UNITED STATES DISTRICT COURT

FOR THE WESTERN DISTRICT OF WISCONSIN

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WILLIAM WHITFORD, et al.,

      Plaintiffs,

-vs-   Case No. 15-CV-421-BBC

GERALD NICHOL, et al.,   Madison, Wisconsin
                              May 26, 2016
      Defendants.   9:00 a.m.

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STENOGRAPHIC TRANSCRIPT OF THIRD DAY OF COURT TRIAL
HELD BEFORE THE HONORABLE JUDGE KENNETH RIPPLE,
THE HONORABLE JUDGE BARBARA B. CRABB, and
THE HONORABLE JUDGE WILLIAM GRIESBACH,

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19                          I-N-D-E-X
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E-X-H-I-B-I-T-S

1   THE CLERK: Case Number 15-CV-421. *William*

2   *Whitford v. Gerald Nichol* called for the third day of

3   court trial.

4   JUDGE RIPPLE: Well, a very good morning to

5   everyone. Early start today. Mr. Poland, is there any

6   housekeeping matter that I need to take up?

7   MR. POLAND: We do have just provisionally, Your

8   Honors, as a housekeeping matter several exhibits that we

9   wish to move into evidence. These were from the

10 examinations of Mr. Foltz and Mr. Ottman: That's

11 Exhibits 465, 466 and 467.

12   JUDGE RIPPLE: Mr. Keenan.

13   MR. KEENAN: I've been objecting to these on the

14 timeliness basis which hasn't been going anywhere. So I

15 guess I'll maintain my objection and expect it to be

16 overruled.

17   JUDGE RIPPLE: Your objection is overruled and

18 the exhibits will be admitted.

19   MR. POLAND: Thank you, Your Honor.

20   JUDGE RIPPLE: Mr. Keenan, is there any

21 housekeeping matter that you would like to take up?

22   MR. KEENAN: No.

23   JUDGE RIPPLE: Thank you. Well then,

24 Mr. Poland, you may proceed with your witness.

25   MR. POLAND: Thank you, Your Honor. The

1 plaintiffs recall Dr. Mayer to the stand.

2   **KENNETH MAYER, PLAINTIFFS' WITNESS, RESUMES,**

3   JUDGE RIPPLE: Good morning, Dr. Mayer.

4   THE WITNESS: Good morning, Your Honor.

5   CONTINUED DIRECT EXAMINATION

6 BY MR. POLAND:

7 Q   Good morning, Dr. Mayer.

8 A   Good morning.

9 Q   Dr. Mayer, do you recall when we left off in court

10 yesterday you had been going through an analysis of some

11 of the critiques that Professor Goedert and Mr. Trende

12 had of your work based on political geography?

13 A   I did.

14 Q   And you, in turn, had critiques of the methods that

15 they used and the analysis they used to critique your

16 work; is that correct?

17 A   That's correct.

18 Q   Professor Mayer, are there better measures by which

19 to analyze political geography?

20 A   There are.

21 Q   What are those?

22 A   There are a number of different measures of

23 dispersion and concentration that are widely used, both

24 in the geography, political geography literature, and in

25 political science. Two of the measures that I used, the

1 first is what's called the *Global Moran's I*, and the

2 second is one called the *isolation index*.

3 Q   Let's start with the Global Moran's I. What is the

4 Global Moran's I?

5 A   At the highest level, the Global Moran's I is a

6 measure of spatial correlation and what it tells you is

7 how values at a particular point in space correlate with

8 values that that variable takes in adjacent or nearby

9 space. So it tells you how the values of a particular

10 variable co-vary or correlate with the values that

11 variable takes in adjacent space.

12 Q   Does any of the literature support the use of

13 Moran's I in evaluating political geography?

14 A   It is extensively used in the study of political

15 geography.

16 Q   And have you relied on some of that literature to

17 support your opinions in this case?

18 A   I have.

19 Q   Could you -- are those articles contained in the

20 binder that we had prepared and given to you yesterday?

21 A   They are.

22 Q   Can you pull up Exhibit No. 150, please, and that's

23 Tab No. 7 in your binder. Can you identify Exhibit 150,

24 Dr. Mayer?

25 A   This is an article published in the Journal of

1   Political or Geographic Analysis that discusses in

2   general terms different measures of spatial association

3   or how values in space, or in this case, two-dimensional

4   ways correspond with values in adjacent space. So it's a

5   general discussion of the different methods of measuring

6   spatial association.

7   Q   And is Exhibit 150 a scholarly article you relied on

8   in applying the Moran's I in this case?

9   A   Yes. And it discusses it specifically.

10 Q   Would you pull up Exhibit 151, please, and Dr.

11 Mayer, that's Tab 8 in your binder. Can you identify

12 Exhibit 151?

13 A   This is -- make sure I get the year correct. That

14 is a 2003 article written by a political scientist,

15 political methodologist at the University of Illinois

16 that uses the Global Moran's I to study how campaign

17 contributions in one area affect campaign contributions

18 in adjacent geographies.

19 Q   And is Exhibit 151 a scholarly article on which you

20 relied in formulating your opinions in this case?

21 A   It is.

22 Q   And would you pull up Exhibit 394, please. That's

23 Tab 11 in the binder. Again, this is an article that

24 we've seen before; correct?

25 A   That's correct.

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1 Q   And how does Exhibit 394, that's the Chen and Rodden

2 2013 article, how does that use the Moran's I?

3 A   So Chen and Rodden actually use the Moran's I to

4 directly calculate partisanship at wards and to determine

5 how partisanship in one ward is related to partisanship

6 in adjacent wards.

7 Q   Did you also rely on the methodology of applying the

8 Moran's I for your work in this case that's reflected in

9 Exhibit 394?

10 A   I did, and there's one slight difference just in

11 terms of how they are described. There are actually two

12 different types of Moran's I. One of them is called the

13 *Local Moran's I*, and that is a variable. That's a value

14 that you would calculate in every separate point of

15 space. So you would be able to calculate a Local Moran's

16 I, for example, in every one of Wisconsin's 6,600 wards

17 and that would give you that measure for each point in

18 space.

19   The Global Moran's I is simply the average of all of

20 those and it tells you on average how values in space

21 correlate to values in different -- in adjacent space. I

22 used the Global Moran's I. Chen and Rodden actually used

23 the Local Moran's I. But in terms of calculating them,

24 they're identical.

25 Q   Did any of these articles calculate the Moran's I

1 for Democratic or Republican vote shares?

2 A   Yes.   The Chen/Rodden piece.

3 Q   Now, Dr. Mayer, did you calculate Moran's I for

4 Wisconsin?

5 A   I did.

6 Q   And you calculated the Global Moran's I; correct?

7 A   That's correct.

8 Q   How did you do that?

9 A   I used -- I did the calculations in the statistical

10 package R, which is a very widely used open source

11 software package using a module that was developed by two

12 statisticians. And what it allows you to do is input

13 geographic data, which in this context are the shape

14 files that actually show you the underlying geographies

15 and boundaries of wards in Wisconsin, with the underlying

16 data, and I was able to calculate the Moran's I for both

17 Democrats and Republicans in Wisconsin wards.

18 Q   And for what years did you calculate the Global

19 Moran's I measure?

20 A   I calculated them for 2012 and 2014.

21 Q   Why did you only do that for 2012 and 2014?

22 A   Well, I had been working with the 2012 data and had

23 gone through and scrubbed it pretty carefully. So I knew

24 it was accurate and I was trying to do a looking-forward

25 analysis to show what happened in 2014. It would be

1 possible to calculate the Moran's I for previous years

2 even though I actually had not looked carefully at the

3 underlying geographic files, but there's no reason to

4 expect the patterns to be any different.

5 Q   What was the data that you used for 2012?

6 A   I used the shape files and corrected data for 2012

7 for the State Assembly races that I obtained from the

8 Legislative Technology Services Bureau or that I more

9 accurately downloaded from their publicly available

10 website.

11 Q   What is a shape file?

12 A   A shape file is a standard file format that is --

13 it's the default file format for GIS, or Geographic

14 Information System software packages, and what it tells

15 you is it allows you to describe what the actual

16 boundaries are and how they relate to each other. And so

17 if I was trying to make a map of Wisconsin, a map of

18 wards, I would load into that the shape files for

19 Wisconsin wards and you can get shape files for the

20 state, for municipalities and for counties. Actually you

21 can generate shape files for any level of geography

22 anywhere from census blocks to roads to municipalities to

23 water areas and it's a way of inputting that data into a

24 GIS program so you can actually look at it.

25 Q   Are they commonly used in drawing or evaluating

1 legislative districts?

2 A   They're universally used even though the two

3 programs -- I used Maptitude. Act 43 map drawers used a

4 program called *autobound* -- the underlying data, the

5 underlying shape files are the same.

6 Q   They're both using shape files; correct?

7 A   That's correct.

8 Q   Now, you also used shape files for 2014 in your

9 Global Moran's I analysis; correct?

10 A   That's correct.

11 Q   Now, when you performed those calculations, what did

12 you find?

13 A   They are laid out in my rebuttal report.

14   MR. POLAND: Can we pull up Exhibit 112, please.

15 A   So one prior comment that because this is a

16 correlation coefficient, it varies between minus 1 and 1.

17 A value of minus 1 would show that the values were

18 perfectly correlated in the inverse direction; as one

19 went up, the other went down. The value of 1 would show

20 that they are associated as one value goes up, the other

21 value goes up or down and down.

22   And so this is a correlation coefficient. And to

23 look at the values for 2014, it shows that the Global

24 Moran's I or the average correlation of the vote share

25 for the Assembly in 2012 or 2014 correlated with the

1 values at an adjacent ward at a level of .75. For

2 Republicans it's .68. One of the characteristics of the

3 Moran's I is that it is spatially asymmetric. You can't

4 calculate a value for one party and use that to calculate

5 the value for the other party. You need to do that

6 separately. And it shows that the correlation of the

7 Republican Assembly vote between a ward and an adjacent

8 ward is .68. And in 2012, you actually see the reverse

9 pattern, that the Global Moran's I or the correlation of

10 Republican Assembly vote is actually a little bit higher

11 than the correlation for the Democratic Assembly vote.

12 Q   Dr. Mayer, what does a value of 1 mean in terms of

13 clustering?

14 A   That would mean that the values were perfectly

15 correlated; that --

16   JUDGE CRABB: Excuse me. You said the values

17 were -- in the 2012 there's little differentiation

18 between the two. And what does that mean?

19   THE WITNESS: That means that the -- for

20 practical purposes we can regard these as basically equal

21 to each other; that it shows that Republican and

22 Democratic votes are correlated at the local area at

23 almost the same.

24   JUDGE CRABB: This really has nothing to do with

25 the percentage of votes obtained by either side?

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1   THE WITNESS: That's correct. What it tells us

2   is the relationship between that percentage in one ward

3   and an adjacent ward. So you can't look at this and draw

4   an inference about which wards voted Democratic and which

5   wards voted Republican. What this tells us is how those

6   values go together.

7   JUDGE CRABB: Go ahead.

8   MR. POLAND: Thank you, Your Honor.

9   BY MR. POLAND:

10   Q   Dr. Mayer, having performed this analysis, what does

11   this tell you about Professor Goedert's and Mr. Trende's

12   opinion about geographic clustering in this case?

13   A   So what we have here is what amounts to a

14   universally accepted measure of geographic concentration

15   and distribution and it shows basically that there's no

16   significant difference in how Democrats and Republicans

17   are distributed around the state. In 2014, Democrats

18   were a little bit more concentrated than Republicans. In

19   2012, Republicans were a little bit more concentrated

20   than Democrats. There's no consistent pattern. And if

21   we actually -- if it were the case that statewide

22   Republicans were less concentrated than Democrats, we

23   would see a large and consistent difference that carries

24   over from year to year.

25   Q   Dr. Mayer, is it fair to call Global Moran's I a

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1 measure of clustering?

2 A   It is, because as the values go to 1, higher values

3 of the Global Moran's I indicate higher clustering. And

4 so the inference that we draw from this or that I draw

5 from this is that the -- there is clustering of Democrats

6 and Republics. Democrats are clustered in Milwaukee,

7 Republicans are clustered in the collar counties which

8 are Waukesha, Ozaukee and Washington. But the levels of

9 concentration and clustering are roughly equivalent.

10 Q   And does that tell you anything about the effect

11 that political geography in clustering of Democrats has

12 on Act 43's high efficiency gap?

13 A   It is confirmation of what I already knew from

14 looking at the data is that you cannot explain the high

15 efficiency gap in Act 43 by looking at political

16 geography or the district is not explained by differences

17 in how Republicans and Democrats are distributed around

18 the state.

19 Q   Because you have found through your application of

20 Moran's I that there's essentially no difference?

21 A   That's correct.

22 Q   Now, Dr. Mayer, are there any other ways that you

23 investigated Professor Goedert's and Mr. Trende's

24 opinions of geography clustering?

25 A   Yes. There is another measure that I used called

1   *the isolation index.*

2   Q   What is the isolation index?

3   A   The isolation index basically tells us for an

4   average member of a group, so for an average Democrat,

5   what percentage of individuals in a geography. So I'll

6   describe it in terms of actually how I did it. So as I

7   applied it here, the isolation index tells me for an

8   average Democrat what percentage of the other people in a

9   ward are going to be Democrats, and for an average

10   Republican, what percentage of the people in a ward where

11   that average Republican lives are going to be Republican.

12   So it's a different way of measuring clustering.

13   Q   Is the use of the isolation index supported in the

14   academic literature?

15   A   It is. It's not only used in the academic

16   literature, but it's also used by the Census Bureau.

17   Q   Have we included some of the articles that apply the

18   isolation index in the binder that we've given to you?

19   A   Yes.

20   MR. POLAND: Can we pull up Exhibit 118, please.

21   JUDGE RIPPLE: If I may, Counsel, I have a

22   question for the witness.

23   MR. POLAND: Of course, Your Honor.

24   JUDGE RIPPLE: Professor, how long has this

25   isolation index been around in your profession?

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1   THE WITNESS: One of their -- I actually did

2   look for this. It has been around since at least the

3   1950's. I think I found -- I cited a reference in my

4   report of a citation to it in 1954.

5   JUDGE RIPPLE: And the Moran's I, how long has

6   that been around?

7   THE WITNESS: So the Moran's I was actually a

8   quantity or a measure that was developed by an Australian

9   statistician and he set that out in a 1950 article. So

10   these have both been around for 50, 60 years.

11   JUDGE RIPPLE: And of the two, is there a

12   general preference in the profession of one of these

13   methodologies over another?

14   THE WITNESS: It depends on what the purpose is.

15   If I were looking at residential segregation patterns,

16   which is one of the ways that census uses the isolation

17   index, if I was simply trying to account for differences

18   in why some groups were concentrated in some areas and

19   not others, you would probably use the isolation index.

20   If I was interested in looking at how those patterns vary

21   between adjacent geographies, so if you were trying to --

22   one of the most common ways of using the isolation index

23   is in studies of residential segregation patterns because

24   it's used to determine, for example, how whites and

25   minorities are segregated in residential patterns. And

1 that would give me a measure of how isolated or

2 integrated areas were. But if I were interested in

3 looking at how those patterns varied in adjacent

4 geographies, so I wanted to look at how segregation or a

5 pattern of residential segregation in a municipality

6 compared to patterns of segregation in adjacent areas, in

7 addition to the isolation index which gives me a measure

8 in a particular area, I would also use the Moran's method

9 to tell me how those values vary.

10   So there are a number of different methods. They

11 all capture similar things. But the specific measure

12 that you use would depend on the question you were

13 asking.

14   JUDGE RIPPLE: Thank you, Doctor. Thank you,

15 Counsel.

16   MR. POLAND: Thank you, Your Honor.

17 BY MR. POLAND:

18 Q   And Dr. Mayer, just to clarify, the isolation index

19 as you calculated it indicates for a typical Democrat how

20 much more Democratic that ward is than the state as a

21 whole; correct?

22 A   Correct. As I calculated it, what it tells me for

23 wards, how much more Democratic than the statewide

24 average a Democratic ward is or a ward where a Democrat

25 would live and I calculated that same value for

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1 Republicans.

2 Q   All right. We'll come back in just a minute. Just

3 to finish off the articles in the literature that you

4 relied on, looking at Exhibit 118, and that's Tab 3 in

5 the binder in front of you, can you identify that

6 article?

7 A   This is a working paper from the National Bureau of

8 Economic Research that was published by Edward Glaeser,

9 who is an economist at Harvard University, and one of his

10 -- at this point one of his Ph.D. students who since has

11 gone on to an academic position as a Ph.D. economist

12 facility member.

13 Q   Do you know whether this article was later

14 published?

15 A   It was published, but it was commissioned so -- but

16 this is -- I regarded this as credible based on the

17 authors and based on the fact that it's associated with

18 the NBER.

19 Q   And Dr. Mayer, could you turn to Exhibit 119, which

20 is Tab 4 in your binder. Can you identify that article?

21 A   This is a study that was also produced by

22 Dr. Glaeser and it's an explicit application of the

23 isolation index to study patterns of residential

24 segregation.

25 Q   Would you turn to Exhibit 152, which is Tab 9 in

1 your binder. And can you identify that article?

2 A   This is a article that was published in the Journal

3 of Sociological Methodology by a -- I can't quite

4 remember the affiliations. If we go down a little bit

5 more it will show their affiliations. One is at Penn

6 State and the other is at Stanford that discusses the

7 different measures that are -- discusses the isolation

8 index and other analogous measures of concentration and

9 distribution.

10 Q   And did each of these articles apply the isolation

11 index?

12 A   They did.

13 Q   Did you rely on all three of these articles to

14 support your reliance on the use of the isolation index

15 for your work in this case?

16 A   I did.

17 Q   Do any of these articles calculate the isolation

18 index for Democratic or Republican vote shares?

19 A   Yes. The Glaeser and Ward paper actually does a

20 historic analysis of Democratic and presidential vote

21 patterns, actually going all the way back to 1840, to

22 assess the question of whether Democrats and Republicans

23 have become more or less concentrated and how that

24 political geography works.

25 Q   And that Glaeser and Ward article is Exhibit 118;

1 correct?

2 A   That's correct.

3 Q   Okay. Now, Dr. Mayer, you calculated an isolation

4 index for Wisconsin; correct?

5 A   That's correct.

6 Q   And how did you do that?

7 A   I used a module that was developed by an economist

8 and it does the calculations and the statistical package.

9 It's Stata. It's the underlying code that one uses to

10 calculate these numbers.

11 Q   What data did you use?

12 A   Again, I used the ward-level Assembly vote going all

13 the way back to 2002, calculating them from 2002 to 2014.

14 Q   And what did you find when you did that?

15 A   That was laid out in my rebuttal report as well.

16   MR. POLAND: Could we bring up Exhibit 111,

17 please.

18 Q   Do you have Exhibit 111 in front of you?

19 A   I do.

20 Q   And Dr. Mayer, you just mentioned you used Assembly

21 votes at the ward level from 2002 to 2014.

22 A   Actually it's 2004 to 2014.

23 Q   Let's make sure we make that correction. So what

24 did you find in Table C?

25 A   So again, this shows me how much more concentrated a

1 ward is than the Democratic vote share in the state. And

2 it shows in 2014, for example, that the average

3 Democratic ward was 23 percent more Democratic than the

4 state as a whole, again using this measure, and it tells

5 me that the average Democrat lived in a ward that was 23

6 percent more Democratic than the state. The average

7 Republican lived in a ward that was 20 percent more

8 Republican than the state as a whole. So I was -- I

9 calculated these figures for each party going back to

10 2004 and what it shows is that in some years Democrats

11 are marginally more concentrated than Republicans. In

12 other years Republicans are more concentrated than

13 Democrats. There's no consistent pattern and there's no

14 clear difference.

15   In 2014, Democrats are slightly more likely to live

16 in a Democratic ward, but if we go back to 2010, the

17 pattern is reversed and it's almost equivalent in the

18 other direction. So my inference from this is that

19 there's no clear pattern in terms of how Democrats and

20 Republicans are concentrated or distributed, and again,

21 looking at the state as a whole.

22 Q   So what does your analysis tell you about Professor

23 Goedert's and Mr. Trende's opinions of geographic

24 clustering of Democratic voters in Wisconsin?

25 A   So yesterday I described my criticisms about why I

1 think the methods that they used were not reliable. Here

2 we have two methods that are universally accepted as

3 reliable that show there is no difference in how

4 Democrats and Republicans are distributed around the

5 state. Concentrations that we see in one part of the

6 state are offset by concentrations for the other party in

7 different parts of the state.

8 Q   Democrats are no more clustered in Wisconsin than

9 Republicans from what you've seen applying the isolation

10 index and the Moran's I; is that correct?

11 A   That's correct.

12 Q   And what does your analysis tell you about any

13 relationship between the political geography of Wisconsin

14 and the efficiency gap of Act 43 that you calculated?

15 A   So now we have a number of pieces of information

16 about the effect of political geography. We have the

17 Demonstration Plan, which demonstrates it is not

18 necessary to draw a map with a high efficiency gap in

19 order to produce a valid plan that's equivalent to Act 43

20 on the traditional redistricting criteria. We have the

21 results of Dr. Goedert's own research and the model that

22 he produced which estimates that a neutral plan in

23 Wisconsin would produce a pro-Democratic bias. We have

24 the results of Dr. Chen's work that shows

25 computer-generated maps in Wisconsin, without any

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1 reference to political data, produce maps with efficiency

2 gaps around 2 percent, around 0 percent.

3   We also now have accepted -- I would describe these

4 as universally accepted measures of geography

5 concentration, the methodology that is reliable that

6 shows there's no difference. Any one of these things,

7 any one of these pieces of evidence would be evidence

8 that the political geography argument that Mr. Trende and

9 Dr. Goedert make is incorrect. You put these all

10 together, it's overwhelming and conclusive evidence that

11 the political geography argument they make is incorrect.

