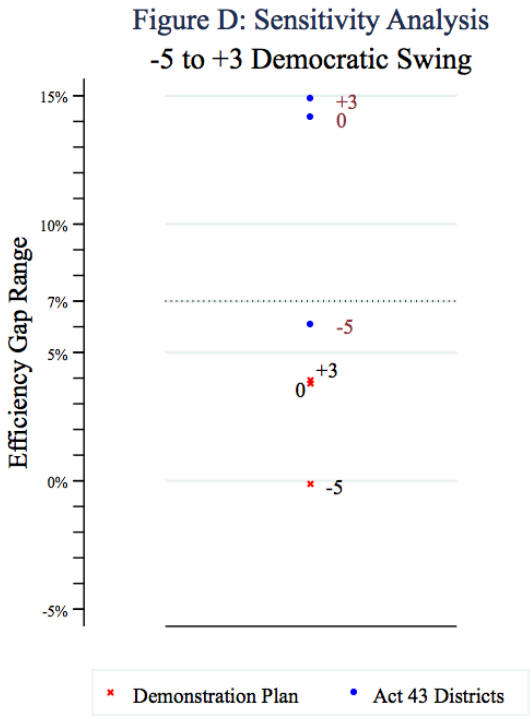
449. Because "election results in Wisconsin (and in most states) are extremely highly correlated from one election to the next," predicted efficiency gaps will be very similar no matter which elections they are based on. Mayer Rebuttal Rpt. (Dkt. 64) at p. 23.

450. 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.

451. 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 24; Goedert Dep. (Dkt. 65) at 145:21-25.

452. 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 26- 27.

453. The outcomes of Professor Mayer's sensitivity testing are displayed in the below chart:



Mayer Rebuttal Rpt. (Dkt. 95) at 30, Tr. Ex. 115.

454. The results of the uniform swing analysis conducted by Professor Mayer for the Current Plan show that its efficiency gap varies from -6.09% (in the Republican wave scenario) to -14.88% (in the Democratic wave scenario). Mayer Rebuttal Rpt. (Dkt. 95) at 27.

455. The results of the uniform swing analysis conducted by Professor Mayer for the Demonstration Plan show that its efficiency gap varies from 0.14% (in the Republican wave scenario) to -3.89% (in 2012) to -3.75% (in the Democratic wave scenario). Mayer Rebuttal Rpt. Dkt. 95 at 26-27.

f) Other additional facts

456. In 2010, Bob Ziegelbauer won assembly district 25, and even though he ran as an independent, he typically voted with Republicans. Jason Stein & Patrick Marley, More than They

Bargained For: Scott Walker, Unions, and the Fight for Wisconsin, Earle Decl., Ex. G (Dkt. 57-7) at 119. [Stipulated Fact 291]

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