12 Q   Thank you, Dr. Mayer.

13   MR. POLAND: Your Honors, I don't have any

14 further questions at this time. I would like to move

15 some exhibits into evidence. I'd like to move in

16 Exhibits 115, 116 and 117, Exhibits 157, 159 and 160, and

17 then Exhibit 487. That was the spreadsheet that we used

18 with Dr. Mayer yesterday. Your Honor had asked

19 Mr. Keenan or given him an opportunity to take a look at

20 it and verify whether it was correct.

21   MR. KEENAN: Okay. Can you read those again? I

22 mean --

23   MR. POLAND: Sure.

24   MR. KEENAN: -- you just rattled them off very

25 quickly.

1   MR. POLAND: 115, 116 and 117.

2   MR. KEENAN: I thought those were already

3 admitted. You got leave of Court at the beginning to get

4 those admitted.

5   MR. POLAND: Okay. Thank you. 157, 159 and

6 160.

7   MR. KEENAN: Those are all objectionable because

8 those are the Jowei Chen materials that we have, I guess,

9 a standing objection to, I would think, based on all the

10 reasons we had talked about yesterday.

11   MR. POLAND: And then Exhibit 487, and that was

12 the spreadsheet that we provided yesterday that Dr. Mayer

13 had created.

14   MR. KEENAN: Is that the one with the Governor

15 06?

16   MR. POLAND: Correct.

17   MR. KEENAN: That was admitted yesterday and we

18 didn't object to it.

19   JUDGE RIPPLE: All right. Certainly 115, 116,

20 117 are admitted. And No. 487 is admitted. And the

21 Court will take under advisement the admission of 157,

22 159 and 160 as per our direction yesterday.

23   MR. POLAND: Very well. Thank you, Your Honor.

24 At this time I'd pass the witness. (8:59 a.m.)

25   JUDGE RIPPLE: Thank you. Mr. Keenan.

1   <u>CROSS-EXAMINATION</u>

2   BY MR. KEENAN:

3   Q   Good morning, Dr. Mayer.

4   A   Good morning.

5   Q   We're going to start -- we'll go backwards. We'll

6   start where you left here off on the isolation index and

7   Global Moran's and kind of work backwards. So in your

8   opinion, the isolation index tells us about geographic

9   clustering and whether one party would be advantaged or

10 disadvantaged in converting their legislative or their

11 statewide vote totals into legislative seats?

12 A   Well, the second part of that would be an inference

13 that we draw. The isolation index doesn't tell you about

14 the effects, but what it does tell you is that the

15 political geography argument that Mr. Trende and

16 Dr. Goedert makes is an assertion that --

17 Q   Okay. Let's --

18 A   Let me finish my answer. They make an assertion

19 that because there is a differential distribution of

20 Democrats and Republicans, so they're making an empirical

21 claim there that Democrats and Republicans are

22 distributed around the state in different manners, and

23 that's an empirical claim that the isolation index and

24 the Global Moran's I show to be incorrect.

25 Q   Okay. Let's get into that. So I'm putting before

1   you an example of partisan distribution here. So we have

2   400 voters in this state. We just made it simple to use

3   some simple math here. 200 for party A, 200 for party B.

4   District 1 has 80 party A voters and 20 party B voters.

5   Districts 2 through 4 have 40 party A voters and 60 party

6   B voters. Now, you'd agree with me that this shows

7   clustering to the disadvantage of party A?

8   A   Well, I'm going to dispute the premise of this

9   because this shows me a district plan that has been

10 enacted.

11 Q   Well, let's say these are wards then. We'll take

12 that out. Wards. There's four wards.

13 A   Well, we also don't know how these wards are

14 aggregated into districts.

15 Q   There's only four of them.

16 A   Well, I understand that. But --

17 Q   Okay. Let's calculate the isolation index for these

18 four.

19 A   -- the argument here --

20 Q   Can you do that for me?

21 A   I can't do it in my head.

22 Q   Okay. Can you tell me how to do it? I'll do it on

23 the paper.

24 A   You can't do it. You would need to fire up Stata

25 and run the --

1 Q   No, you don't. I'll do it by hand right here.

2   MR. POLAND: Your Honor, I'm going to object to

3 this. Mr. Keenan is attempting to tell Dr. Mayer how to

4 perform an analysis that Dr. Mayer has said cannot be

5 performed.

6   MR. KEENAN: Well, he --

7 BY MR. KEENAN:

8 Q   You're an expert on the isolation index; right?

9 A   As used here. But I'm telling you that you cannot

10 calculate the isolation index the way that I suspect you

11 are trying to do. There is -- actually it's a very

12 complicated formula. You can't simply add up the number

13 of Republicans and Democrats and draw an inference from

14 that. I'm telling you you can't do it.

15 Q   Okay. So you said the census uses the isolation

16 index; right?

17 A   That's correct.

18 Q   Okay.

19   MR. KEENAN: Jackie, could you pull up our

20 census isolation index document?

21 Q   Maybe this will refresh your recollection. Before

22 you do that, why don't you just explain to me the formula

23 by which you would calculate the isolation index for each

24 individual ward.

25   MR. POLAND: I'm going to object to the form of

1   the question. I think it's vague as to what wards

2   Mr. Keenan is referring to.

3   JUDGE RIPPLE: Rephrase it.

4   BY MR. KEENAN:

5   Q   You did an analysis of all of Wisconsin's wards;

6   right? Each ward was assigned a value and then the Stata

7   program adds them all up; right?

8   A   That's actually not entirely correct. The isolation

9   index is essentially a weighted average by population of

10 the values for each ward. So the ward values are

11 actually an intermediate -- I mean I can show you in the

12 Reardon and O'Sullivan piece what that formula actually

13 is. But I would not be comfortable doing it on a --

14 Q   And the reason that is is because you had never

15 actually heard of the isolation index before you were

16 retained as an expert in this case.

17 A   The isolation index, that's correct.

18 Q   And you had never run an isolation index analysis

19 before you were retained as an expert in this case;

20 right?

21 A   That's correct.

22 Q   Okay. And you got the module and Stata to perform

23 this analysis from counsel; right?

24 A   No. I got --

25 Q   Is this the one you found on the internet?

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1 A   Well, it's available on the internet.

2 Q   Okay.

3 A   It's available on the website of the economist who

4 actually wrote the module. It's not something that you

5 find on Wikipedia.

6 Q   All right. So let's pull up the census document.

7   MR. KEENAN: I've got to shift you over. Do you

8 know how to shift back to your laptop? I think you can

9 blow this up a little bit.

10 Q   This is a document from the U.S. Census, maybe this

11 will refresh your recollection.

12   JUDGE GRIESBACH: Exhibit number?

13   MR. KEENAN: This is just for impeachment. This

14 isn't an exhibit. Just to refresh his recollection.

15 BY MR. KEENAN:

16 Q   So this is from the census.

17   MR. KEENAN: We'll go to page four.

18   MR. POLAND: Your Honors, I'm unsure right now

19 whether this is being used to refresh the witness's

20 recollection or for the purposes of impeachment.

21   MR. KEENAN: Well, if he ever knew how to

22 calculate the isolation index, it's used to refresh his

23 recollection. If he doesn't know, then it's for

24 impeachment.

25   THE WITNESS: Well, I actually cited this in my

1 report. This shows how to do the calculation and the

2 Stata module implements this.

3 BY MR. KEENAN:

4 Q   Okay. So let's focus in on No. 6 here. This is

5 isolation, so this is the isolation index; right? This

6 is the formula?

7 A   Well, I would have to -- this looks about right.

8 It's not clear from this what the xi's and the totals

9 are.

10 Q   We'll get to that. But just to start this, N Sigma

11 i equals 1, that means this calculation is a sum of

12 several different calculations of the equation that's in

13 the brackets there; right?

14 A   That's correct. It's summing this value for all of

15 the units in a particular geography.

16 Q   Okay. And so if we move over --

17   MR. KEENAN: We can zoom out a little bit. Move

18 over. We have definitions here. We'll blow up that

19 first column. And we can see what those variables mean.

20 Q   And xi is the enumerator in both of those fractions.

21 You see that?

22   MR. KEENAN: You need to blow it up a little

23 more.

24 A   I see it.

25 Q   Okay. And if we look at the definition at xi, it's

1   the minority population of "i." And you understand that

2   "i" is like the unit you're looking at in that particular

3   instance like a ward?

4   A   That's correct.

5   Q   Okay. Now, this is usually used to study minority

6   populations and their segregation; right? That's why it

7   says minority?

8   A   That's a common use of it.

9   Q   But you're using it to study like Democrats and

10 Republicans, so we would have to -- for this, for using

11 with political parties, you would say the minority or the

12 population of party A that's in this ward; right?

13   MR. POLAND: I'm going to object to the form of

14 that question, Your Honor.

15   JUDGE RIPPLE: Rephrase it, please.

16   MR. KEENAN: Sure.

17 BY MR. KEENAN:

18 Q   Here it says the *minority population of i*, *xi*, but

19 we're not talking about minorities here, right, in your

20 analysis?

21 A   So it refers to the minority population at the

22 highest unit of geography. So if we're looking at

23 residential segregation patterns, we would be comparing

24 normally whites to African Americans. It doesn't mean

25 that we're looking at which group comprises the smallest

1 share.

2 Q   Yeah, that's what I'm getting at. Like in your

3 analysis, you didn't look at minority population, you

4 looked at the partisan population of a particular

5 geographic unit.

6 A   That's correct.

7 Q   Like the Democrats in a ward or Republicans in a

8 ward.

9 A   That's correct.

10 Q   Okay. So to calculate, we would -- the enumerator

11 of the first fraction would be the total population of a

12 particular party in that individual unit of geography xi.

13 A   So small x(i) is the number of individuals in the

14 minority group in the ward. So if we had -- yes.

15 Q   And if you're looking at Republicans, for example,

16 it would be the number of Republicans in the ward.

17 A   Well, not -- well, it depends, because you calculate

18 the isolation gap looking at Republicans and Democrats.

19 So in the context of how the isolation index is used to

20 study partisanship is that we don't need to make an

21 *a priori* assumption about which group is the minority.

22 Q   Exactly.

23 A   Well, the reason this is important is that you are

24 -- you're going to ask me to presumably walk through and

25 do these calculations by hand and what I'm telling you is

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1 that I'm not comfortable doing that. I would want to

2 apply that data to make sure that I was applying the same

3 methodology. You're mixing terms here, minority

4 populations in ways that is not how it's done.

5 Q   You don't understand how to do this by hand; right?

6   MR. POLAND: Object to the question, Your

7 Honors. Dr. Mayer can answer the question, but I object.

8   THE WITNESS: My view is that doing it by hand

9 would almost guarantee you're getting unreliable results.

10 I mean I haven't done multiple regression by hand since

11 1982 since I was a grad student.

12 BY MR. KEENAN:

13 Q   This isn't a regression though, is it? This is just

14 simply two fractions that are multiplied by each other?

15   JUDGE CRABB: I'm sorry, I have to interrupt.

16 We have a court reporter who's trying to take this down

17 as carefully as possible and she can't do it when either

18 one of you interrupts the other.

19 BY MR. KEENAN:

20 Q   Right? This fraction, this equation is just a sum

21 of a bunch of individual equations that are two fractions

22 multiplied by each other.

23 A   As you've described it that way, that's correct.

24 This is the sum of two fractions that are multiplied,

25 summed over all the geographies, all the units of a

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1 particular geography.

2 Q   And that's something you can't do by hand?

3 Multiplication and division?

4 A   I can do it by hand. But in the context of doing

5 the calculation with wards, I would want to make sure

6 that that was validated. I mean I can add up numbers. I

7 can do the multiplication. What I'm telling you is that

8 I would not regard my walking through this on the fly in

9 five minutes trying to do the calculation by hand is

10 going to give you a result that is as reliable as the

11 method that I used.

12 Q   Okay. Can you explain just in layman's terms the

13 equation that's in the brackets here, x(i) divided by x

14 times x(i) divided by t(i)?

15 A   No. I will tell you what the literature says the

16 isolation index is is that it tells you on a weighted

17 percentage what percentage of members of a group live in

18 a geographic relation with other members of that group,

19 and that's what this reflects.

20 Q   How does it do that?

21 A   Because that's what the formula -- that's what the

22 formula does. If we look at it, that the left-hand

23 figure is the percentage of a group in a unit and its

24 composition, the number of individuals in a group

25 compared to their statewide total, and the other is the

1 number of members in a group compared to the total number

2 of people in a geographic region.

3 Q   Okay. So it's the number of a group in the unit, so

4 it's a percent of that group in the unit times the

5 percent of that group in the entire state?

6 A   Well, I don't know that that's an accurate way of

7 phrasing it, but again, the isolation index tells you on

8 a weighted average, so we're actually taking the

9 population of the different regions into account. So

10 we're not assuming the populations in all the regions are

11 the same. What it tells you is on average, what percent

12 of the members of a group live in a geographic region

13 among other members of that group.

14 Q   So in this example, what is the isolation index for

15 party A in District 1?

16   JUDGE CRABB: Excuse me. As the person keeping

17 track of the exhibits, what are you talking about here?

18 Q   This is just a demonstrative to use with him to see

19 if he can calculate this.

20   JUDGE CRABB: Put a number on it so --

21   MR. KEENAN: Sure. What's our next number?

22 574. Thank you.

23   MR. POLAND: Brian, can we get a copy of 574?

24   MR. KEENAN: I don't think I have another one.

25   JUDGE RIPPLE: We need to follow this.

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1   MR. POLAND: I would like to have a copy of the

2   exhibit.

3   JUDGE RIPPLE: Can you follow it for now?

4   MR. POLAND: We'll follow it to now on the

5   screen.

6   JUDGE RIPPLE: Counsel, will you see that

7   opposing counsel gets a copy?

8   BY MR. KEENAN:

9   Q   Sir, to calculate the isolation index in District

10   1 -- just so we understand, to do the isolation index for

11   party A and party B, you would need to run two separate

12   calculations; right?

13   MR. POLAND: Dr. Mayer, if you would just give

14   me a minute to object to the question. I'm going to

15   object to the form of the question.

16   MR. KEENAN: What's the objection? Form?

17   MR. POLAND: Form, and also it's an

18   argumentative question.

19   JUDGE RIPPLE: It certainly was argumentative.

20   Rephrase it.

21   BY MR. KEENAN:

22   Q   To calculate the isolation index for two different

23   groups like this, you run two separate calculations;

24   right?

25   A   That's correct.

1   Q   Okay. And you did two separate calculations, for

2   the Republicans and the Democrats in Wisconsin.

3   A   I did one for Republicans and one for Democrats.

4   Q   Correct. So to do this example, we would need to do

5   a separate calculation for party A and then run a

6   separate calculation for party B.

7   A   That's correct.

8   Q   And the way you would do that is you would find the

9   isolation index calculation for each district and then

10   you would add them all together.

11   A   Well, you actually don't -- the isolation index in

12   this context doesn't really have much meaning at the

13   district level. What you would need to calculate is the

14   overall statistic. It's a single number you would

15   calculate. It's a summary statistic that's based on all

16   these. So it would not be an accurate methodology to

17   look at that total for one district and draw an inference

18   about the state as a whole.

19   Q   Exactly. You would look at each of these and add

20   them together; right?

21   A   Yes.

22   Q   And then you would have the statewide version.

23   A   That's correct.

24   Q   Okay. So let's do that. So we have the percentage

25   of party A, that's x(i); right? The number of party A,

1 that's 80?

2 A   Well, you're asking me to do this in my head. I'm

3 telling you I'm not willing to do this in my head. I

4 don't think that's going to give a reliable answer. If

5 we were going to do this, I would want to fire up my

6 computer, run the Stata module, and that would give you a

7 directly comparable isolation index. The fact that I'm

8 not going to be able to do this in my head has no bearing

9 on whether it's a reliable indicator or not.

10 Q   Well, it's true though that the isolation index for

11 two equally sized groups always comes out to be the same?

12 A   No, that's incorrect.

13 Q   That's incorrect. Okay.

14 A   Depends on how they're distributed at lower levels

15 of geography.

16 Q   Okay. I guess maybe we'll just have --

17 A   Actually I can give you a example.

18   MR. KEENAN: No, we'll have Dr. Goedert talk

19 about this.

20   MR. POLAND: I think actually rule of

21 completeness, Your Honors, I think Dr. Mayer should be

22 permitted to answer the question that he was asked.

23   JUDGE RIPPLE: We'll let him answer the

24 question.

25   THE WITNESS: So if you take an equal number of

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1 voters and you put all of the voters -- 100 percent of

2 the voters in half of the wards in the state and 100

3 percent of the voters in half of the wards in the other

4 state -- in the other set of wards, you would not come up

5 with an isolation index of 1.

6 BY MR. KEENAN:

7 Q   Why is that?

8 A   You would not come up with -- the isolation index

9 depends on more than just the total number of members of

10 a group. It depends on how they're distributed. That's

11 what it's capturing.

12 Q   Okay. You say that the Glaeser article, that's the

13 one example that we saw of this being used to determine

14 the distribution of partisans?

15 A   That's the example that I cited.

16 Q   That's 118.

17   MR. KEENAN: We can call that up.

18 A   That's correct.

19 Q   I believe you said this wasn't peer reviewed, was

20 it?

21 A   Not as far as I know.

22 Q   And Glaeser and Ward aren't political scientists;

23 right?

24 A   They are economists.

25 Q   Correct. And other than this, you haven't seen the

1 isolation index being used to compare the distribution of

2 partisans in any of the literature?

3 A   I do recall seeing it, but I can't identify any

4 sources sitting here. I'm not sure.

5 Q   They would have been in your report, wouldn't they?

6 A   Possibly. I'm not sure.

7 Q   Let's move on to the Global Moran's I. Prior to

8 your work in this case, you had never performed a Global

9 Moran's I analysis on any geographic area?

10 A   That's not entirely true. I had done some work on

11 spatial auto correlation earlier in my career because I

12 had done a number of studies of defense contracting and

13 part of that analysis I had to deal with spatial auto

14 correlation indices. So I didn't actually calculate the

15 Moran's I, but I knew what it was and was familiar with

16 it before my work in this case.

17 Q   You may have been familiar with it, but you had

18 never calculated it before. That was the question.

19 A   I believe that's correct.

20 Q   Okay. And you had seen it applied in the Chen and

21 Rodden article?

22 A   That's correct.

23 Q   And that's the only time you've seen it used to

24 analyze the distribution of partisans; right?

25 A   That's incorrect. It's actually been used to study

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1 other political variables, distribution of campaign

2 contributions. So the Chen and Rodden piece is one of

3 the pieces that I cited, but I believe there are other

4 applications of it that look at concentration of

5 partisans.

6 Q   To campaign contributions you mentioned, but

7 partisans.

8 A   That was the one that I cited in the reliance

9 materials, but it's commonly used.

10 Q   Okay. Now, Chen and Rodden didn't use the Global

11 Moran's I, did they?

12 A   They used the Local Moran's I from which you can

13 directly calculate the Global Moran's I.

14 Q   Can we turn to Exhibit 550. We marked this Exhibit

15 2. This was used under another number with your counsel.

16 This is the Chen and Rodden article?

17 A   That's correct.

18   MR. KEENAN: And if we could move to page seven.

19   MR. POLAND: Your Honors, may I just note at

20 this time that this is Plaintiffs' 394 as well.

21   JUDGE RIPPLE: So noted.

22 BY MR. KEENAN:

23 Q   And I'll just read the bottom paragraph here. It

24 says "Alternatively rather than forcing precinct

25 partisanship to be binary, it's useful to examine the

1 extent to which each precinct's election results are

2 correlated with those of its neighbors and ask whether

3 the extent of the spatial auto correlation is higher in

4 Democratic than in Republican districts. Anselin's

5 (1995) Local Moran's I is well suited to this task."

6   So they use Local Moran's I; right?

7 A   But the two computations are identical. The only

8 difference is the Global Moran's I is the average of the

9 Local Moran's I in every unit of geography.

10 Q   Sure. But then when you average, you lose some

11 things, don't you? So let's go to the next page.

12   MR. POLAND: I'm going to object to that

13 question. That was counsel testifying.

14 Q   Okay. So let's go --

15   JUDGE RIPPLE: Sustained.

16 Q   Let's go to the top. This is Chen and Rodden's

17 application of the Local Moran's I; right?

18 A   I'm actually not sure.

19 Q   Okay.

20 A   Because this says that the figure shows the Bush

21 vote share. It doesn't say that it's a calculation of

22 the Moran's I.

23 Q   If we could go down.

24 A   Okay.

25 Q   Heights correspond to Local Moran's I. Move back

1 up. But you were familiar about this before you started

2 your work in this case though; right?

3 A   I'm familiar with this piece?

4 Q   Yes.

5 A   That's correct.

6 Q   Okay. Now, what this shows is the Local Moran's I

7 for each precinct in Florida; correct?

8 A   I believe that's what it shows.

9 Q   And this is colored coded by -- to distinguish

10 between Democrat-leaning wards and Republican-leaning

11 wards; right? The blue are the Democrats. You see the

12 Bush vote share?

13 A   No, that's incorrect. The color refers to the

14 percentage of the Bush vote. The height of the -- the

15 height of these columns is in the third dimension. It

16 shows that the heights correspond to the Local Moran's I,

17 so there are different pieces of information that this

18 displayed. The color is one piece of information, but

19 the height is the second piece of information.

20 Q   Exactly. The height shows the -- that shows the

21 Local Moran's I. The color shows whether it's a

22 Republican or Democratic precinct.

23 A   That's correct.

24 Q   Okay. And we see that for the Democratic precincts,

25 the height is quite high; right?

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1 A   So you do see some spikes in blue.

2 Q   And Chen and Rodden said they are stalactite-like

3 formations; right?

4 A   That's how they refer to it.

5 Q   They say that Democrats live in areas with high

6 Local Moran's I values?

7 A   I can't quote chapter and verse sitting here, but

8 that's a reasonable inference from this chart.

9 Q   And this actually shows clustering, does it not?

10 A   True. In Florida.

11 Q   Correct. And the areas of the clustering here are

12 the large cities in Florida that have large Democratic

13 populations; correct?

14 A   That's correct.

15 Q   Okay. Now, they rely on -- it's the document that's

16 in Tab 7 of your reliance materials. I believe this is

17 Exhibit 150 of the plaintiffs'. And this is the Lou

18 Anselin article, *Local Indicators of Spatial Association*.

19 You already went over this on direct?

20 A   Correct.

21 Q   And Mr. Anselin says that the Local Moran's I is

22 good at finding hotspots; correct?

23 A   I believe that's what he says. We can find the --

24 but again, high values of the Local Moran's I would

25 indicate high measures of local association in that

1 particular area.

2 Q   And that's why Chen and Rodden use the Local Moran's

3 I to analyze the state of Florida because it would show

4 the hotspots?

5 A   I don't know if that's why they use it because --

6 for that purpose.

7 Q   Now, the way you calculated the Global Moran's I is

8 you use an -- I'm forgetting. Is this the R module that

9 you found on the internet or is this the one that was

10 provided by counsel?

11 A   It's an R module that's available at the -- there

12 are a number of different websites that make available

13 different R modules, and so when you say you found it on

14 the internet, it sort of implies that I stumbled across

15 it. It's available at one of the websites that provides

16 the modules that have been validated and made available

17 for analysis in R.

18 Q   And this -- your rebuttal report was the first time

19 you had ever run this particular module.

20 A   That's correct.

21 Q   Okay. And what you did is you had to run a separate

22 analysis for both the Republicans and the Democrats;

23 right?

24 A   That's correct. It's asymmetric.

25 Q   And so you loaded -- that might be a bad term -- but

1 put every ward in Wisconsin through on the Republican

2 analysis; right?

3 A   That's correct. I mean the way that it works is the

4 module actually accepts as input the shape file. One of

5 the attributes of the shape file is that there is data

6 that's associated with each geographic area or each

7 geography and so the vote totals would be input -- would

8 be accepted as input in the module as part of the input

9 of the shape file.

10 Q   And so each ward in Wisconsin would be analyzed in

11 the Republican side when you're doing the Republican

12 calculation?

13 A   No. You would analyze the -- it would be -- that's

14 correct. It would be the number of Republican votes.

15 Q   In each and every ward in Wisconsin?

16 A   That's correct.

17 Q   And then on the Democratic side it would be the same

18 thing, you'd analyze the Democratic votes in each and

19 every ward in Wisconsin.

20 A   That's correct.

21 Q   And you're using the two-party vote share; right?

22 So the wards in Wisconsin have --

23 A   I don't think I used the vote share. I actually

24 think I used the actual -- I would have to double check,

25 but if it was the vote share, it was calculated from the

1 actual votes.

2 Q   Okay.

3 A   I'd have to double-check my report to see whether I

4 computed that looking at the -- so it would be -- it

5 would be the two-party vote share computed from the

6 actual results.

7 Q   Yeah. So it would be two parties. So it would

8 always add up to 100 in each ward, the Republicans and

9 the Democrats?

10   MR. POLAND: Object to the form of the question.

11 The number 100 is vague.

12   MR. KEENAN: Yeah, sorry.

13 BY MR. KEENAN:

14 Q   The percentage, if you took the raw vote totals and

15 then made them into a percentage, the two-party vote adds

16 up to 100 percent of the vote in that ward; right?

17 A   So can I take a minute here? I just want to make

18 sure --

19 Q   Okay.

20 A   -- that --

21   JUDGE RIPPLE: Let the witness take a look.

22 A   So I believe what I did was to -- I think this is

23 based on the actual totals. I don't know this is based

24 on the vote percentage. I would have to go back and

25 double check the original code.

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1 Q   Okay. But either way, you ran each and every ward

2 on the Republican side; right?

3 A   So all of the wards where there was vote data would

4 be included in the analysis.

5 Q   What you explained was that what Global Moran's I

6 does is show this correlation between the votes in one

7 ward and then its neighboring wards?

8 A   It's the average of that and -- yeah.

9 Q   But there's a series of individual calculations

10 performed on each ward; correct?

11 A   That would be the Local Moran's I.

12 Q   Correct. And then the Global is averaging all of

13 that out over the state.

14 A   Correct.

15 Q   Okay. So when you're running the Republican side of

16 the analysis, the most heavily Democratic ward in the

17 state, for example, a 95 percent Democratic ward is

18 showing up on the Republican side as a 5 percent ward;

19 correct?

20 A   Again, I'm not sure. I believe I did it with the

21 actual numbers, but again, those -- a ward in which

22 Republicans received 95 percent of the two-party vote,

23 that would be -- if you calculated the vote share, that

24 would be correct.

25 Q   And then if the neighboring wards were, say, like 96

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1 percent Democrat and 95 percent Democrat, 94 percent

2 Democrat, those wards are showing up as, like, 6 percent

3 Republican, 5 percent Republican, 6 percent Republican?

4 A   I think that's right.

5 Q   And then you're measuring the correlation between

6 those and the Republican vote shares in those wards are

7 actually very highly correlated, right? Because 4

8 percent correlates well with 5 percent and 6 percent with

9 4 percent?

10 A   In the example that you're giving, that's true. But

11 again, that's a misuse of the statistic. The Global

12 Moran's I is a summary statistic that shows on average

13 what the correlation would be between the Republican and

14 Democratic vote in a ward and the Republican and

15 Democratic ward -- vote in adjacent wards. And you would

16 not look at a particular ward and draw an inference from

17 that and -- I mean I don't quite understand what the

18 point of this is.

19 Q   On the Democratic side, those same wards are getting

20 analyzed on the Democratic calculation; right? So on the

21 Democratic side, that 95 percent ward is showing up as 95

22 percent Democrat and the neighboring ward is 94 percent

23 Democrat.

24 A   If that's what the data show, that's correct.

25 Q   And then you're correlating the relations there and

1 95 is correlating well with 94 and is correlating well

2 with 95 and it's correlating well with 94.

3 A   Again, the correlation -- you can't calculate a

4 correlation with two numbers. You need a range of

5 numbers because the correlation tells you how the

6 variance or how a set of numbers relate to equivalent

7 numbers. I mean if you -- you can't calculate a

8 correlation coefficient based on a single number. The

9 Global -- the Local Moran's I is you're calculating the

10 correlation, not based on a ward and a single ward, it's

11 all of the adjacent wards that share a boundary. So

12 that's how the calculation is performed, not saying that

13 number is .95 here and .95 there so the correlation is 1.

14 Q   And each and every ward in Wisconsin is being

15 analyzed both on the Republican side and the Democratic

16 side?

17 A   That's correct.

18 Q   And they're just mirror images of each other; right?

19 Because the 95 percent Republican --

20 A   No, I believe I did it with the actual votes and not

21 the percentages.

22 Q   Okay. So there might be some scattering in there?

23 A   There's going to be a lot of scattering because you

24 also -- there is no reason that the Republican and

25 Democratic vote in a ward is going to add up. That's

1 going to be a constant, it's going to be mirrored.

2 Q   And so what you did then is you take the global, the

3 sum or the average of all of these individual

4 calculations across the state and that's where you get

5 your Global Moran's I calculation?

6 A   That's correct.

7 Q   Okay. And those are just mirror images of each

8 other; right?

9 A   No, they're not.

10 Q   Okay.

11 A   It depends on how -- what pattern you observe in the

12 different wards, they aren't going to be mirror images.

13 That's why if they were mirror images, they wouldn't be

14 asymmetric. You could calculate one and know what the

15 other is, but they are not mirror images. They're

16 asymmetric.

17 Q   Yeah. There's a little bit of asymmetry there.

18 A   No, I'm going to dispute that. You can't make that

19 claim. The symmetry is based on the data, it's not based

20 on a hypothetical.

21 Q   So that's why you get a difference of .68 and .69,

22 because there are slight differences in these

23 correlations.

24 A   That's what the data show.

25 Q   And each and every ward is on both sides of this

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1 equation?

2 A   That's correct.

3 Q   Okay. So heavy concentrated Democratic wards are

4 being considered on the Republican side; is that right?

5 A   That's correct.

6 Q   Okay. We'll move on.

7   MR. KEENAN: We can take this down.

8 Q   We spent a lot of time with, maybe 15 minutes

9 yesterday, with Mr. Poland and you were talking about

10 some responses, some criticism you thought that

11 Mr. Trende had leveled against your computation method;

12 correct?

13 A   That's correct.

14   MR. KEENAN: If we could pull up Mr. Trende's

15 report. It's Exhibit 147 or 547, I'm sorry. Highlight

16 section heading there *IV*.

17 Q   Can you read what heading IV says?

18 A   Well, I'm not Dr. Jackman. This has nothing to do

19 with my report.

20 Q   Okay. So this says "Dr. Jackman's imputation

21 strategy is problematic"; correct?

22 A   I'm not going to offer any commentary about

23 Mr. Trende's criticism of Dr. Jackman.

24   MR. POLAND: Your Honor, I would object to the

25 line of questioning.

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1 BY MR. KEENAN:

2 Q   Well, Mr. Trende never actually criticized your

3 computation method, did he?

4 A   He did.

5 Q   You didn't understand that what Mr. Trende was

6 saying was that based on your analysis that Dr. Jackman's

7 imputation method might be faulty?

8 A   He was making a direct criticism of my method and

9 based on his analysis -- he showed two figures from my

10 report, so he definitely made a criticism directly of my

11 underlying methodology.

12 Q   Okay. So you didn't understand that he was saying

13 assume that Dr. Mayer is right, that would mean that

14 Dr. Jackman might be wrong?

15 A   I did not get into his criticism of Dr. Jackman, and

16 so...

17 Q   Okay.

18 A   We can go to my report or go to Mr. Trende's report

19 and identify where he criticized me.

20 Q   Sure, let's go down.

21   MR. KEENAN: Next page. Blow up like the first

22 few paragraphs there.

23 A   Now again, this is a criticism that applies to

24 Dr. Jackman and you'll have to take this up with him.

25 Q   Okay. But this is what you were responding to;

1 right?

2 A   No, this is not what I'm responding to. I don't

3 know if I have Mr. Trende's report as an exhibit.

4   MR. POLAND: Your Honors, I believe it's Exhibit

5 126 and this should be in Dr. Mayer's witness binder. We

6 did go through the specific paragraphs in Mr. Trende's

7 report with Dr. Mayer on his direct examination.

8   JUDGE CRABB: Excuse me. Are you asking -- does

9 he have -- are you talking about the same binder that you

10 gave each of us yesterday?

11   MR. POLAND: I'm sorry, Judge?

12   JUDGE CRABB: Are you asking about the same

13 binder you gave each of us yesterday?

14   MR. POLAND: No, Your Honor. No, no. Now we're

15 looking at specifically Dr. Mayer has a separate binder

16 of hard copies of the exhibits that we went through and

17 Mr. Trende's report is Exhibit 126 in that binder.

18   THE WITNESS: So in paragraph 136 and 137,

19 actually paragraphs 136 to 139, Mr. Trende is making an

20 argument about imputation and he shows that the -- I took

21 this as a criticism of my method, but it's a fundamental

22 misreading of the nature of the process.

23 BY MR. KEENAN:

24 Q   Okay.

25 A   The nature of the underlying methods.

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1   Q   All right. So we spent -- so you didn't understand

2   that Mr. Trende was criticizing Dr. Jackman and not

3   yourself.

4   A   No, he was making an invalid criticism of my

5   methodology in this.

6   Q   Let's move on to the Demonstration Plan. You drew

7   your plan in 2015; right?

8   A   That's correct.

9   Q   Okay. So at the time you drew your plan, you knew

10   the election results from 2012 and 2014?

11   A   I did not incorporate the 2014 data in the drawing

12   of the Demonstration Plan because I was attempting to

13   determine whether it was possible to draw a plan about --

14   based on what happened in 2012.

15   Q   But the 2014 election happened, so it was available

16   if you wanted to use it, you just decided not to.

17   A   It wasn't part of the analysis; so...

18   Q   And then you created a regression model to estimate

19   vote shares based on the 2012 election results?

20   A   That's correct.

21   Q   And you were fitting that model to like the 2012

22   election results that had already happened; right?

23   A   So I was using the 2012 presidential vote and the

24   independent variables to forecast or to estimate what the

25   Assembly vote -- what had been an open-seat baseline.

1 Q   You then drew the Demonstration Plan, I believe as

2 you said, to get Republican and Democratic-leaning

3 competitive seats?

4 A   Well, that was one of the underlying decision rules.

5 It wasn't the only one obviously.

6 Q   And whether those seats are Republican-leaning or

7 Democratic-leaning competitive seats was based on that

8 2012 election; right?

9 A   Well, not precisely. What my method did was to

10 generate a method that estimated the underlying

11 partisanship of a ward actually using the 2012 data. But

12 we know that my estimates are actually almost identical

13 to the composite that was based on the '04 to '010

14 results. So they're both measuring the same underlying

15 thing, which is the baseline partisanship. And the fact

16 that I used 2012 elections to come up with an estimate

17 that matched almost exactly what the district estimates

18 using previous elections show, that it doesn't matter

19 what method you use, you could become -- that both

20 methods came up with equivalent measures of the

21 underlying partisanship of wards and districts.

22 Q   And your analysis was backward looking; right? You

23 had the results and ran the analysis.

24 A   No. It was -- backward looking would mean I'm using

25 2012 to predict 2010. So in that sense it wasn't

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1 backward looking, it was looking at the results at a

2 point in time.

3 Q   Whereas the composite was forward. I mean it was

4 before the 2012 election results; right?

5 A   That's correct.

6 Q   So it was '04 to '10. It wasn't known what the 2010

7 election results would be at that time; right?

8 A   That's correct.

9 Q   And the same with Professor Gaddie when he was doing

10 his regression model, he didn't know what the 2012

11 election results would be?

12 A   That's correct. But again, the measures line up

13 almost perfectly which suggest they are both measures of

14 the same underlying phenomenon which actually doesn't

15 change dramatically from one year to the next.

16 Q   Now, you'd agree with Professor Gaddie though. He

17 explained how if you want to do a partisan baseline for a

18 district, you wouldn't rely on one year's election;

19 right?

20 A   Well, that's true. But again, it doesn't matter

21 because the method that was used that used elections from

22 '04 to '010, that measure is the same as mine; so...

23 Q   It happened to be the same as yours.

24 A   Well, it didn't happen to be, it was. It wasn't an

25 accident because they're both measures of the same

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1   underlying quantity.

2   Q   Well, it was an accident; right?

3   A   Absolutely not.

4   Q   Okay. You produced that spreadsheet, right, that

5   had the error in the Governor 6 Tab; right?

6   A   Well, but the bottom line is that, as I explained

7   yesterday, there was as error in that one race out of the

8   12 or 13 races that went into that measure. But if you

9   look at the actual metric, which is the final map

10 partisan baseline of those Act 43 districts, it matches

11 up almost exactly to what I produce using 2012 data. So

12 to the extent that that data was erroneous, it doesn't

13 matter. The ultimate result, the ultimate calculation

14 was correct.

15 Q   They lucked into this getting the right result?

16 A   Well, it was because they were averaging a large

17 number of races. It's not a matter of luck. What it

18 means is, as I explained yesterday, when you're

19 constructing a composite measure with a variety of

20 different underlying different characteristics and one of

21 those is erroneous, what that will do is it has the

22 effect of increasing the measurement error of the final

23 estimate. It doesn't mean that estimate is wrong, it

24 means there's going to be a little error there. And what

25 I show in comparing the final baseline estimates to mine

1 is those estimates -- those errors don't matter. They go

2 away. They're immaterial when you're looking at the

3 final result.

4   MR. KEENAN: Could we pull up Exhibit 486.

5 Q   This is the -- this is the spreadsheet you recently

6 prepared, right, that shows the governor 06 issue; right?

7 A   That's correct.

8 Q   Okay. What we see here is, for example, in District

9 1, the new governor 06 percentage is 587 percent; right?

10 A   That's correct.

11 Q   And so what you're saying -- I mean what this shows,

12 right, is that this governor 06 percent column was wrong

13 throughout this entire dataset?

14 A   I don't know that it was wrong throughout the entire

15 dataset because there are some numbers that don't appear

16 to be implausible. But 578 percent, that's incorrect.

17 Q   And we see a variety of different numbers there;

18 right? So right underneath that there's 226 percent?

19 A   Correct.

20 Q   And then under that there's 417 percent?

21 A   Correct.

22 Q   But then we see below sometimes it's 79 percent or

23 70 percent.

24 A   Correct.

25 Q   So this error isn't consistent across all these

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1 districts, is it?

2 A   No, it's not.

3 Q   Okay. We even -- if we scroll down, we see like a

4 671 percent and I believe there's even like a 1,100

5 percent here is the max; right? 1,110 percent.

6 A   I think we go down to the bottom, we can actually

7 see what the maximum/minimum are.

8 Q   So what this shows though is that all 04-010

9 composite is not an actual true average of the races it

10 was intended to be an average of.

11 A   What it shows is that one of the things that went

12 into the composite was incorrect, but the actual -- that

13 those errors became immaterial when you're looking at the

14 actual numbers. Because again, if you look in that

15 spreadsheet, the final map, look at those open-seat

16 baseline estimates that are based on the 04-010 composite

17 and compare them to my open-seat baseline estimates, they

18 are almost exactly the same. So I'm not disputing that

19 this column was wrong, what I'm saying in terms of

20 looking at the final composite, it doesn't matter.

21 Q   And the error has a different effect, right, in each

22 district on the composite score if you were to correct

23 it.

24 A   I'm sorry?

25 Q   If you were to correct this column, you would have a

1 different effect on each and every district, right, in

2 terms of calculating the score?

3 A   I believe that's right. I'm not quite sure I

4 understand.

5 Q   Because the error is different in each of these

6 districts. Sometimes we see it's 133 percent Republican

7 vote, the next one down is 222 percent; right? So the

8 nature of the error is different between each of these

9 districts.

10 A   That's correct.

11 Q   So if we went back and corrected it, it would

12 actually change the number in different ways for each

13 district.

14 A   It would in very small ways.

15 Q   Okay. Now, have you attempted to -- you haven't

16 attempted to, like, correct the error and see what the

17 differences would be?

18 A   Actually Dr. Jackman did.

19 Q   Okay. And so -- but you don't know what, like, if

20 it changes from 51 to 47?

21 A   They line up almost exactly. I'm telling you that

22 based on the final number that we see, that this error is

23 not a material error in that final.

24 Q   It happened not to be a material error based on what

25 happened in the 2010 election is what you're saying.

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1   MR. POLAND: Object to the form of the question.

2   THE WITNESS: It happened --

3   JUDGE RIPPLE: Sustained.

4   THE WITNESS: It happened not to be material --

5 do I still need to answer it?

6   JUDGE RIPPLE: We'll let him rephrase the

7 question --

8   THE WITNESS: I'm sorry.

9   JUDGE RIPPLE: -- then you can answer.

10 Mr. Keenan.

11   MR. KEENAN: If we could bring up Mr. Mayer's

12 initial report, which is Exhibit 2, I believe. And we'll

13 go to page 24, Table E. Page 24 at the bottom. I'm

14 sorry, keep going. This is actually the rebuttal report

15 now.

16 BY MR. KEENAN:

17 Q   The point I wanted to make is this right here, the

18 Demonstration Plan efficiency gap. We see the baseline

19 efficiency gap is 2.20; correct?

20   JUDGE RIPPLE: Just for the record what are we

21 looking at?

22   MR. KEENAN: Sure. This is Exhibit 104, which

23 is Mr. Mayer's original rebuttal report.

24   MR. POLAND: Your Honor, I believe that we

25 should use the revised rebuttal report, the amended

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1 rebuttal report which has many of the transcription

2 errors corrected.

3   MR. KEENAN: I want to go over those errors.

4   JUDGE RIPPLE: I think we'll let counsel go over

5 the errors here. Any deficiency you can certainly take

6 care of on redirect.

7   MR. POLAND: Thank you, Your Honor.

8 BY MR. KEENAN:

9 Q   So you calculated the baseline efficiency gap of the

10 Demonstration Plan at 2.2 percent. Professor Jackman

11 characterizes his efficiency gaps as negative if they are

12 Republicans. Using that method, this would be a negative

13 2.2 percent efficiency gap?

14 A   That's correct.

15 Q   Now, let's just -- I just want to make sure we're

16 clear what the baseline efficiency gap is. So that's

17 assuming that every seat is contested and no incumbents

18 were running.

19 A   That's correct.

20 Q   Okay. And so that number though doesn't actually

21 represent the efficiency gap that was seen in Wisconsin

22 or that would have been seen under the Demonstration Plan

23 in real life in 2012; correct?

24 A   No. Again, it's an open-seat baseline so it does

25 not take incumbency into effect or into account.

1 Q   Moving over to the Act 43 one, 11.69 percent, that's

2 also the baseline, so that's assuming all seats contested

3 and no incumbents were running.

4 A   That's correct.

5 Q   Okay. And that's not actually the election that

6 took place in 2012. There were some uncontested seats

7 and some incumbents did run.

8 A   That's correct.

9 Q   Okay. Now, for your baseline method you impute

10 votes for the uncontested seats; correct?

11 A   That's correct.

12 Q   Okay. When Dr. Jackman imputes votes, he includes a

13 confidence level interval. There's a point estimate on

14 his EG with some confidence intervals at 95 percent to

15 account for uncertainty in imputations. Are you aware of

16 that?

17 A   You'll have to take that up with him. I'm not

18 prepared to...

19 Q   Sure. My point is you didn't do anything like that

20 with your imputations.

21 A   No. This is a point estimate.

22 Q   Okay. And then we see in your rebuttal report you

23 took incumbency into effect based on some criticisms of

24 Dr. Goedert; correct?

25 A   That's correct.

1 Q   And we see the Demonstration Plan, at least your

2 initial calculation, the efficiency gap for the

3 Demonstration Plan jumps to negative 3.71; correct?

4 A   That's correct.

5 Q   Okay. And then on Act 43, taking incumbency into

6 account, the efficiency gap increase in negative 13.04?

7 A   Well again, these were the figures prior to

8 correcting the errors in the -- correcting the errors in

9 the data used to generate this table.

10 Q   Sure. Those errors -- you discovered those errors

11 during a deposition; correct?

12 A   That's correct.

13 Q   And then we stopped the deposition and then you went

14 home and corrected the report and provided a few one?

15 A   That's correct.

16 Q   Okay.

17   MR. KEENAN: Now, we can turn to Exhibit 114 and

18 we'll go to page 24, there's a similar table.

19   JUDGE RIPPLE: Counsel, you can read into the

20 record what exhibit --

21   MR. KEENAN: Sure. This is Exhibit 114, which

22 is Professor Mayer revised rebuttal report.

23   JUDGE RIPPLE: Thank you.

24 BY MR. KEENAN:

25 Q   And so upon revision, the efficiency gap of the

1 Demonstration Plan jumped to negative 3.89 percent?

2 A   The Demonstration Plan didn't change. It was the

3 incumbency efficiency gap for Act 43 that changed.

4 Q   And the efficiency gap for the Demonstration Plan

5 with incumbency.

6 A   Right. But that --

7 Q   That had been 3.71.

8 A   Right. But that did also -- I'm sorry.

9 Q   And then with Act 43 that also changed. That's now

10 negative 14.15 percent?

11 A   Again, using the negative -- the consistent -- yes.

12 Q   Okay. And your revised rebuttal report, what this

13 shows is that the efficiency gap for Act 43 increased by

14 two-and-a-half percent?

15 A   That's correct.

16 Q   Due to incumbency.

17 A   That's correct.

18 Q   Okay. And this is similar to your baseline model,

19 correct, where when you did a baseline model the

20 Republicans won 57 seats?

21 A   I'm not sure what you're referring to.

22 Q   Sure. In this 11.69 number, the seat total for

23 Republicans under your baseline model was 57.

24 A   I'd have to go back and look at the data.

25 Q   Okay.

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1   A   I don't remember sitting here what that number was.

2   Q   And then when you took incumbency into account, it

3   added three seats and the seat total jumped to 60?

4   A   Again, I'd have to go back and look at the

5   underlying data. I don't exactly remember. But it would

6   make sense that the number of Republican seats would go

7   up.

8   Q   Because as you add in the incumbency fact, they end

9   up winning more seats than the baseline would indicate?

10   A   That's correct.

11   Q   Because there were more Republican incumbents back

12   running for election in 2012?

13   A   That's correct.

14   Q   And that's why we see this jump in the efficiency

15   gap. There's more Republican incumbents than Democratic

16   incumbents.

17   A   That's correct.

18   MR. KEENAN: If we could go down to the

19   uniform-swing calculations that Professor Mayer

20   performed.

21   Q   And you went over this with Mr. Poland yesterday.

22   MR. KEENAN: Yes, if we could blow this table

23   up.

24   Q   This is Table F?

25   JUDGE RIPPLE: Just for the record we're still

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1 in the revised rebuttal report?

2   MR. KEENAN: Yes. Revised rebuttal report.

3   MR. POLAND: It is Exhibit 114, just for the

4 record.

5   JUDGE RIPPLE: Thank you.

6 BY MR. KEENAN:

7 Q   And in response to criticisms from Dr. Goedert, you

8 performed a uniform swing on the -- this is a

9 Demonstration Plan incumbent baseline; correct?

10 A   That's correct.

11 Q   Okay. And we see the incumbent baseline of your

12 plan shows 50 Republican seats and 49 Democratic seats;

13 correct?

14 A   That's correct.

15 Q   Now, this is a change from your Demonstration Plan

16 open-seat baseline; correct?

17 A   I believe it is.

18 Q   The Republicans picked up two seats, I believe, due

19 to incumbency?

20 A   I think that's right.

21 Q   Okay. And under this, your plan incumbent baseline

22 now, we see the efficiency gap is, using Dr. Jackman's

23 negative terminology, it's negative 3.89; correct?

24 A   Correct.

25 Q   And I guess maybe just globally you kind of report

1 the Republican efficiency gaps as positive numbers and

2 the pro-Democratic efficiency gaps as negative.

3 Dr. Jackman has it reversed.

4 A   That's right.

5 Q   But it's essentially the same, the sign is just

6 changing.

7 A   That's correct.

8 Q   Now, what you intended this to show is what would

9 happen if you took a uniform swing across all districts

10 within basically the plausible range of election results

11 that have been seen over the past recent history in

12 Wisconsin?

13 A   That's correct.

14 Q   Okay. And what we see here is that from your

15 incumbent baseline if the Republicans win 5 more points

16 or reverse, the Democrats lose 5 percentage points, they

17 would gain one seat in the Assembly?

18 A   I'm sorry, say that again.

19 Q   Sure. You do a D minus 5 uniform swing? That's the

20 left column.

21 A   That's correct.

22 Q   And so that means you're taking your baseline and

23 you're swinging it down five points for the Democrats;

24 right?

25 A   That's correct.

1 Q   And these are two-party vote totals. So like the

2 reverse is -- it's a Republican plus five?

3 A   That's correct.

4 Q   Okay. And you did D minus five because that would

5 take you to about an election with Republicans at 54

6 percent of the vote and Democrats with 46?

7 A   That's roughly correct.

8 Q   Because that was sort of the highest Republican vote

9 share or conversely lowest negative Democratic vote

10 share?

11 A   Correct.

12 Q   And so under this plan, what your uniform-swing

13 analysis shows is if Republicans would get their highest

14 report share they'd seen, they'd win 51 seats?

15 A   That's correct.

16 Q   And it shows that in the entire plausible range of

17 election results, the Democrats would never fall below 48

18 seats?

19 A   That's what this shows.

20 Q   Okay. Now, yesterday you testified that the essence

21 of gerrymandering was protecting your downside. It

22 wasn't really about gaining more seats once you had the

23 majority, but it was about making sure you didn't fall

24 out of the majority?

25 A   That's correct.

1 Q   Okay. This protects the Democrat's downside pretty

2 well. They never fell below 48 seats.

3 A   Well, it's true that the table shows that under a

4 5-point Republican swing, the Democrats go down to 48

5 seats.

6 Q   Now, you drew these districts to be competitive;

7 correct?

8 A   Where I had an opportunity to do so I did.

9 Q   Okay. Yet when we have a uniform swing that covers

10 the entire gamut of potential election results, we see a

11 whole swing of eight seats from left to right?

12 A   So from minus 5 to plus 3 we see an 8-point swing.

13 Q   Wouldn't you expect that competitive seats should

14 swing more than that?

15 A   Well, and again when I was creating competitive

16 seats, I wasn't aiming for particular distribution trying

17 to get seats in a particular range. I made an effort to

18 draw a roughly equivalent number of seats in the same

19 range of competitiveness.

20 Q   Now, you did an actual uniform swing off the numbers

21 that gave you that 3.89 efficiency gap.

22 A   I'm sorry, I don't --

23 Q   So there was a set of district results that resulted

24 in a 3.89 efficiency gap, your incumbent baseline there.

25 A   That's correct.

1 Q   You didn't perform the uniform swing off of that

2 baseline.

3 A   Well, I did.

4 Q   What you did is you then assumed all of the party

5 winners in that baseline would be incumbents and then

6 they would run for re-election; right?

7 A   That's correct.

8 Q   Okay. And so then you made a uniform swing after

9 that, after the incumbency advantage had been added in

10 for each of those individuals here in the 50/49 incumbent

11 plan baseline.

12 A   That's correct.

13 Q   Okay.

14   MR. KEENAN: Well, let's pull up Exhibit 568.

15 Q   And we'll go to Tab -- Exhibit 568, Mr. Mayer, along

16 with your rebuttal report, counsel sent us several Excel

17 sheets that you had provided. Do you recall that?

18 A   Yes.

19 Q   And we've marked as Exhibit 568, 569 and 570 the

20 three different spreadsheets that you provided that were

21 the backup information for the revised rebuttal report.

22 A   Correct. Okay.

23 Q   And this is one of those spreadsheets and there are

24 several tabs.

25   MR. KEENAN: And we can go to the tab that says

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1 *EG with Inc.* way at the left there. And if we -- so

2 let's just -- we'll go along the top to just orient

3 ourselves with what the spreadsheet shows.

4 Q   District column A is pretty self-explanatory.

5 That's the district number.

6 A   Correct.

7 Q   And then column F is a predicted Democratic vote in

8 that district using your model, although this one is

9 taking incumbency into account; correct?

10 A   Correct.

11 Q   Okay. And then H, predicted rep, is the predicted

12 Republican votes; correct?

13 A   Correct.

14 Q   And your model works by predicting actual vote

15 totals?

16 A   Yes.

17 Q   And so when you run your model, it would generate

18 the 16,904 number for the predicted Republican votes?

19 A   Correct.

20 Q   And then you would run the number for the Democrats

21 and predict the 15,633 votes?

22 A   Correct.

23 Q   And then the percentages we see here are just a

24 function of adding those numbers together and then

25 dividing to get the percentage; correct?

1 A   Correct.

2 Q   Like the D percent is the Democratic percentage of

3 the vote in that district and the R percent is the

4 Republican percentage in that district; correct?

5 A   Correct.

6 Q   And we see they add up to 100. 48 plus 52; correct?

7 A   Correct.

8 Q   So this is a two-party vote total?

9 A   That's correct.

10 Q   If we move over to the left and here -- maybe like

11 still back a little left.

12   MR. POLAND: Your Honor, actually I believe I

13 have an objection -- I'm sorry. Withdrawn.

14 Q   And then we'll go through these columns. We're

15 going to mainly look at the percentages here. But these

16 lost and surplus columns here, those are the calculations

17 of the wasted votes in each of these districts after

18 using your model; correct?

19 A   Correct.

20 Q   So the surplus votes would be the excess votes

21 needed to win the seat?

22 A   Correct.

23 Q   And we see a D surplus and an R surplus. So in

24 District 1 the Republicans won, so that's why you see the

25 R surplus?

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1 A   Correct.

2 Q   And then we see D wasted and R wasted. They're in

3 columns N and O?

4 A   Correct.

5 Q   I guess first we should say J and K, D lost and R

6 lost. Those would be the wasted votes, so to speak, of

7 the losing party?

8 A   So say that again.

9 Q   Sure. D lost here 15,633, that's the wasted vote

10 total for the Democrats because they lost the seats. All

11 those votes count as wasted?

12 A   That's correct.

13 Q   And going down the line too, we see the Republicans

14 lose their seat, so there's a R lost figure there,

15 10,457?

16   JUDGE RIPPLE: We are on Exhibit 568?

17   MR. KEENAN: 568.

18   JUDGE RIPPLE: We're having some difficulty with

19 numbers up here. The numbers on your display aren't the

20 numbers on --

21   MR. KEENAN: There are several tabs on the

22 bottom, and so this is the tab that is the farthest to

23 the left. EG with Inc. is the title.

24   JUDGE GRIESBACH: Okay.

25   JUDGE RIPPLE: We're good. Thank you.

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1 BY MR. KEENAN:

2 Q   So the columns J through, I guess, M, show that

3 either the wasted votes by the losing party or the

4 surplus votes that are wasted by the winning party;

5 correct?

6 A   Correct.

7 Q   And then we see R minus D net and so that's taking

8 the Republican vote and subtracting the Democrat vote

9 from it, wasted vote?

10 A   Well, it's actually the signs are reversed. It's --

11 so yes, it looks like the signs are reversed. That

12 actually looks like that's D minus R, but...

13 Q   Okay. It should say D minus R net?

14 A   The numbers would be the same, it's just the signs

15 would be reversed.

16 Q   And that's showing the net effect of the wasted

17 votes because there's wasted votes for both parties in

18 each district.

19 A   Correct.

20 Q   And Rep win, we see a 1 or a 0. The 1 represents

21 why the Republicans have won that seat or not.

22 A   Correct.

23 Q   If we move down to the bottom of the spreadsheet,

24 here in column P we see 3.8855. Do you see that?

25 A   Yes.

KENNETH MAYER - CROSS

1 Q   And that corresponds then with the 3.89 efficiency

2 gap that you had calculated for the Demonstration Plan

3 with incumbents taken into account?

4 A   Correct.

5 Q   Okay. Let's go up to the top then. And if we can

6 scroll over so that we see both the Republican and

7 Democratic vote percentages. Okay. So you did not run

8 the uniform swing off of this -- these vote percentages

9 here; correct?

10 A   No. Because the purpose of a uniform swing is to

11 make a prospective estimate of what would happen in the

12 subsequent election. It's not designed to see what would

13 happen in this election because we're working with the

14 same redistricting plan. So I made the assumption that

15 every party that won a district would run as an

16 incumbent -- run as an incumbent and then applied the

17 swing.

18 Q   We'll go through the numbers to show how that worked

19 then.

20   MR. KEENAN: If we can go to Exhibit 569,

21 defendants.

22 Q   And this is another one of the spreadsheets,

23 Professor Mayer, that you provided to us. This one is

24 titled *Revised Swing Ratio Incumbents*. And the first tab

25 -- we're on the first tab over to the left right now.

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1 Hopefully everyone can get there. It says on the bottom

2 *Plan Open-Seat Baseline*. Do you see that? Do you see

3 that, Professor Mayer?

4 A   I do.

5 Q   Okay. And so this is your open-seat baseline with

6 no incumbents taken into account; right?

7 A   That's correct.

8 Q   Okay. And so if we just look at these percentages

9 here, for example, District 1 shows that this is 49.8

10 percent Democratic district and a 50.2 percent Republican

11 district; correct?

12 A   Correct.

13 Q   And then going down to District 2, it's 54.1 percent

14 Democratic and 45.9 percent Republican.

15 A   Correct.

16 Q   Okay. If we go to the -- we're going to move over

17 tabs.

18   MR. KEENAN: And I think, Jackie, we should go

19 to tabs we can't see here. The swing ratios tab. You

20 can go all the way to the top. Okay.

21 Q   And so here we see another column that has the

22 districts and has the D percentage and the R percentage;

23 correct?

24 A   Correct.

25 Q   Now, this is the baseline off of which you ran your

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1 uniform swing; correct?

2 A   Actually I don't think this is. This has the

3 incumbency factored back in, so I don't believe that

4 these vote percentages, the open-seat baseline, this was

5 what I used to apply the swing which was after incumbency

6 had been incorporated.

7 Q   Correct. Maybe we were confused. That's what I

8 meant to convey, so I'm sorry if I asked a poor question.

9 So you took these numbers and then performed your uniform

10 swing; correct?

11 A   Right. So the predicted -- so the predicted values

12 here assume that every district had an incumbent of the

13 party that won under the baseline.

14 Q   Okay. So like, for example, in District 2 here, we

15 see that the Democrat had 58.4 percent of the vote. You

16 see that?

17 A   Yes.

18 Q   All right. So then when you ran your minus 5

19 uniform swing, that's going to swing down to 53.4

20 percent?

21 A   That's correct.

22 Q   And that will stay as a Democratic seat, right,

23 because it hasn't flipped over past the other side of 50?

24 A   That's correct.

25 Q   Okay. If we go back to the first tab we were on,

1 open-seat baseline, we see that the D percentage is 54.1

2 percent; correct?

3 A   Correct.

4 Q   Okay. Now, if we had done the uniform swing on this

5 of five points, this would have flipped over to the

6 Republicans; correct?

7 A   It would, but that's a misuse of the technique.

8 Again, the purpose of the open-seat baseline was to give

9 you a consistent methodology of comparing alternative

10 district configurations and so the reason is that in an

11 alternative map, incumbents might change. We don't know

12 where the incumbents are. So this is a way of making a

13 direct valid comparison between two alternative

14 redistricting plans.

15   Under the swing analysis here, I'm examining what

16 would be a plausible set of outcomes in the same

17 redistricting plan; what we can directly observe; which

18 party was likely to win an election. And so we're not

19 comparing one districting plan to another districting

20 plan, we're comparing a set of alternative outcomes in

21 the same plan. And so in that case, it makes sense to

22 incorporate incumbency back into this. So you -- and

23 just to draw another point that the reason that the Act

24 43 map drawers and Dr. Gaddie did a swing analysis using

25 their open-seat baseline is that they were comparing one

1 plan to another plan, so they were trying to see what

2 would happen in alternative district configurations. So

3 you could do the swing analysis here, but that would be

4 an improper use of the method.

5 Q   Okay. So let's just see the effect of the

6 incumbency here. We have 54.1 here in the Democratic

7 side in District 2. Let's flip back to the tab that's

8 the -- that we were just on. Swing ratios. It's now

9 58.4 percent.

10 A   Again, under the same vote percentage as we observed

11 in 2012.

12 Q   So that was like a 4.3 percent --

13 A   That's the incumbency advantage in that district.

14 Q   Okay. Now, you would agree though that this revised

15 swing -- this swing ratio tab here, these percentages

16 don't represent a possible election result in the 2012

17 election; correct?

18 A   Well no, because the purpose of examining the swing

19 analysis in this case, we know what happened in 2012, so

20 in that sense it doesn't make any sense to think about

21 what would have happened if the 2012 election were

22 different because it wasn't. We observed what happened.

23 What this is designed to do is to see what would -- a

24 plausible set of outcomes of what would happen in the

25 same plan in a subsequent election where you might see a

1 swing. So in terms of the counterfactuals, it doesn't

2 make sense to apply the counterfactual to 2012 because we

3 know what happen.

4 Q You know what happened.

5 A And if the election results were different, that

6 would have changed the underlying estimates in my model

7 since my model was based on the 2012 election result. So

8 I mean it's not a proper use of the baseline model to do

9 a swing analysis of this sort.

10 Q Now, we saw like a four-point bump for the

11 Democrats. So you add a four-point bump and then do a

12 five-point swing back; right?

13 A Well, you would factor the incumbency advantage in

14 and then perform the swing based on that.

15 Q So that's why we don't see any of these seats

16 flipping back to the Republicans, because you're adding

17 in a Democratic incumbency advantage and then before you

18 do the uniform swing.

19 A That's why we don't see this seat flipping.

20 Q We only saw one seat flip, right, after five points?

21 A I don't know which seats actually flipped. I

22 performed the analysis and reported the results.

23 Q It was 50 and 51, remember?

24 A Correct.

25 Q Okay. And the reason that changed is because you're

1 adding incumbency to every seat. So this is assuming

2 that every incumbent -- it's assuming a hypothetical

3 election under the Demonstration Plan in 2012; correct?

4 A   No. It's assuming what would be a plausible set of

5 results in a subsequent election. So I'm not making a

6 claim that if 2012 had looked different this is what you

7 would see. This is -- the estimate is based on the 2012

8 election and this is observing or estimating what a

9 likely outcome would be in a subsequent election.

10 Q   Yes. That's exactly -- I'm trying to -- I think

11 you're fighting me when you don't need to. This is --

12   MR. POLAND: I'm going to object to the form of

13 the question.

14 Q   This --

15   JUDGE RIPPLE: Sustained.

16 BY MR. KEENAN:

17 Q   The assumptions underlying this tab, swing ratio, is

18 that the 2012 election had been run under the

19 Demonstration Plan; correct?

20 A   That's correct.

21 Q   And then the parties who had -- were over 50 percent

22 under the Demonstration Plan won that seat; correct?

23 A   Correct.

24 Q   So District 2 had been won by a Democrat because we

25 saw all the incumbency -- you know, when you did your

1 election, it was won by the Democrats and now you're

2 treating it as a Democratic-held seat; correct?

3 A   That's correct.

4 Q   Now, there wasn't actually a Democratic incumbent in

5 District 2; correct?

6 A   I don't know.

7 Q   Okay. And so if this was supposed to represent --

8 A   Again, I'm not fighting you for the sake of fighting

9 you.

10 Q   He's done.

11 A   I want to make sure that our terminology is precise.

12 I actually don't know under the Demonstration Plan

13 whether there was an incumbent in District 2.

14 Q   There actually was a Republican incumbent in

15 District 2; correct?

16 A   I don't know. I didn't pay attention to where

17 incumbents resided. So I just want to make sure that

18 we're using precise language in describing what happened.

19 Q   But in the 2010 elections, the Democrat didn't win

20 District 2; correct?

21 A   Well, District 2 in the Demonstration Plan is not

22 the same as District 2 in Act 43 or what District 2 was

23 in the previous redistricting plan. So the numbers are

24 not going to line up exactly.

25 Q   There wasn't a Democrat in the State Assembly in

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1 that area though who would have then been running in

2 Demonstration Plan District 2.

3 A   I don't know.

4 Q   And so hypothetically if this is supposed to

5 represent a future election after 2012, this would be

6 someone who would be a first-term incumbent; right?

7 A   Well, I mean conceptually I didn't draw a

8 distinction in terms of how long people had been in

9 office. It was generated using the underlying data.

10 Q   So you're giving an incumbency effect equally across

11 all incumbents regardless of how long they've served in

12 the Assembly.

13 A   That's correct. That's how it's done in the

14 literature.

15 Q   For example, you now have -- is it 49 Democratic

16 seats? 50 to 49 is the number?

17 A   What plan are we looking at?

18 Q   This is the Demonstration Plan --

19   MR. KEENAN: Actually let's go down to the

20 bottom. I don't think we have it here. Let's go back up

21 to the top.

22 Q   But every -- we see them color coded here. Every

23 one that says -- that's color-coded blue here in the

24 predicted DEM, that means the Democrat is treated as the

25 incumbent; correct?

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1 A   Well, yes. So this is the Demonstration Plan,

2 assuming that there is an incumbent in every district.

3 So I've already applied the incumbency model, observed

4 who won, and then recalculated those estimates assuming

5 there's an incumbent in every district. So this is not

6 actually going to line up precisely with the results in

7 Table F of my rebuttal report. But again, there are lots

8 of numbers floating around. We're making sure if we have

9 an apple, we're looking at another apple.

10 Q   Once we get in the incumbency effect, then there's

11 not many plans that flip hands because you're adding in

12 like four points incumbency and then swinging five points

13 down.

14 A   There are going to be fewer seats that switch.

15 Q   And then let's go back to the -- all the way to the

16 open-seat baseline. We see District 1 is 49.8 percent

17 Democratic and 50.2 percent Republican. Do you see that?

18 A   Yes.

19 Q   Okay. Then we go back to the swing ratios. We see

20 -- this one we see an incumbent effect, but it's only 1.8

21 points; correct?

22 A   I actually -- can we go back to the original

23 spreadsheet?

24 Q   Sure.

25 A   So 50.2. So it's 1.8 percentage points.

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1 Q   Okay.

2 A   But again, that's based on the incumbency advantage

3 coefficients which are actually not going to be the same

4 in every district because I calculated those based on the

5 population of the wards which is not constant.

6 Q   And now though when you perform your

7 uniform-plus-three swing, this seat is going to swing to

8 the Democrats; right?

9 A   That's correct.

10 Q   Okay. So if we have about a 4 percent Democratic

11 incumbency effect, the only type of seats that are going

12 to end up swinging under this analysis is something

13 that's maybe 50 to 51 percent when you do D minus 5?

14 A   The incumbency advantage is not going to be

15 identical in every district because it's calculated using

16 the underlying data. So it will be true that when you

17 add the incumbency back in, all of the votes will shift

18 away from 50 percent. We're either adding votes to the

19 Republican or adding votes to the Democrat based on which

20 party is the incumbent.

21   But again, I did not calculate the incumbency

22 advantage by running analysis and saying oh, the

23 incumbency advantage is 3 percent in every district.

24 It's actually calculated in each district separately. So

25 it's not going to -- it probably will be close, but it's

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1   not going to be identical in every district.

2   Q   Okay. And you performed this same type of

3   adjustment before running your Act 43 uniform-swing

4   analysis as well?

5   A   That's correct.

6   Q   Okay. So what you did there is took the Act 43

7   results and then you assign incumbency effects to all the

8   incumbents who won under your Act 43 analysis; correct?

9   A   That's correct.

10 Q   And so in Act 43 -- your Act 43 analysis showed 60

11 Republican seats?

12 A   I believe that's right.

13 Q   Okay. So you're treating all those 60 Republican

14 seats as incumbent-held seats; correct?

15 A   Correct.

16 Q   And then you're adding in the incumbency

17 advantage --

18 A   To the baseline.

19 Q   -- correct?

20 A   Or actually so -- so in the incumbency analysis we

21 observe where the incumbents are and which seat won. And

22 I think all of the incumbents won, but I'm not positive.

23 But we observed the result and then rerun the analysis,

24 assuming every district has an incumbent based on who won

25 in 2012. So again, I'm not fighting you for the sake of

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1 fighting you, but I just want to make sure we're

2 precising describing what I did.

3 Q   Sure. And we can open up 567. Okay. This is the

4 third spreadsheet that was sent to us. This is titled

5 *Revised Act 43 Swing Rebuttal.* And this is a spreadsheet

6 that shows your swing analysis on Act 43; correct?

7 A   Yes.

8 Q   Okay.

9   MR. KEENAN: And I think maybe we should go back

10 to Exhibit 114, your rebuttal report. And if we can just

11 go down one page I think from here. This is the right

12 exhibit. The same table that shows Act 43. Right here.

13 Q   And so this is the summary table of your swing

14 analysis on Act 43; correct?

15 A   Correct.

16 Q   And what this shows is Act 43 actual -- it shows 60

17 Republican seats and 39 Democrat seats; right?

18 A   Right.

19 Q   And then we see the swing analysis on both sides.

20 You see a D plus 3, which is adding three points to every

21 Democrat seat; correct?

22 A   Correct.

23 Q   And then we see D minus 5, which is subtracting 5

24 from every Democratic seat?

25 A   That's correct.

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1 Q   And this is again the range of election results

2 we've seen in the past?

3 A   Since 1992, that's correct.

4 Q   And what this shows is that under Act 43, if you

5 subtract five points from the Democratic vote or

6 conversely add five points to the Republican votes, they

7 gain 0 seats?

8 A   Well, that's true as I described yesterday. The key

9 here is that Republicans don't pick up any additional

10 seats under a strongly Republican swing because they've

11 already secured significant advantage. And if it swings

12 in the other direction, the efficiency gap actually grows

13 larger because Democrats get -- Republican gets 56

14 percent of the vote but hang on to a 54-45 majority in

15 the Assembly.

16 Q   And then D plus 3, it shows Democrats getting 54

17 percent of the seats or 54 seats.

18 A   Correct.

19 Q   And --

20 A   No, no, no. It shows Democrats getting 45 seats.

21 Republicans are first.

22 Q   I'm sorry, I misread that. Yes. 45 seats.

23 Republicans will have 54 seats. And you said this shows

24 how -- Act 43 shows the Democrats could never get a

25 majority here; right?

1   A   Well, not under a plus 3 plausible swing. I mean if

2   there's an election where you have -- under the scenarios

3   that I outline here, Democrats do not capture a majority

4   even when they receive the highest percentage of the vote

5   they've received in the last 20 years.

6   Q   And what this again though is on the Act 43 actual,

7   you ran all those calculations and figured out who would

8   win the seats; correct?

9   A   Correct.

10 Q   And it came out 60 to 39 Republicans?

11 A   Correct.

12 Q   And then what you did is you treated each of those

13 seats as being held by an incumbent.

14 A   Correct.

15 Q   Okay. And then you ran your uniform swing.

16 A   That's correct.

17 Q   Okay. And so after adding in the incumbency -- so

18 what this is assuming is that every single member of the

19 Republican Legislature, all 60 would run for re-election.

20 A   Not all 60. Every member. All 99.

21 Q   All 60 Republicans and all 39 Democrats.

22 A   Correct.

23 Q   Now, that assumption has never been the case in

24 Wisconsin; correct?

25 A   It's general to make sure that not every incumbent

1 runs. But again, we don't know where incumbents will or

2 will not run and so this is a uniform way of making a

3 uniform -- conducting a uniform analysis.

4 Q   And if we want to take this to -- maybe even predict

5 out years from 2014 like '16, '18 and '20, this is

6 assuming that every Republican incumbent, the six of them

7 will continue to run each and every election in the

8 cycle?

9 A   Well, again, this is not a forecast that you can use

10 to say well, let's assume the next election looks like

11 this and the next election after that looks like that.

12 This is looking at a range of outcomes. So it would

13 apply to -- you can apply this methodology to any

14 plausible vote swing and come up with an estimate of what

15 the partisanship of the legislature and what the

16 efficiency gap would be under any hypothetical set of

17 results, again, applying what -- the maximum swings that

18 we have observed since 1992.

19 Q   All right. And so for this D plus 3 column on the

20 right, in order to assume that applied throughout the

21 whole decade though, you have to assume that each and

22 every incumbent runs for re-election through the entire

23 decade; right?

24 A   Again, that's not quite what this is designed to do.

25 This is designed to show what would happen under a swing

1 irrespective of when it actually takes place. So this

2 doesn't apply to any specific election, whether 2014,

3 2016, 2020. What this tells you is it's a general way of

4 describing what would likely happen under maximum swings

5 that we have observed in Wisconsin.

6   MR. KEENAN: If we could go back to 567.

7   JUDGE RIPPLE: Mr. Keenan, in about two or three

8 minutes we would like to take a break. Can you bring me

9 in for a soft landing?

10   MR. KEENAN: We can just do it now.

11   JUDGE RIPPLE: Let's do it now. The Court will

12 stand in recess for 15 minutes.

13   (Recess   10:29-10:49 a.m.)

14   THE CLERK: This Honorable Court is again in

15 session. Please be seated and come to order.

16   JUDGE RIPPLE: Mr. Keenan, you may continue.

17 BY MR. KEENAN:

18 Q   Dr. Mayer, we'll do one last thing with the uniform

19 swing then we'll move to a different topic.

20 A   Okay.

21 Q   We have Exhibit 569 up here which we looked at

22 before. This is the efficiency gap revised for your

23 plan, the Demonstration Plan with incumbents. This is

24 the tab that was used to calculate the 3.89 efficiency

25 gap, to orient yourself.

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1   Now, you understood Dr. Goedert's criticism of you

2   to be that you had information available to you that the

3   drawers of the map did not, namely what the results of

4   the 2012 election were.

5   A   He did make that criticism.

6   Q   Okay. So he thought you should have run a uniform

7   swing to show what the possible results would have been

8   ahead of time that could have happened in 2012; right?

9   A   That's not what I read. His criticism was that I

10 didn't take into account information that the map drawers

11 had and that I didn't perform sensitivity testing to see

12 what would happen with the configurations under

13 alternative scenarios of statewide vote percentages.

14 Q   Okay. Well, let's -- so the 2012 election had about

15 51.4 percent Democratic vote share; correct?

16 A   It depends on how you calculate it.

17 Q   Professor Jackman has calculated it that way;

18 correct? And then he in 2014 calculated the Democratic

19 vote share of 48 percent; correct?

20 A   I believe so.

21 Q   So that's a negative 3.4 percent swing?

22 A   Correct.

23 Q   So we're going to go through this document here and

24 we'll perform a uniform-swing exercise on the baseline

25 that was used to generate the negative 3.89 percent

1 efficiency gap. So basically every seat here that has a

2 D percent that's 53.4 or less will swing to the

3 Republicans, correct, on a negative 3.4 percent D swing?

4 A   So I just want to make sure I have the directions

5 straight in my head. So you are asking what would happen

6 in a 3.4 percent Republican swing.

7 Q   Correct. Negative Democrat. Positive Republican.

8 A   So that means that every Democratic seat that was

9 between 46.6 and 50 would swing in the Republican's

10 direction.

11 Q   No. Every seat that was 50 percent Democrat to 53.4

12 percent, when you subtracted it now, the Democrats have

13 less than 50 percent and lose the seat.

14 A   That's the equivalent, yes.

15 Q   You may have been thinking Republicans jumping. I'm

16 thinking of Democrats falling down. And the column we're

17 looking at here is G D PCT. That refers to the Democrat

18 vote percentage; right?

19 A   Correct.

20 Q   So when we look at District 2, that's 51.8 percent;

21 correct?

22 A   Correct.

23 Q   And so on a minus 3.4 on this baseline, that would

24 swing to the Republicans.

25 A   Well, again, that's not how I did it. I performed a

1 baseline, assuming that every district had an incumbent.

2 So again, this is a combination in races. Whether it was

3 an incumbent, it's the incumbent effect. In races that

4 was the open seat, it doesn't have the incumbency

5 advantage built in, so now we're kind of comparing apples

6 and oranges.

7 Q   Let's compare alternative scenarios that might have

8 happened in 2012. So at that point there wouldn't have

9 been a Democratic incumbent in District 2. So if you

10 swing it down 3.4 percent, you end up with a Republican

11 seat; correct?

12 A   Correct.

13 Q   Okay. That's one seat. So we can go down to

14 District 13. We see 52.4 percent. Doing the same

15 exercise, that would swing to the Republicans too;

16 correct?

17 A   Correct.

18 Q   And that's two seats. And go down to District 20.

19 That's 50.3 percent. That's going to swing to the

20 Republicans too; correct?

21 A   Correct.

22   MR. KEENAN: One more down, Jackie.

23 Q   Then if we go down to District 29?

24 A   So just hold on a second. I want to make sure that

25 this is not Act 43, this is the Demonstration Plan.

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1   Q   Correct.

2   A   Okay.

3   Q   That's 50.3 percent as well. So that's going to

4   swing to the Republicans when we go down negative 3.4

5   percent; correct?

6   A   Correct.

7   Q   And then our next one is District 40. That's 51.9

8   percent. So if we swing that 3.4 percent down, that's

9   going to flip to the Republicans as well.

10   A   Correct.

11   Q   And then 42, there is the exact same percent, so

12   that's going to flip to the Republicans.

13   A   Correct.

14   Q   Then we're up to six seats. District 49 is 50.3

15   percent. That's going to flip to the Republicans as

16   well?

17   A   Correct.

18   Q   That's 7. District 51 is 52 percent?

19   A   Correct.

20   Q   So that's going to flip to the Republicans. Now

21   we're at eight seats. District 64. That's at 52.8

22   percent. That one swings down to the Republicans as

23   well; correct?

24   A   Correct.

25   Q   Now we're at nine. District 67. Exactly 50, but

1 it's a Democratic win there with slightly more votes. So

2 that one is going to flip down as well; correct?

3 A   Correct.

4 Q   We're at 11. District 92. 50.5 percent. So if we

5 go down three-and-a-half, that one flips to the

6 Republicans?

7 A   Correct.

8 Q   That's 12. District 96 is 51.5?

9 A   Correct.

10 Q   So that one flips and that's 13.

11 A   Correct.

12 Q   So we started out with 50 Republican seats; correct?

13 A   Correct.

14 Q   Now with a negative 3.4 percent, we've added 13.

15 A   But you're not doing the analysis correctly.

16 Because we know what happened in 2012. We can observe

17 those votes directly. And if we're going to apply a

18 swing analysis, you can't just rearrange those votes, and

19 this is why I did the incumbency assumption.

20   The other piece of this is that to the extent you're

21 going to do this analysis, what this tells you is that

22 the Demonstration Plan is actually responsive to changes

23 in the statewide vote, which Act 43 is not. In order to

24 do this analysis, you would also have to look at what

25 happened to Democratic seats if the Democratic vote swung

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1   3.4 percent in the other direction, and I haven't done

2   that calculation, but you would see presumably a number

3   of Democratic -- a number of Republican seats swing to

4   the Democrats. So on the one hand this is not a direct

5   comparison to what I had done and what this essentially

6   tells you is the Demonstration Plan is actually

7   responsive to changes in the statewide vote.

8   Q   And when you drew the Demonstration Plan, you knew

9   the results of the 2012 election when you were drawing to

10 those results to get the competitive seats you wanted.

11 A   Not precisely. That was drawing -- I wasn't using

12 the actual 2012 Assembly vote, I was using the baseline

13 open-seat partisan measure which was -- which had as

14 independent variables the 2012 vote. But I was not

15 directly recomputing the Demonstration Plan results using

16 the actual 2012 election results.

17 Q   Correct. But you knew what happened in the 2012

18 election so you were able to devise a model that would

19 show you what should happen in that election.

20 A   No, but that's a misstatement of what I did. I

21 wasn't trying to produce a model that would show a

22 particular result. I used the 2012 data to generate

23 estimates in a model that wasn't designed to produce any

24 particular results. I mean the data show what the data

25 show.

1 Q   And then you used that data to draw your plan,

2 right, so when you draw your districts, you were working

3 off the knowledge of what that 2012 election environment

4 had been?

5 A   That's correct.

6 Q   Okay. Now, someone who drew a map before that time

7 wouldn't have that information; right?

8 A   Well, they actually did. Because again, I made this

9 point several times, that my estimates of the baseline

10 partisanship were based on the 2012 election results and

11 they line up almost exactly to the baseline estimates of

12 the 04-010 composite, as well as Dr. Gaddie's regression

13 results which were based on previous election results.

14 And so the issue here is that not that they didn't have

15 the 2012 election results, they didn't. What they did

16 have was an accurate measure of underlying partisanship

17 that actually didn't -- wasn't a function of any

18 particular election results.

19   So while it's true they didn't actually observe in

20 2011 what the 2012 election results were, the information

21 they had and the estimates that they had generated almost

22 exactly correspond to what you actually see when you

23 apply -- when you compare them to my equivalent method

24 which was based on the 2012 election results.

25 Q   So you haven't correlated the partisan baseline

1 score that the composite that the Legislature used with

2 the 2014 election results; correct?

3 A   So the partisan score, the 04-010 composite with the

4 2014 elections, no.

5 Q   So you don't know how the composite would have

6 compared to the actual results that would have been seen

7 had the 2012 elections had something more like a 52

8 percent Republican vote share?

9 A   Again, the composite was a baseline and one wouldn't

10 expect those to correlate exactly or as accurately with

11 actual vote results because it's a measure of underlying

12 partisanship that has extracted some election specific

13 factors, in particular, the effect of incumbency. So I

14 mean it would be slightly misleading, I think, to look at

15 the 04-10 baseline and compare that to what you actually

16 saw in 2014.

17 Q   So on the uniform swing that we just did, we saw

18 that the Republicans would win 63 seats on -- what is

19 it -- 52 percent of the vote, and that's identical to

20 what we saw in the actual 2014 election?

21 A   Again, you're using the method in a way that it was

22 not intended to be used. So it is true that having gone

23 through this exercise, the 3.4 swing compared to my

24 baseline did produce that result, but that's not how you

25 would do the analysis.

KENNETH MAYER - CROSS

1 Q   And the way you avoided getting that result was

2 adding in the incumbency result so then when you swing

3 down, the seats don't flip.

4   MR. POLAND: Object to the form of the question.

5   JUDGE RIPPLE: Try to rephrase, please.

6 BY MR. KEENAN:

7 Q   The reason we don't get the same result is because

8 you're adding incumbency first before we do a swing;

9 right?

10 A   You see different results when you factor in

11 incumbency and then perform the swing.

12 Q   Now, Dr. Gaddie, when he was doing his curves, he

13 didn't take a baseline and then add in an incumbency and

14 then do a swing; right?

15 A   No. And that's because he was comparing -- the goal

16 of that exercise would be to compare alternative district

17 configurations.

18 Q   Sure. Even after they had the team map, which was

19 thought to be the final map, there was one of these

20 curves? They were still comparing alternative district

21 configurations?

22 A   That's correct.

23 Q   Okay. Now, you understand that Dr. Goedert

24 criticized you for not using uniform swing because it's

25 suggested by the Stephanopoulou and McGhee law review

1 article on which the efficiency gap is based?

2 A   I don't recall that specifically.

3 Q   Okay. So Stephanopoulos and McGhee suggest running

4 uniform swings on the efficiency gap seen in the first

5 election; correct?

6 A   Again, the Stephanopoulos and McGhee article is

7 based on actual results. It's not the same method that I

8 used.

9 Q   And their uniform swing, they don't add in an

10 incumbency result or incumbency effect and then run the

11 uniform swing, do they? They just swing off the actual

12 election results.

13 A   Sitting here I don't remember.

14 Q   Okay. We can change topics a little bit. We're

15 going to go into some of the details of your

16 Demonstration Plan for the Court's benefit. So just for

17 some background, you talked about shape files in your

18 direct testimony. Shape files are generated from mapping

19 software and then they -- you can put them in a GIS

20 program to display a visual depiction of a map; correct?

21 A   That's correct.

22 Q   Okay.

23   MR. KEENAN: And so for the Court's benefit, the

24 defendants have marked several electronic versions of

25 maps and those are Exhibit 502, which is the map of Act

1   43; Exhibit 514, which is the map of the 2002 plan

2   enacted by the *Baumgart* court, and Exhibit 520, which is

3   the map of Professor Mayer's Demonstration Plan. So the

4   shape files, we have to import them into a software. So

5   what we've done is there's a web-based arc GIS, which is

6   what we're seeing here, in which the shape files have

7   been imported so that we can see them and work with them.

8   There's one website, if you can see on the left, there's

9   boxes we check. So right now we're on Assembly Demo Plan

10 down here on the left. So this is the shape file, the

11 Demonstration Plan.

12 Q   Mr. Mayer, you provided shape files to your counsel

13 who provided them to us; correct?

14 A   Correct.

15 Q   Okay. So what we're looking at here is Exhibit 520,

16 which is a graphical picture of the Demonstration Plan.

17 Does it look familiar to you?

18 A   Well, I actually haven't seen this before. I

19 recognize the shape of a couple of districts, but by

20 looking at this I can't say for certain that this is the

21 Demonstration Plan.

22 Q   Okay. Now, you provided shape files to your counsel

23 though; right?

24 A   Correct.

25 Q   Okay. And I can to represent to you that this is

1 imported from the shape files you've provided to your

2 counsel and were provided to us?

3 A   Okay. Good enough.

4   MR. POLAND: Your Honors, we haven't had a

5 chance to check this for sure, but certainly will allow

6 the questioning to proceed with the assumption that this

7 does, in fact, reflect and contain the shape files that

8 were provided by the plaintiffs.

9   JUDGE RIPPLE: And at some point you will check

10 this?

11   MR. POLAND: We will, Your Honor.

12   JUDGE RIPPLE: Okay. And let us know.

13   MR. KEENAN: I do want to make clear that before

14 trial, we sent an email with the link to this to

15 plaintiffs' counsel.

16   JUDGE RIPPLE: Understood.

17   MR. KEENAN: And I believe the electronic

18 versions of this exhibit for the Court have a link to

19 this website as well.

20   MR. POLAND: Your Honor, I would note one thing.

21 It looks like there's a layer here for Demonstration Plan

22 Senate districts and we'd object to that because

23 Dr. Mayer did not draw Senate districts.

24   MR. KEENAN: I'm not going to use that, so that

25 would be fine. I wasn't planning on using it. It was

1 just put in here.

2   JUDGE RIPPLE: The record will reflect that.

3 BY MR. KEENAN:

4 Q   I'm going to focus here -- we'll zoom in a little

5 bit on the Fond du Lac area. I want you to focus on your

6 District 53, 54 and 52. Do you see that?

7 A   I do. 53 doesn't look right. It doesn't look like

8 it's contiguous but...

9 Q   And then 58 there. Do you see that? That goes

10 around Lake Winnebago.

11 A   So 52, 53 and 58?

12 Q   Correct.

13 A   Correct.

14 Q   I'm going to hand you --

15   MR. KEENAN: We're going to look at this, but

16 I'm going to hand him a couple of exhibits that have been

17 marked just so we don't have to flip back and forth on

18 the screen to documents. Those are Exhibits 559 and 561.

19 559 is a similar version to the spreadsheet we looked at,

20 which is Dr. Mayer's baseline computations for the Act 43

21 plan, the baseline partisanship measure.

22   And then 561 is his similar calculation for the

23 Demonstration Plan.

24   May I approach and hand these?

25   JUDGE RIPPLE: Yes, you can approach the

                    KENNETH MAYER - CROSS

1 witness.

2 BY MR. KEENAN:

3 Q   So first we'll just look at the map, and you see

4 District 53 in orange here in the center. This district

5 starts in Sheboygan -- or not Sheboygan -- Fond du Lac in

6 the south and then runs up along Lake Winnebago. And you

7 see it gets into part of the City of Oshkosh.

8   Do you see that?

9 A   Yes.

10 Q   Okay. And then District 54 contains much of the

11 City of Oshkosh there? It's in yellow above District 53?

12 A   Correct.

13 Q   And then District 52 in purple there is kind of

14 surrounding. And if we look at District 58, it starts on

15 the east side of Lake Winnebago towards the top and we

16 move down south and moves all the way down quite a ways

17 south and moves over to the west, up to the north, and

18 then juts out to the left. See it moves up again to the

19 north, back to the west, up to the north, and then it

20 kind of circles back into Lake Winnebago.

21   Do you see that?

22 A   Yes.

23 Q   Okay. If you could look at Exhibit 561, which is

24 the Demonstration Plan partisan baseline numbers. What

25 is the partisan score for District 53?

1   A   So when you say partisan score, what are you

2   referring to?

3   Q   Like the Democratic or Republican percentage. You

4   can use which one you want.

5   A   So District 53 has a Republican percentage of 51.9

6   percent.

7   Q   Okay. So that's one of your Republican

8   competitive-leaning districts?

9   A   Correct.

10   Q   And then District 54, is that 53.4 percent

11   Democratic?

12   A   That's correct.

13   Q   And then District 52 here is 61.1 percent

14   Republican?

15   A   Correct.

16   Q   And then we see District 58 here, the one that wraps

17   all the way around Lake Winnebago, that's 69.4 percent

18   Republican; correct?

19   A   Correct.

20   Q   Okay. So we're going to compare this with Act 43.

21   So I'm going to unclick and we'll look at the Act 43

22   version of this area of the state.

23   A   Okay.

24   Q   We see here District 52 contains the City of

25   Fond du Lac and some surrounding area. We see District

1   54 has much of the City of Oshkosh. We see 53 runs

2   between them and circles Oshkosh. And then we don't see

3   one of those big looping ones around. Could you list the

4   partisan score for District 52, the Republican

5   percentage?

6   A   I will, but this is not a terribly useful comparison

7   because the district boundaries are different and so my

8   District 52 doesn't look like this 52. The boundaries

9   that we see are driven by municipal boundaries. I didn't

10 start drawing the plan here, so the boundaries that you

11 see in the Demonstration Plan are a function of decisions

12 that have gone elsewhere in the state. So it's --

13   JUDGE GRIESBACH: Could we wait to hear this

14 part on redirect? I would really like to follow the line

15 of questioning.

16   THE WITNESS: Okay. I'm sorry. I'm sorry.

17 BY MR. KEENAN:

18 Q   But you had a District 52 that was right -- you had

19 had a district that was in Fond du Lac and then worked

20 its way up to Oshkosh, remember?

21 A   Yes.

22 Q   And then we have District 52, which is basically

23 Fond du Lac and some surrounding area. What's the

24 partisan score for that for Republicans?

25 A   58.09 percent Republican.

                    KENNETH MAYER - CROSS

1 Q   Okay. I believe yesterday you were talking about

2 how those 58 percent Republican districts, that's like

3 the sweet spot of gerrymandering because you're cracking

4 the Democrats very efficiently; right?

5 A   I don't think I referred to a specific number, but

6 this is in the range.

7 Q   So this is like -- this is gerrymandering right

8 here?

9 A   Well, I'm not trying to be disputatious, but the

10 overall effect of a plan is not a function of any single

11 district. You have to look at the overall plan.

12 Q   And then District 54, that's a 54.1 percent

13 Democratic district?

14 A   Correct.

15 Q   So that's slightly more packed, so to speak, than

16 the district you drew out of Oshkosh? And then what's

17 the partisan score for District 53 there that's

18 surrounding Fond du Lac and Oshkosh?

19 A   62.9 percent Republican.

20 Q   So that's another safe Republican seat, a

21 gerrymandered seat there?

22 A   Well, I will characterize it as a safe Republican

23 seat.

24 Q   Okay. Now, do you know how this compares to the

25 prior plan that was in place for this area?

KENNETH MAYER - CROSS

1 A   I don't.

2 Q   All right. Well, let's look at that. I believe the

3 numbers look a little -- that 53 is the orange one, 52 is

4 the purple one. So we see there's a district here that

5 has Fond du Lac there and then swings on both sides of

6 Lake Winnebago; correct?

7 A   Correct.

8 Q   And then we have District 54 up there is, like,

9 centered on Oshkosh; correct?

10 A   That's correct.

11 Q   And then we have the orange one, which I believe is

12 53, kind of like swings around the two; correct?

13 A   Correct.

14 Q   All right. We'll go back to the Demonstration Plan.

15 All right. Now, we also have a tab on here that shows us

16 the incumbent addresses and I believe you looked at this

17 for showing, you know, which seats you would show the

18 incumbents in -- when you took incumbency into account;

19 right? You found the addresses and geocoded them?

20 A   That's correct.

21 Q   Okay. So each of these orange dots here represents

22 an incumbent in the -- at the 2011 time frame. So we see

23 your District 53 here pairs three Republican incumbents,

24 doesn't it? Or 52, sorry.

25 A   I don't know. I don't recall where the incumbents

1 live and this was not something I took into effect when

2 drawing the plan.

3 Q   You didn't look at incumbency at all in drawing the

4 plan where they lived?

5 A   No.

6 Q   So this is kind of an after-the-fact thing that

7 happened?

8   MR. POLAND: Object to the form of the question.

9   JUDGE RIPPLE: Try again.

10 BY MR. KEENAN:

11 Q   All right. Let's look at who these incumbents are.

12 They're not coming up, but you were here for testimony

13 about Senator Mike Ellis and how he wouldn't bring the

14 plan to the floor because there was incumbents paired in

15 his district? Did you hear that testimony?

16 A   I did hear testimony that the district boundaries

17 were revised based on what he asked for.

18 Q   And that pairing that Senator Ellis objected to,

19 that's two of the incumbents that are paired here; right?

20 A   I don't know.

21 Q   You don't know. Okay. I'm zooming in on the

22 Milwaukee area. And the Demonstration Plan, you've

23 testified that your plan complies just as well with the

24 Voting Rights Act as Act 43; correct?

25 A   That's correct.

1 Q   Okay. And I want you to look at District 18 right

2 there in the middle. Do you see that yellow?

3 A   Yeah.

4 Q   Okay. Now, that's one of your majority/minority

5 districts; right?

6 A   I believe so.

7 Q   Okay. We see two dots there; right?

8 A   Yes.

9 Q   So that indicates a pairing?

10 A   Correct.

11 Q   Okay. And so one of those dots is the African

12 American incumbent that was in that majority/minority

13 district; right?

14 A   I don't know.

15 Q   Okay. You don't know. And you've paired that

16 incumbent with a white Democratic representative; right?

17 David Cullen?

18 A   I did not take incumbency into account when I drew

19 the plan. I don't know where they are.

20 Q   So you don't know whether that would violate the

21 Voting Rights Act to pair an African American with a

22 white incumbent in the majority/minority district?

23 A   It would depend on the minority population of it and

24 to the extent that you can adjust these boundaries a

25 little bit.

KENNETH MAYER - CROSS

1 Q   We had some testimony yesterday about pairings of

2 incumbents. You were here for that; right?

3 A   Yes.

4 Q   Okay. And Mr. Earl mentioned Sandy Pasch moving to

5 Shorewood?

6 A   Yes.

7 Q   So Sandy Pasch lives here in the 22nd District.

8 That's her dot right there, okay?

9 A   Okay.

10 Q   All right. So you didn't pair her; right?

11 A   Didn't take -- I didn't take incumbency into -- I

12 had no idea where incumbents --

13 Q   She didn't end up getting paired. But she did get

14 paired with this dot up here on the top in the right.

15 That's Representative Ott. Do you see that in the purple

16 districts by the coast?

17 A   I see that dot.

18 Q   Okay. So you didn't pair Sandy Pasch. But you did,

19 if we keep going up, you paired two Republican incumbents

20 here in the district right above that; right?

21 A   Okay.

22 Q   Okay. If we move down to this other Milwaukee area,

23 you see District 84 in gray here. Again, you paired two

24 Republican incumbents in this district; right?

25 A   Okay.

KENNETH MAYER - CROSS

1 Q   Now, it's not your testimony that the Republican

2 Legislature would ever have actually adopted the

3 Demonstration Plan; right?

4 A   This was attempted to demonstrate that it was

5 possible to draw a map that treated the parties fairly.

6 Q   And we see District 61 down here, correct, in the

7 south of the state right on the border in red? Do you

8 see that?

9 A   Yes.

10 Q   And we see two dots here; right? One on the far

11 west and one more towards the east?

12 A   Yes.

13 Q   Okay. Now, this is a Republican and Democratic

14 pairing?

15 A   I don't know.

16 Q   You don't know. All right. This is one of them

17 that was mentioned by Mr. Earle yesterday of, you know,

18 pairing an Assembly Democrat into a highly Republican

19 district?

20 A   So are we looking at the Demonstration Plan or Act

21 43?

22 Q   Under Act 43, it did happen these two were paired

23 and Mr. Earle made the point that the Democrat had been

24 lumped into a Republican district with a very high vote

25 percentage. Do you remember that?

KENNETH MAYER - CROSS

1 A   Yes.

2 Q   Okay. And this was John Steinbrink and Samantha

3 Kerkman? That was the pairing at issue. So you've

4 paired them also. Can you tell me what the partisanship

5 of your District 61 is?

6 A   So the only seat baseline of District 61 is 56.2

7 percent Republican.

8 Q   Right. So you've paired that Democrat into a highly

9 Republican district unbeknownst to you.

10 A   Yes.

11 Q   Just by applying districting principles; right?

12 A   Correct.

13 Q   We move to District 32 here more to the west, we see

14 this starts at the Illinois border and then works its way

15 north and then kind of juts out there. Now, this is

16 another one of your triple Republican pairings; right?

17 A   I don't know.

18 Q   Okay. We'll move to the north of the state. Now,

19 your plan fit -- split fewer counties than Act 43;

20 correct?

21 A   Correct.

22 Q   All right. But you didn't have to worry about

23 pairing incumbents; correct?

24 A   I didn't take incumbency into account.

25 Q   Okay. So in District 75 here in the northern part

1 of Wisconsin, you ended up pairing three incumbents here

2 as well?

3 A   Okay.

4 Q   All right. And this is two Republicans and one

5 Democrat?

6 A   I don't know.

7 Q   Okay. And then I want to focus you on District 93

8 here, which is the far west of Wisconsin, kind of right

9 on the other side of the border from the Twin Cities. Do

10 you see that?

11 A   Yes.

12 Q   Okay. Now, you have a pairing there as well and

13 that's two Republican incumbents; right?

14 A   I don't know.

15 Q   Okay. And you didn't -- when you were districting,

16 you didn't really take into account trying to maintain

17 the core of the prior districts; right?

18 A   No.

19 Q   You just didn't worry about core retention?

20 A   That was not one of the factors that I looked at.

21 Q   Okay. Because if we compare this to the prior plan,

22 your districts look a lot different; right? So now this

23 pairing wasn't there. District 30 was right on the

24 border and District 29 was inland; right?

25 A   Well, I don't precisely remember. But in this plan

1 the two incumbents in that area are not paired.

2 Q   And this is one of the highest growth areas, right,

3 that we saw with Mr. Foltz, the St. Croix County area?

4 A   I don't recall.

5 Q   Okay. But let's go back to the Demonstration Plan.

6 And what's the partisanship score of your District 93?

7 A   District 93 is 59.2 percent Republican.

8 Q   Okay. And then what's 92?

9 A   49.5 percent.

10 Q   So slight Democratic seat?

11 A   Correct.

12 Q   Okay. Which you're able to achieve by pairing these

13 two Republicans here in '93?

14 A   That's not how I achieved it.

15 Q   Now, you said you didn't take core retention into

16 account. Now, core retention is the percentage of the

17 old district that's carried over to the new district;

18 correct?

19 A   In terms of population, that's correct.

20 Q   Yeah. Not geographic area, population.

21 A   Correct.

22 Q   And you also didn't do any consideration of Senate

23 districts; right?

24 A   That's correct.

25 Q   So you, when you were districting, you weren't

KENNETH MAYER - CROSS

1 worrying whether you were possibly disenfranchising

2 voters with respect to the state Senate?

3 A   No.

4 Q   So to put the Demonstration Plan in place, someone

5 would have to run such an analysis of the

6 disenfranchisement they would see under it in order to

7 make sure it's okay; right?

8 A   It would depend on the configuration of the Senate

9 districts.

10 Q   But someone would have to analyze that; right?

11 A   Correct.

12 Q   And figure out how much disenfranchisement there

13 were.

14 A   Correct.

15 Q   But you didn't district with respect, you know,

16 thinking about maintaining as much of the old Senate

17 district as you could to minimize that

18 disenfranchisement.

19 A   In terms of the Senate?

20 Q   Yeah.

21 A   That's correct.

22 Q   Now, you submitted an expert report in the *Baldus*

23 case; right?

24 A   Correct.

25 Q   And you testified on behalf of plaintiffs in that

1 case?

2 A   That's correct.

3 Q   And as part of that you opined that Act 43 did not

4 meet traditional districting principles; right?

5 A   In the *Baldus* case, that's correct.

6 Q   There were some other stuff too about the Voting

7 Rights Act, but we won't focus on that. And you said Act

8 43 did not comply with traditional districting principles

9 because it didn't maintain enough core constituencies;

10 right?

11 A   That was one of the things I noted.

12 Q   And you framed that as a traditional districting

13 principle, right, in that opinion?

14 A   That's one of them, yes.

15 Q   Okay. But then when you drew the Demonstration

16 Plan, you didn't consider core constituency at all?

17 A   That's correct.

18 Q   And then you also opined that Act 43 had too much

19 disenfranchisement; right?

20 A   Correct.

21 Q   Okay. And you drew the Demonstration Plan without

22 consideration of disenfranchisement.

23 A   Right. Again, my goal was to draw a plan that

24 was -- treated the parties fairly and symmetrically.

25 Q   And you say that equal on traditional districting

1 principles; right?

2 A   As I noted, it's population contiguity, respect for

3 population subdivisions and voting rights.

4 Q   But not the ones you were talking about on the

5 *Baldus* case.

6 A   Correct.

7 Q   The core constituency, core retention, you thought

8 that was important because voters develop a relationship

9 with their representative; right? And you don't want --

10 A   I'd have to go back and look at my report. It's

11 been five years.

12 Q   And they develop a relationship, you don't want to

13 interfere with that; right? That was the gist of why the

14 core constituency --

15 A   I'd actually like to look at my report. It's been a

16 number of years.

17 Q   Okay.

18   MR. KEENAN: Jackie, can you pull that up on the

19 screen? I'm sorry. I've got to switch off mine.

20   MR. POLAND: Was this marked as an exhibit?

21   MR. KEENAN: No. This is just for impeachment

22 or refresh his recollection.

23   JUDGE CRABB: It should have a number.

24   MR. POLAND: And I would like a copy and I would

25 like Dr. Mayer to be a copy as well if he's going to be

1 asked about it. A complete copy.

2   JUDGE RIPPLE: So ordered.

3   MR. KEENAN: I had a copy and now I can't find

4 it to give to you.

5   MR. POLAND: I think it's critically important

6 that the witness have a full copy of the report if he's

7 going to be asked questions about it.

8 BY MR. KEENAN:

9 Q   Are you able to read it on the screen?

10 A   Not at this size, no. That I can make out.

11 Q   If we move to the bottom here, we see the ECF filing

12 here; correct? And that says -- you see the case number.

13 That's the *Baldus* case; correct? JP Stadtmueller, Judge

14 Wood and Judge Dow.

15   Do you see that on the bottom?

16 A   You're asking me?

17 Q   Do you recognize that as the *Baldus* case?

18 A   Yes. I'm sorry.

19   MR. POLAND: Your Honors, I need to object here.

20 Dr. Mayer actually submitted different reports in the

21 *Baldus* case. He presented one for the *Baldus* plaintiffs

22 and one for the *Voces De La Frontera* plaintiffs. There

23 are attachments to both reports. And I think if the

24 witness is going to be cross-examined about that report,

25 I believe he should have a full copy and which report it

1   is should be identified and provided to him.

2   BY MR. KEENAN:

3   Q   I guess the main point is is it your opinion that

4   you want to maintain core constituency to avoid

5   disrupting the relationship between voters and their

6   representatives? We can put this --

7   JUDGE RIPPLE: What does the witness have in

8   front of him here?

9   MR. KEENAN: This is a report he submitted in

10 the *Baldus* case.

11   JUDGE RIPPLE: But does it have the -- is it

12 complete? Does it have all of the attachments?

13   MR. KEENAN: This PDF does.

14   JUDGE RIPPLE: And is it -- and which of the two

15 reports that counsel referred to is this?

16   MR. KEENAN: I believe this is the *Baldus*

17 report.

18   JUDGE RIPPLE: All right. I understood counsel

19 for plaintiffs to say there were two?

20   MR. KEENAN: Well, there's a *Voces De La*

21 *Frontera* case. It's a separate --

22   MR. POLAND: No. Well, the cases were actually

23 tried together. They were combined for the purposes of

24 discovery at trial and Dr. Mayer submitted one report for

25 the *Baldus* plaintiffs and one report for behalf of the

1 *Voces De La Frontera* plaintiffs.

2   MR. KEENAN: I don't even need to refer to this

3 anymore. We can close it down.

4 BY MR. KEENAN:

5 Q   Did you opine in this case that -- you did opine

6 that redistricting should preserve core population of the

7 existing districts where possible; correct?

8 A   I think so. I believe so.

9 Q   And your opinion was that Act 43 didn't do that well

10 enough; right?

11 A   Well, as I recall that was one of the objections,

12 although there's a tremendous amount of context that

13 we're missing here.

14 Q   And the principle for that core retention, why we

15 have that is that you want to avoid disrupting the

16 relationship between voters and their representatives?

17 A   That's a normative value.

18 Q   But when you drew your Demonstration Plan, you

19 didn't take into account at all where the representatives

20 lived with respect to their voters in the prior district;

21 right?

22 A   My aim was to draw a plan that treated the parties

23 symmetrically, and as testified, I did not take into

24 account where incumbents lived.

25 Q   If we could open up Exhibit 569. And you have a

1 paper copy of this in front of you as well that I just

2 handed you.

3 A   Excuse me. Did you say 569?

4 Q   Correct.

5 A   I have 559 and 5 --

6 Q   Oh, 559?

7 A   -- 61.

8 Q   Which one is the open-seat baseline? I have the

9 wrong number.

10 A   That's 561.

11 Q   561 then. Okay. And we saw an electronic version

12 of a spreadsheet like this before, but this is a

13 spreadsheet that details your open-seat baseline plan;

14 correct?

15 A   Yes.

16 Q   For the Demonstration Plan. And we see the columns

17 as well. We see, like, district, and then we see the

18 predicted DEM vote.

19 A   Well, actually, so it doesn't say that it's the

20 Demonstration Plan. I think it is, but can we determine

21 with certainty whether this is the Demonstration Plan or

22 this is the open-seat estimate of Act 43?

23 Q   If you look at the other document you have there

24 that I gave you in paper, 571, what does that say at the

25 top?

1 A   So this is Act 43.

2 Q   Correct, 571 is Act 43. 569 is the Demonstration

3 Plan. I'm sorry, 561 is the Demonstration Plan?

4 A   Okay. That looks right. Sorry.

5 Q   All right. There's a lot of separate sheets. We

6 want to make sure we get the right one.

7   JUDGE RIPPLE: Counsel, for the record what is

8 the witness looking at?

9   MR. KEENAN: He is looking at a spreadsheet that

10 is the underlying data for his Demonstration Plan

11 open-seat baseline.

12   JUDGE RIPPLE: And that is number?

13   MR. KEENAN: 561.

14   JUDGE RIPPLE: 561.

15 BY MR. KEENAN:

16 Q   And so as we see, for example, here in District 1,

17 we can see this is a predicted DEM column and it's

18 16,259. Do you see that?

19 A   Yes.

20 Q   And that's -- we went over this before on another

21 spreadsheet, but that's the number of votes generated by

22 your open-seat baseline model; correct?

23 A   Correct.

24 Q   And the Republican number, their predicted REP is

25 the same but for the Republican candidate?

KENNETH MAYER - CROSS

1 A   Correct.

2 Q   And the percentages there, the D percentage is the

3 Democratic percentage and the R percent is the Republican

4 percentage; correct?

5 A   That's right.

6 Q   And then we see those same lost vote totals going on

7 to the right; correct?

8 A   Yes.

9 Q   Okay. And the Republican win column at the very far

10 right?

11 A   Yes.

12 Q   So it's your testimony that Democrats in Wisconsin

13 are not any more concentrated than Republicans; correct?

14 A   Again, I'm going to phrase it precisely. Based on

15 the measures that I used, it showed that Democrats and

16 Republicans are distributed in concentrated -- in a

17 statewide basis in roughly equal measure.

18 Q   And your highest Republican percentage district, if

19 we could zoom in a little bit on District 24 there, is

20 74.9 percent; correct?

21 A   Correct.

22 Q   Okay. If we see what happens here is there's 25,826

23 Republican votes; correct?

24 A   So we're in District 24?

25 Q   Correct.

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1   A   25,868, correct.

2   Q   And then the Democratic total is 8,667; correct?

3   A   Correct.

4   Q   And then if we go to the right, this spreadsheet

5   tallies up wasted votes district by district; correct?

6   A   Correct.

7   Q   And so we look at the D lost, we see 8,667 again;

8   correct?

9   A   That's correct.

10   Q   Because the Democrats lost the seats, all the votes

11   count as wasted votes; right?

12   A   Correct.

13   Q   And then if we move over to the R surplus column

14   which is a few over, we see 8,601?

15   A   Correct.

16   Q   And the surplus is half the margin of victory;

17   correct?

18   A   That's correct.

19   Q   Okay. And that's -- that's to show the packing, so

20   to speak? It's access votes needed to win?

21   A   Correct.

22   Q   Okay. And then we see D wasted and R wasted,

23   correct, in the next two columns?

24   A   That's correct.

25   Q   And those are just repeats of the numbers we saw

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1   before?

2   A   That's correct.

3   Q   And then R minus D net, that's -- it looks like

4   it's -- as you said, it's actually D minus R?

5   A   Right.

6   Q   There's -- it's 8,667 minus 8,601?

7   A   Correct.

8   Q   And then we get 66?

9   A   Correct.

10 Q   So that's the net wasted votes in that district?

11 A   Right. Which is a property of 75-25 district will

12 essentially have 0 net wasted votes.

13 Q   So this shows that the most packed Republican

14 district in the state actually generates more wasted

15 Democratic votes?

16 A   That's correct.

17 Q   And this isn't a unique situation with just this

18 district, is it?

19 A   I don't know. I'm -- again, the efficiency gap is

20 not calculated on a district-by-district basis, it's a

21 statewide statistic that shows what happens across all

22 districts in a plan.

23 Q   Well, if we look at the row right above there, we

24 see it's a 70 percent Republican district, so that's

25 another very strong Republican district; correct?

1 A   Correct.

2 Q   And we see there that there's 25,459 votes for the

3 Republican?

4 A   Correct.

5 Q   And then 10,922 votes for the Democrat?

6 A   Correct.

7 Q   Okay. And so then when we get to wasted vote

8 totals, we see D wasted is that whole 10,922 votes?

9 A   Correct.

10 Q   And that's because all the votes for the losing

11 candidate just go straight into the wasted column; right?

12 A   That's right.

13 Q   And the Republican wasted vote is 7,268?

14 A   Right.

15 Q   So this is a 70 percent Republican district and we

16 have Democrats actually having more wasted votes by

17 3,600?

18 A   That's correct.

19 Q   Okay. Now, if we go up, we see there's many highly

20 Democratic districts. For example, District 8 is 80.9

21 percent? Do you see that?

22 A   I do.

23 Q   And then District 10 is 88.6 percent?

24 A   Yes.

25 Q   And then District 11 is 82.2 percent?

1 A   Yes.

2 Q   And then District 12 is 83.2 percent?

3 A   Yes.

4 Q   Okay. And if we look at the wasted votes in these

5 districts, for District 8 we see there's a net thousand

6 wasted votes for the Democrats?

7 A   So where are we? District 8?

8 Q   Correct.

9 A   Okay.

10 Q   And then District 10, we'll see there's 7,769 wasted

11 votes for the Democrats?

12 A   Correct.

13 Q   And then District 11 we see there's 3,904 votes for

14 the Democrat?

15 A   Correct.

16 Q   And then District 12 we see there is 3,962 wasted

17 votes for the Democrat?

18 A   Correct.

19 Q   Now, your plan actually has nine seats that are

20 greater Democratic percentages than the highest

21 Republican seat; correct?

22 A   I would have to go back and check the data. I don't

23 know for sure.

24 Q   So we've already gone over 8, 10, 11, 12. We have

25 16 here, which is 88.1; 17, which is 85.9; 18, which is

1 82.8; and we'll have to go to the next page. Those are

2 all in Milwaukee; right?

3 A   I mean, counsel, you're throwing lots of numbers at

4 me. I'm having trouble keeping track of all of them.

5 Q   Sure.

6   JUDGE CRABB: And you're not the only one.

7 Q   District 8, Democratic percentage is 80.9 percent;

8 correct?

9 A   That's correct.

10 Q   All right. And that's a district in Milwaukee?

11 A   That's the Hispanic majority district in Milwaukee.

12 Q   District 10, 88.6 percent Democratic?

13 A   Okay.

14 Q   That's in Milwaukee?

15 A   Yes.

16 Q   District 11, 82.2 percent Democratic. That's also

17 in Milwaukee?

18 A   Correct.

19 Q   Next one down, District 12, 83.2 percent Democratic.

20 That's in Milwaukee as well?

21 A   Correct.

22 Q   District 16, so we've got to jump a few, we see 88.1

23 percent Democratic?

24 A   Correct.

25 Q   Okay. That's in Milwaukee as well.

                    KENNETH MAYER – CROSS

1 A   That's right.

2 Q   And then District 17 is 85.9 percent Democratic?

3 A   Correct.

4 Q   And then District 18 is 82.8 percent Democratic;

5 right?

6 A   Correct.

7 Q   And those districts are in Milwaukee?

8 A   I believe so, yes.

9 Q   Okay. And we can flip to District 76 and 77, we see

10 76 is 82 percent Democratic.

11 A   Okay.

12 Q   And we see 77 is 81.5 percent Democratic.

13 A   Okay.

14 Q   And those two districts are in the City of Madison;

15 correct?

16 A   I think so. But again, the numbers in the

17 Demonstration Plan don't always correspond exactly, so

18 I'm not sure. They probably do, but I would need to look

19 at a map to be certain.

20 Q   You were here for Mr. Whitford's testimony; correct?

21 A   Yes.

22 Q   And he lives in the City of Madison. He'd be in one

23 of these two districts; right?

24 A   I have no idea.

25 Q   So there's nine districts that are higher Democratic

1 percentage than the highest Republican percentage in your

2 plan?

3 A   I'm not -- I'm trying to keep the numbers straight

4 in my head, but okay.

5 Q   All right.

6   MR. KEENAN: And if we could pull up the

7 stipulated facts that were filed with the Court in the

8 pretrial report. And we can go to the bottom one.

9 Q   And at your deposition you explained to me hopefully

10 how we could calculate the vote totals we generated from

11 your model for various cities in the state. Do you

12 recall that?

13 A   Yes.

14 Q   So it says "Professor Mayer's baseline partisanship

15 model produces the following vote totals and two-party

16 vote percentages."

17   MR. KEENAN: And you can go down to the chart

18 that's on the next page. And just blow up the top chart

19 there. That is a stipulated fact.

20 Q   So your model, the incumbent open-seat model, shows

21 that in the City of Milwaukee, the Democrats receive 77.9

22 percent of all Assembly votes cast; correct?

23 A   That's correct.

24 Q   And then in the City of Madison, the Democrats

25 receive 78 percent of all the Assembly votes cast.

1 A   Correct.

2 Q   Okay. And we see there if you add those two

3 together, that's about 390,000 votes statewide?

4 A   Roughly.

5 Q   Okay. And then we see some percentage for these

6 other cities. For example, Green Bay is 55.2 percent

7 Democratic. Do you see that?

8 A   Yes.

9 Q   And we see a few of them that are larger, like

10 Racine is 70.4 Democratic. Do you see that?

11 A   Yes.

12 Q   And then LaCrosse is 67.4 percent Democratic, a

13 little towards the bottom. Now, you mentioned that

14 Republicans are concentrated in Waukesha?

15 A   Not the city, the county.

16 Q   Yeah. And the City of Waukesha is 62.4 percent

17 Republican; correct?

18 A   Correct.

19   MR. KEENAN: I'm just going to consult with my

20 co-counsel to make sure we've covered everything.

21   JUDGE RIPPLE: Please.

22 (Pause at 11:46 a.m.)

23   MR. KEENAN: No further questions at this time.

24   JUDGE RIPPLE: Thank you, Mr. Keenan. Redirect,

25 sir.

                    KENNETH MAYER - CROSS

1   MR. POLAND: Yes, Your Honor, I do. I'll remain

2 seated for this if it's okay with the Court.

3   REDIRECT EXAMINATION

4 BY MR. POLAND:

5 Q   Dr. Mayer, do you remember that Mr. Keenan asked you

6 what would happen if there was a pro-Republican swing

7 based on your open-seat estimates?

8 A   I do.

9 Q   What is your opinion about conducting swing analysis

10 using this baseline rather than assuming incumbents in

11 all districts?

12 A   Well, in my view it's an inappropriate use of that.

13 It's the wrong way to do the baseline -- wrong way to do

14 the swing analysis.

15 Q   Why is that?

16 A   Because again, the baseline was designed to allow

17 you to make a direct comparison between two alternative

18 district configurations. It's not designed to -- for

19 that purpose, and in my view, a properly done swing

20 analysis, given that we're looking at a single

21 redistricting plan that -- that you would take incumbency

22 into effect.

23 Q   Dr. Mayer, do you remember Mr. Keenan brought up a

24 map on the screen and he showed you some specific

25 district shapes and subdivision splits from around the

1 Lake Winnebago area?

2 A   Yes.

3 Q   How does your Demonstration Plan compare to Act 43

4 overall in terms of compactness and political subdivision

5 splits?

6 A   It's actually more compact. The Roeck score was 4.9

7 for the Demonstration Plan compared to .39 for Act 43.

8 And the Demonstration Plan splits three fewer counties

9 and overall one fewer municipality than Act 43.

10   MR. POLAND: Could we bring up on the joint

11 final pretrial report page 47, paragraph 226.

12 Q   Dr. Mayer, this is a stipulation of the parties.

13 Does this identify the number of splits?

14 A   Yes, it does.

15 Q   Now, how representative do you think Mr. Keenan's

16 few examples were?

17 A   Not at all representative. You can't judge an

18 overall plan by looking at just one or two districts. So

19 that's not a valid way of generating an inference about

20 the plan as a whole. You would need to look at numbers

21 like this.

22 Q   Do you remember that Mr. Keenan brought up the

23 subject of incumbent pairings and core retention?

24 A   Yes.

25 Q   Is the pairing of incumbents a federal or a

1 Wisconsin state legal requirement?

2 A   It's not.

3 Q   How about core retention? Is it a federal or

4 Wisconsin legal requirement?

5 A   It is not.

6 Q   Now, do you remember that Mr. Keenan asked you about

7 the pairing of incumbents in your Demonstration Plan?

8 A   I do.

9 Q   What is your opinion about taking incumbents'

10 addresses into account when designing a Demonstration

11 Plan?

12 A   It's not something that you would need to do.

13 Again, I'm not -- I'm trying to demonstrate that it is

14 possible to draw a plan that is not biased and the

15 problem is that taking incumbency into effect very

16 quickly becomes an issue of assuming that incumbents have

17 a property right to their seat, that it's theirs, and

18 that's incorrect.

19 Q   You were in the courtroom over the last two days

20 when Mr. Foltz and Mr. Ottman testified; correct?

21 A   Correct.

22 Q   How did your approach to incumbents compare to how

23 Act 43 paired Democratic and Republican incumbents?

24 A   I'm actually not sure because I didn't take

25 incumbency into effect. So sitting here, I don't know

1 how many pairings there were in the Demonstration Plan.

2 Q   Did you see the testimony of Mr. Ottman yesterday?

3 A   I did. I'm not sure I can accurately recall that

4 piece of it if he talked about that and I'm actually not

5 sure how they did those calculations for the

6 Demonstration Plan in any event.

7 Q   Now, Dr. Mayer, was your Demonstration Plan designed

8 to be imposed or proposed as a remedy in this litigation?

9 A   No, it was not.

10 Q   What was its purpose?

11 A   It was designed to show that it was possible to draw

12 a map, a valid redistricting plan that complied with the

13 legal requirements of redistricting with a much lower

14 partisan bias or efficiency gap score.

15 Q   Dr. Mayer, we saw a few minutes ago Mr. Keenan went

16 through some highly Democratic districts in your

17 Demonstration Plan; true?

18 A   That's correct.

19   MR. POLAND: Could we bring Exhibits 16 and 17

20 up on the screen. Now, the map on the left is not the

21 one I'm looking for. It's Figure 14 and Figure 12. I'm

22 sorry, 15 and 17. 15 and 17.

23 Q   Dr. Mayer, how many of the districts that Mr. Keenan

24 went through -- highly Democratic districts in your

25 Demonstration Plan were drawn to comply with the Voting

1 Rights Act?

2 A   Seven.

3 Q   And of the nine highly concentrated Democratic

4 districts that Mr. Keenan identified for you, can you

5 point them out where they are in Figure 14?

6 A   Figure 14? They're here.

7 Q   All right. Now, how does the number of cracked

8 Democratic and Republican districts compare in your

9 Demonstration Plan in Act 43?

10 A   So the quantity there is the number of districts

11 that are on either side of 50 percent. And as I

12 testified yesterday, there were 42 Republican districts

13 where the Republican candidate under the Act 43 baseline

14 received between 50 and 60 percent of the vote compared

15 to 17 Democratic districts. So this is evidence of

16 pro-Republican cracking.

17   In a Demonstration Plan, there were 29 Republican

18 districts, between 50 and 60 percent of the vote, and 27

19 Democratic districts, which is here. Actually it's this

20 figure and then these two districts. There are two sets

21 of districts.

22 Q   Dr. Mayer, does any redistricting criteria justify

23 this kind of disproportionate cracking of Republican and

24 Democrats?

25 A   No.

1 Q   Now, Dr. Mayer, do you recall that when Mr. Keenan

2 was examining you, he suggested in a question that

3 Mr. Foltz, Mr. Ottman and Mr. Handrick lucked into their

4 partisan baseline measure. Do you recall that?

5 A   I do.

6 Q   Is it your opinion or do you agree that they lucked

7 into that partisan baseline measure?

8 A   It's not remotely possible.

9 Q   Why is that?

10 A   Because their estimates are based on different data.

11 They're based on a slightly different method, and they

12 are an effort to capture an underlying measure of

13 partisanship that line up almost exactly to mine and they

14 also correlate almost perfectly with Professor Gaddie's

15 regression analysis. In order to have that happen, I

16 used the example of flipping 99 matches in a row. It's

17 not remotely possible that that was a coincidence or an

18 accident. The reason those numbers match is that they

19 are measuring the same underlying feature, which is

20 baseline partisanship.

21   MR. POLAND: Thank you. No further questions.

22   JUDGE RIPPLE: I guess we're finished with this

23 witness then, are we not?

24   MR. POLAND: I think so, Your Honor.

25   JUDGE RIPPLE: Thank you. Dr. Mayer, thank you

1 very much and you may stand down.

2   (Witness excused at 11:55 a.m.)

3   MR. POLAND: Oh, I'm sorry, Your Honor. Before

4 we break, I did have two housekeeping matters. One, at

5 the conclusion of my initial examination of Dr. Mayer I

6 asked to move Exhibit 487 into evidence. I was mistaken.

7 The number should have been 486. That was the Excel

8 spreadsheet that we had tendered to the Court yesterday.

9 I apologize for that.

10   And also if I could put on the record I would like

11 to get a copy of the exhibit that Mr. Keenan had marked

12 and showed Dr. Mayer in the very initial portion.

13   JUDGE RIPPLE: Yes, the Court has directed that

14 be done.

15   MR. POLAND: Thank you, Your Honor.

16   JUDGE CRABB: Yesterday I had noted that 486 and

17 487 were both admitted.

18   MR. POLAND: Oh. Thank you, Your Honor.

19   JUDGE CRABB: Received.

20   JUDGE RIPPLE: We're at 11:55 and perhaps you

21 could tell me how you -- what your plans are. We had

22 planned to go to 12:30 before we broke and so we still do

23 have some time this morning if it can be profitably used.

24   MR. POLAND: We can do that, Your Honor. We are

25 prepared to call our next witness.

KENNETH MAYER - REDIRECT

1   JUDGE RIPPLE: Then please proceed with your

2   next witness.

3   MR. POLAND: Your Honor, the plaintiffs call

4   Professor Simon Jackman.

5   JUDGE RIPPLE: Professor Jackman will take the

6   stand then.

7   MR. POLAND: Your Honor, Mr. Hebert will do the

8   direct examination of Professor Jackman.

9   **SIMON JACKMAN, PLAINTIFFS' WITNESS, SWORN,**

10   JUDGE RIPPLE: Counsel, your witness.

11   MR. HEBERT: Thank you, Your Honor. Is it

12   acceptable to the Court that I stay seated?

13   JUDGE RIPPLE: It is.

14   MR. HEBERT: Thank you.

15   DIRECT EXAMINATION

16   BY MR. HEBERT:

17   Q   Would you state your name, please.

18   A   My name is Simon Jackman.

19   Q   And where do you reside?

20   A   I live in Sidney, Australia.

21   Q   And what is your current position of employment?

22   A   I'm a Professor of Political Science and Statistics

23   at Stanford University.

24   Q   Do you hold a dual professorship there?

25   A   Yes.

1 Q   And what are those?

2 A   Political Science and Statistics.

3 Q   And do you hold any other positions of employment at

4 the present time?

5 A   Yes. I'm also a Professor of Political Science at

6 the University of Sidney and I'm also the Chief Executive

7 Officer of the United States Study Center at the

8 University of Sidney.

9 Q   What is -- are you at both institutions at once?

10 A   Not physically. That would be beyond my power. I'm

11 on leave of absence from Stanford at the current time.

12 Q   What is the U.S. Study Center, Dr. Jackman?

13 A   The United States Study Center is an institute that

14 was founded by the Australian government to enrich

15 Australian's understanding of American politics, American

16 international relations and Australia's relationship with

17 the United States.

18 Q   How long have you been a professor at Stanford?

19 A   19 years.

20 Q   And what was your position before that?

21 A   For two years I was a professor of political science

22 at the University of Chicago.

23 Q   And where did you receive your Ph.D. from?

24 A   From the University of Rochester in Rochester,

25 New York.

SIMON JACKMAN - DIRECT

1 Q   What classes do you teach at Stanford?

2 A   Classes on the application of statistical methods in

3 political science settings. I also teach classes on

4 American politics, in particular American political

5 institutions, American political behavior, American

6 public opinion.

7 Q   I'd like Exhibit 82 to be brought up, a copy of your

8 curriculum vita. Do you recognize this?

9 A   I do.

10 Q   Does 82 contain your qualifications in terms of your

11 educational experience and scholarly work?

12 A   It does.

13 Q   Now, I see in your CV it mentions the American

14 National Election Studies project, also known as ANES on

15 page one. Do you see that?

16 A   That's correct.

17 Q   What is ANES?

18 A   The acronym stands for the American National

19 Election Study. It's perhaps the longest running, most

20 authoritative study of political behavior in the world.

21 It was a study that got started here in the United States

22 in the early 50's but has gone on to be emulated around

23 the democratic world. It receives substantial support

24 from the National Science Foundation and goes into the

25 field and administers a large comprehensive survey of

1 Americans' beliefs, attitudes and their likely voting

2 behavior, both before and after every presidential

3 election.

4 Q   What is your role in the American National Election

5 Studies project?

6 A   Yeah. So as a principal investigator, I carry

7 primary responsibility for making scientific decisions

8 about how best to allocate resources in pursuit of the

9 goals of the study. I oversee a staff at Stanford and I

10 work closely with my fellow principal investigators, both

11 at Stanford and at the University of Michigan.

12 Q   You mentioned earlier that it is a recipient of a

13 grant from the National Science Foundation; correct?

14 A   It is.

15 Q   Do you know what the size is of the grant from the

16 National Science Foundation in relation to other

17 political science grants?

18 A   Yes. In relative terms it's quite large. It is

19 unquestionably the single largest project that, in terms

20 of money, that the National Science Foundation invests

21 in.

22 Q   I see that your CV mentions, which is Exhibit 82, on

23 page two indicates that you have an affiliation with the

24 American Academy of Arts and Sciences?

25 A   Yes.

1 Q   What is your affiliation?

2 A   I was elected as a fellow of the Academy in 2013.

3 Q   Your CV at page three, Exhibit 82, mentions the

4 Society for Political Methodology. Can you tell us about

5 your work for that society?

6 A   Yes. The Society for Political Methodology is the

7 professional association for scholars such as myself

8 whose professional scholarly interests intersect

9 statistics and political science. At the time -- I was

10 at one time president of that association. At that time

11 we had 900 members, largely U.S. based. The society has

12 since continued to grow and thrive and now the membership

13 is considerably larger and has a lot of members from

14 overseas as well.

15 Q   Do you have an association with Huffington Post and

16 pollster.com?

17 A   I did in 2012.

18 Q   What was that association?

19 A   I was asked to perform a lot of analysis of polls in

20 the public domain leading up to the 2012 election so as

21 to develop state-by-state forecasts of the election

22 results in each state, and this was an area that most

23 people equate this sort of exercise with the name Nate

24 Silver at -- once at the New York Times and now at

25 FiveThirtyEight.com. And I was doing essentially a

1 similar exercise for Huffington Post back in the 2012

2 cycle.

3 Q   And if we wanted to look at the charts based on your

4 models, would we go to pollster.com for that?

5 A   They retained my intellectual property and continue

6 to use my models and algorithms for the charts. They're

7 currently using the 2016 cycle, that's right.

8 Q   Now, are your opinions that you formed in this case

9 based on facts, data and analysis in your reports?

10 A   Yes.

11   MR. HEBERT: And for the record, Your Honors,

12 those reports are three-fold: Exhibit 34, which is his

13 main report; Exhibit 83, which is Dr. Jackman's rebuttal

14 report; and Exhibit 93, which is his sensitivity

15 analysis. And they're all in evidence already.

16 Q   Are your opinions that you formed in this case based

17 on reliable principles and methods in your field of

18 study?

19 A   Yes.

20 Q   Have you applied those principles and methods in

21 formulating your opinions in this case?

22 A   Yes.

23 Q   And are your opinions in this case stated to a

24 reasonable degree of scientific certainty?

25 A   Yes.

1   MR. HEBERT: Your Honors, we tender Professor

2   Jackman. I believe counsel stipulated that he's an

3   expert. I would simply like to list that he is an expert

4   in political methodologies, statistics, state legislative

5   elections in the United States, computational statistics,

6   public opinion, voter behavior, election forecasting and

7   electoral institutions. And we tender him as an expert

8   in those areas.

9   MR. KEENAN: Well, I think that goes a little

10   beyond what he did in this case. We're not disputing

11   he's an expert. I don't know about all those things.

12   They just -- election forecasting, I don't know that we

13   talked about that at all; so... But I don't want there

14   to be a dispute with Mr. Jackman is an expert in the

15   case.

16   JUDGE RIPPLE: He will be accepted as an expert.

17   MR. HEBERT: Thank you, Your Honor.

18   BY MR. HEBERT:

19   Q   So you were retained as an expert in this case. Is

20   this the first time you've ever testified in any lawsuit

21   involving politics or redistricting?

22   A   Yes.

23   Q   Now, what expert analysis were you asked to perform

24   in this case?

25   A   I was asked to consider measures of partisan

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1   symmetry as revealed in state legislative elections in

2   the United States spanning a long time period, roughly

3   1972 to the present; to investigate in particular two

4   particular measures of partisan symmetry, the efficiency

5   gap and partisan bias and the stability of those

6   measures, the measurement properties, and in particular

7   how those -- what those symmetry measures revealed about

8   the plan at the center of this litigation, Act 43.

9   Q   Did your analysis in this case that you performed,

10   did it have anything to do with trying to set a threshold

11   for the efficiency gap?

12   A   Yes. I was asked to see if I could ascertain was

13   there a level of the efficiency gap that might trigger

14   scrutiny. Was there a level of the efficiency gap large

15   enough at which point we might think that the plan was

16   worthy of further investigation.

17   Q   Do you have a copy of Exhibit 34, your report in

18   this case, in front of you at the witness stand? I

19   should have provided it to you before you did.

20   A   That's my initial report?

21   Q   Yes, sir.

22   A   Yes, I do.

23   Q   Okay. And page one of that report essentially lists

24   the items that you were asked to analyze; correct?

25   A   Yeah, that's correct.

1 Q   Now, turning to page two of Exhibit 34, can you tell

2 us what data you consulted to perform the tasks that you

3 were asked to perform?

4 A   Yes. So the primary source of data is a large

5 canonical source of data on state legislative election

6 returns that has been in the public domain since its

7 initial creation by a political scientist at the

8 University of Kentucky who was really the godfather of

9 studies of state legislative politics. It's since been

10 updated by successive generations of political scientists

11 and it is widely considered to be the authoritative

12 source of state legislative election returns spanning

13 1967 through to 2012. And the current stewart of that

14 data collection is a scholar by the name of Carl Klarner.

15 Q   That's spelled K-l-a-r-n-e-r?

16 A   That's correct.

17 Q   What other datasets did you consult?

18 A   Another dataset I made extensive use of was

19 presidential election returns 2000 to the present. But

20 the key thing about those data is that the presidential

21 votes have been aggregated and presented by state

22 legislative district.

23 Q   Did you look at any data on which political party

24 controlled redistricting?

25 A   Yes. Subsequently I got hold of some data, again

1 widely used throughout political science, coding each

2 districting plan that was in operation for a given state

3 legislative election, by what process or which party

4 controlled the redistricting process.

5 Q   Now, how many cases were in your database? And if

6 you could, describe to the Court what a case is so we are

7 all on the same page.

8 A   Yeah. The dataset that I first talked about is

9 extensive. It covers -- indeed the subset of it I used

10 for the purposes of my analysis covered over 83,000

11 individual state legislative races. And that spans 786

12 legislative elections, it spans 41 states, and it spans

13 1972 to 2014.

14 Q   And how many district plans -- and if you could turn

15 to page six of Exhibit 34. How many district plans did

16 that span?

17 A   I believe the number is 206.

18 Q   That's correct. Thank you. How comprehensive would

19 you say the database is that you studied compared to

20 other analyses of redistricting that have been done at

21 the state legislative level?

22 A   I know of no other study that is as comprehensive in

23 terms of either geographic scope and/or the temporal

24 dimension.

25   MR. HEBERT: Your Honors, we're going to go

1 through this testimony about the efficiency gap and

2 partisan symmetry and so on to demonstrate hopefully that

3 the plaintiffs' theory of the case makes sense, is

4 judicially manageable, statistically valid and all the

5 rest. But I'm going to kind of -- this is a spoiler

6 alert in the sense that a lot of testimony may seem dense

7 because of its statistical nature and I'd like to spend

8 some time, with the Court's permission, asking Professor

9 Jackman to at least define some of the terms for the

10 record so that we have them in there and I may ask him to

11 step up and illustrate something if it's helpful to the

12 Court. Would that be acceptable?

13   JUDGE RIPPLE: Certainly.

14   MR. HEBERT: Okay.

15 BY MR. HEBERT:

16 Q   Did you study the issue of partisan effects in your

17 report?

18 A   Yes.

19 Q   Okay. Did you study the issue of partisan intent in

20 your report?

21 A   No.

22 Q   Did you study the issue of justification for a

23 partisan effect that the state could present in this

24 case? Justifications. Could you answer verbally?

25 A   No.

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1   Q   Thank you. So let's start with some of the terms,

2   defining terms. You've indicated one already. The term

3   *partisan symmetry*. Generally speaking, and I emphasize

4   generally speaking, what is partisan symmetry?

5   A   Partisan symmetry is the notion that a districting

6   plan or more generally an electoral system treats the

7   political parties and voters for those political parties

8   equally.

9   Q   And what is the -- how can you determine -- what's

10   the most obvious way of determining whether an electoral

11   system does that?

12   A   The most common way has been to examine if the

13   mapping from vote shares into seat shares is the same for

14   both parties. As vote share goes up for party A, that's

15   translating into seats presumably and increased seats.

16   But does that mapping from increased vote share into seat

17   share look the same for both political parties.

18   Q   Another term that came up, and then you mentioned

19   two of the terms in that answer was seat-vote curve. And

20   what is a seat-vote curve? And I'd like, if you could,

21   to step over -- do you have the mic on?

22   A   I believe I -- yes, I do.

23   Q   All right. If you could step down and it's

24   especially important that you speak up so that not only

25   the Court can hear you, but the court reporter and the

1 rest of us. And if you could, what I'd asked you to do

2 is to step up here and show us a demonstration of a

3 seat-vote curve.

4 A   Okay.

5 Q   Maybe we could turn that a little bit. The most

6 important audience is the Court.

7 A   So I'm going to draw two axes, and on the horizontal

8 axis we'll put statewide vote share and that runs between

9 0 and 100 percent. On the vertical axis, I'm going to

10 have seat share, and again, that will be expressed in

11 percentage terms, so that will range from a low of 100

12 percent to a high -- a low of 0 to a high of 100 percent.

13   And we might as well -- and we're going to restrict

14 our attention to the two-party case. So as we've heard

15 this a number of times over the last couple of days, when

16 we're in the two-party case, the vote share -- if the

17 vote share for party A is 25, then by simple arithmetic

18 the vote share for party B is 100 minus that or 75. So

19 let's just arbitrarily say this is Democratic vote share.

20 Everything goes through. It doesn't really matter how we

21 define it.

22 Q   It could be Republican vote share?

23 A   It could easily be.

24 Q   Whatever you've chosen to graph.

25 A   Party A and party B. Keep it perfectly clear. But

1 so party A's vote share is increasing along this axis.

2 Critical points here are the 50/50 points, which I'll go

3 ahead and label now and sort of crudely put in some

4 reference lines here.

5 Q   And why are the 50/50 points important?

6 A   We'll get to that in just a second.

7 Q   Okay. I'm very anxious to find out.

8 A   It has to do with this notion of symmetry is the

9 answer. But let me draw a symmetric seats-votes curve.

10 Typically in single member district systems, you're going

11 to get a curve that looks like this. At 0 percent votes

12 statewide, the party has to -- it can't win any seats, so

13 we know the curve starts there. We also know that if we

14 won 100 percent of the votes throughout the state, it's

15 going to win all of the seats so we know whatever curve

16 we draw has to run between these two points.

17 Proportional representation systems give you a 45-degree

18 line, but in single member district systems of the sort

19 we have here, you end up with an S-shape curve, something

20 like the following. (Drawing) How is that?

21   And roughly what's happening here is that going from

22 0 to 10 doesn't help you very much. If you're at 10

23 percent statewide vote share or even 20/25, it's still

24 probably quite unlikely that in any given seat you've

25 actually tripped 50 percent. So your seat share stays

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1   quite small.

2   But what tends to happen, and this is where most

3   elections are decided, of course, and this range is much

4   closer to 50, is that as your vote share goes up, so too

5   does the proportion of seats you win. And quite rapidly.

6   In this region of the curve, small increases in votes

7   translate into large increases in seats, and then, of

8   course, we see a tapering off on the high end. Once

9   you're up to 80 or 90 percent, you've almost won all of

10   seats and so this curve tends to flatten out at the high

11   end.

12   Symmetry here is the fact that the curve runs

13   through the 50/50 point and so if the party won 50

14   percent, if the statewide vote was split evenly, so too

15   would the state share be split evenly. And this curve,

16   the symmetry is the -- this curve looks the same on

17   either side. If you reflected it about the 50 point, it

18   would look the same. But in particular, it's got to do

19   that if it runs through the 50/50 point.

20   So there's partisan symmetry as represented through

21   this canonical tool frankly in the political science

22   literature, the so-called seats-votes curve, represented

23   as a graph here, but a formalization of what electoral

24   systems do and that is to map votes into seats. That's

25   what the game is all about fundamentally.

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1   Q   You were in the courtroom when we played the

2   testimony of Professor Gaddie?

3   A   I was.

4   Q   So is this an example of the kind of S curve that he

5   was discussing?

6   A   Yes. He was almost -- his analysis that the

7   S-shaped patterns we saw in his color coding of his

8   spreadsheets almost literally correspond to this general

9   S-shaped curve that you get as a generic matter in single

10 member district systems.

11 Q   One of the things that I've heard, and maybe you can

12 explain it based on what you just said, is that in an S

13 curve -- this shows that if you get one percent more in

14 vote share, it shows you how much more seat share you

15 will get. Can you explain what that means? I heard that

16 in this case. I've heard it before.

17 A   Yeah. Well, that's what this curve provides for is

18 it provides a way of literally reading off for -- a

19 particular value of vote share or an increase in it, we

20 can simply project up and then over. And for a given

21 increase, you said a one-point increase, it would be

22 quite small on the scale of this graph, we could project

23 up and over and just literally read off increases in

24 seats --

25 Q   Okay.

1   A   -- from a change -- from here a small one, a small

2   change in votes.

3   Q   Okay. And we're going to eventually mark this

4   exhibit as a demonstrative and we'll give it a number,

5   the next number. But before we do that, Professor

6   Jackman, what color marker did you use to illustrate the

7   seat-vote curve? Just so we have that in the record. Is

8   it black or blue? I can't tell from here.

9   A   That is black.

10 Q   Okay. So the next term that has come up and I want

11 you to define is *partisan bias*. What's partisan bias?

12 A   So this symmetric curve, because the seats-votes

13 curve that I've drawn by construction is symmetric, there

14 is no partisan bias here. But let's consider another

15 seats-votes curve, one that wasn't symmetric. And I'll

16 use red for that if you don't mind.

17 Q   Not at all.

18 A   And it would do something like this. And the

19 feature about that curve is that it no longer runs

20 through the 50/50 point and indeed you can see that under

21 -- if this were the seats-votes curve that characterized

22 the redistricting plan or the electoral system, that at

23 50 percent vote share if we were operating elections

24 under the red curve, at 50 percent vote share this

25 particular political party is now winning something like,

1   I don't know, let's just call it 75 percent of the seats.

2   And moreover, the point at which the political party can

3   form a majority in the legislature is far below 50. It's

4   actually -- you can predict down off this curve as well.

5   And so here with about -- and again, I'm just crudely

6   reading this. At about 45 percent statewide vote share,

7   this particular political party under this particular

8   plan is able to get a majority in the Legislature. And

9   it's that vertical distance here --

10   Q   When you say *here*, you're starting at 50 percent

11   threshold and going north?

12   A   Yeah. From the 50/50 point up to where the biased

13   curve hits the horizontal, the vertical reference line at

14   50, that vertical distance we refer to as partisan bias.

15   Q   If you could step aside so the Court can see what

16   you've done there. So is partisan bias a common symmetry

17   metric in political science?

18   A   It is.

19   Q   When did it first come about in the scholarly work

20   of political scientists?

21   A   Seats-votes curve have been part of political

22   science for almost a hundred years. But the terminology

23   really became much more widespread in the 1990's onwards.

24   Q   And who were the political scientists who kind of

25   pioneered that measure? Thank you. Return to your seat.

1 A   It was really a wave of scholarship by Professor

2 Gary King at Harvard and Professor Andrew Gelman who got

3 his Ph.D. at Harvard at that time and is now a professor

4 of political science and statistics at Columbia

5 University.

6 Q   I've heard the term in this case -- you've been in

7 the courtroom every day; correct?

8 A   Yes.

9 Q   Okay. One of the terms that came up in connection

10 with when Professor Gaddie was talking, I believe,

11 testifying was the term *hypothetical election*. Does that

12 play any role in partisan bias analyses?

13 A   Yeah. As you can see, or I hope you can see from

14 the definition of partisan bias there, partisan bias at

15 the top asks us to contemplate an election where the

16 statewide vote was 50/50, was evenly split. Now, there

17 may be a particular election where -- where that actually

18 happened, but as a general matter, most elections are not

19 split exactly 50/50. So this core concept, partisan

20 bias, asks us to contemplate a counterfactual election

21 typically.

22   MR. HEBERT: I'd like to bring up Exhibit 414.

23 Q   Do you recognize Exhibit 414?

24 A   Yes, I do.

25 Q   Can you tell me what that is?

1 A   That is an article by Andy Gelman and Gary King from

2 the American Political Science Review.

3 Q   And is this an article that you relied on in forming

4 your opinion in this case in doing your analyses?

5 A   Yes.

6 Q   And is it a reliable authority by experts in your

7 field?

8 A   Yes.

9 Q   I'd like to bring up Exhibit 333, another article,

10 this one by Grofman and King.

11 A   Yes.

12 Q   Is this an article that you relied upon in forming

13 your opinions in this case?

14 A   Yes.

15 Q   What is this article about?

16 A   This article is a review of partisan symmetry

17 measures in the wake of some high court -- some Supreme

18 Court decisions, in particular *LULAC*, written by two

19 political scientists whose scholarship, Gary King in

20 particular, his name I mentioned earlier, but two

21 scholars whose political science scholarship has closely

22 interacted with the law in redistricting matters.

23 Q   The Gelman/King article we looked at in Exhibit 414

24 was in the *American Political Science Review*. Is that a

25 peer-reviewed journal?

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1 A   It is.

2 Q   How does it relate to other political science

3 journals? Is it more prestigious or less prestigious?

4 A   It is the most prestigious political science.

5 Q   And we've heard this term a number of times, *peer*

6 *reviewed*. What does peer reviewed mean?

7 A   Typically peer review is a double-blind process

8 where articles are submitted for consideration at

9 scholarly journals like this one. The names of the

10 authors are removed when the articles are sent out to

11 other scholars in the field for consideration. And

12 moreover, the names of the reviewers are removed when

13 their opinions come back to the author, the editor.

14 Q   I notice the Grofman/King piece, which was Exhibit

15 333, was in a journal called the *Election Law Journal*.

16 When those two political scientists published it, is that

17 a peer-reviewed journal?

18 A   Yes.

19 Q   Now, have you yourself done any work on measuring

20 partisan bias?

21 A   Yes, I have.

22   MR. HEBERT: And for the Court's information, I

23 have about maybe three to four minutes of questions and

24 it would be a good breaking point, so if you'll indulge

25 me for a couple more minutes.

1 Q   Have you done any work yourself? You said -- and I

2 want to bring up 391 first and ask if you can tell me

3 what this is?

4 A   Yes. That's an article I wrote with Richard Niemi.

5 Q   All right. And what was this article about?

6 A   It was about partisan bias in state legislative

7 settings.

8 Q   Okay. And what about Exhibit 417?

9   MR. HEBERT: If we could bring that up.

10 Q   Can you tell me what this is?

11 A   This is an article I wrote estimating partisan bias

12 in elections to Australian in state and lower houses and

13 the Federal House of Representatives over a long time

14 period, 1949 to 1993.

15 Q   Is the British journal here of political science and

16 the previous one we looked at, Exhibit 391, *Legislative*

17 *Studies Quarterly*, are both those refereed journals?

18 A   They are.

19 Q   And did you rely on those in forming your opinions

20 in this case, those two articles?

21 A   Yes, I did.

22 Q   And are they reliable authority by experts in your

23 field? Since you authored them, I suppose you're going

24 to say yeah.

25 A   That's rather self-serving, but I would say yes.

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1   MR. HEBERT: So, Your Honor, this is a good

2   point to break if it's acceptable.

3   JUDGE RIPPLE: Sounds like a very good idea.

4   You've had a long morning. So let's take an hour for

5   lunch.

6   MR. HEBERT: Thank you, Your Honor.

7   (Noon recess   12:30-1:35 p.m.)

8   THE CLERK: This Honorable Court is again in

9   session. Please be seated and come to order.

10   JUDGE RIPPLE: Good afternoon. Mr. Hebert, you

11   may continue.

12   MR. HEBERT: Thank you, Your Honors.

13   BY MR. HEBERT:

14   Q   So I'd like to, Professor Jackman, resume our

15   conversation about calculating partisan bias. So when

16   you calculate partisan bias, and you illustrated that for

17   us on the chart, you take the results of an actual

18   election, correct, to start out with and then shift it?

19   A   Yes, to start out with. As I said earlier, any

20   given election may not produce -- in general will not

21   produce an exact 50/50 split of the vote. So in order to

22   compute partisan bias, the statewide vote share needs to

23   be adjusted back to 50/50.

24   Q   And why do you do that shifting to 50/50?

25   A   Well, it comes off the definition of partisan bias.

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1 Partisan bias is defined as the descent of percentage

2 points of seats in excess of 50 percent that a party

3 would win if it were to win 50 percent of the vote.

4 Q So do you do that shift with every district?

5 A Yes.

6 Q Do you do it in an equal amount?

7 A Typically that's the usual and overwhelmingly the

8 dominant method for computing partisan bias.

9 Q What is that called, that shift in the political

10 sign field?

11 A That method of moving election results is called

12 *uniform swing*, and the word uniform in the sense the same

13 shift is being applied uniformly across all districts.

14 Q Now, when you think about partisan gerrymanders as a

15 political scientist, is it more relevant to analyze

16 actual election results or these hypothetical elections

17 involving this shift that you just described?

18 A Yeah. I think it's more realistic to be studying

19 actual election results.

20 Q Why is that?

21 A Well, just as -- frankly as a general scientific

22 principle, you would rather be closely tethered to

23 reality than not. More closely tethered to reality than

24 less.

25 Q Another term that's come up and you just used it is

1 *uniform swing* or *uniform-swing analysis*. And that's what

2 you described earlier about what would happen in a

3 hypothetical election; is that correct?

4 A   That's how you would shift an actual election to a

5 hypothetical, 50/50 election.

6 Q   So an example of that would be, say, if Democrats

7 get 53 percent of the statewide vote and we were

8 interested in finding out what would have happened if

9 they got 50 percent of the statewide vote, we'd shift the

10 Democrat vote share down by 3 percent?

11 A   That's the typically way it's done. Each district,

12 a 3 percent subtraction to Democratic vote share is

13 performed.

14 Q   Another term that has come up, and this one is a

15 tough one for me, so what is *electoral responsiveness*?

16 Do you need to step down to show us on the chart?

17 A   It's perhaps easiest to refer back to the chart.

18   MR. HEBERT: And with the Court's permission, if

19 the Doctor could illustrate that.

20 Q   And tell us what it is as you're doing it, if you

21 would, Professor.

22 A   Hang on one second. The technique is, the idea of

23 responsiveness is really a question about the slope or

24 how steep the seats-votes curve is.

25 Q   Could you use a green marker to illustrate the slope

1 that you're talking about or the steepness of the slope?

2 A   Yes.

3 Q   And what it means?

4 A   Yeah. Well, what it means is let's just draw a

5 point of tangency, say, to the seats-votes curve, the red

6 one, just here. That's not a very good point of

7 tangency, but you get the idea. It's how steep this

8 curve is at this point, and the steeper the curve means

9 that for a given change in statewide vote share would get

10 a bigger change in seat share. If this seats-votes curve

11 was flatter, you'd need bigger changes in vote share to

12 bring about the change in seat share. So this is a

13 critical feature of an electoral system to one, as your

14 question presupposes, in the literature we refer to this

15 as responsiveness. How responsive this seat share to

16 changes in vote share, and that's given by the steepness

17 of the seats-votes curve.

18 Q   So the steepness of the slope tells us then, if I

19 understand what you're saying, how quickly a party gains

20 seats as it gains votes.

21 A   Exactly.

22 Q   Okay. Thank you.

23   MR. HEBERT: And we're going to have that

24 exhibit marked. I believe it is 488, Your Honors. If

25 Ms. Greenwood. Okay, you've marked it. Thank you. I'm

1 going to move exhibits in at the very end of the

2 testimony so I'm not going to -- I'm going to keep moving

3 here.

4 Q   Now, you mentioned also the efficiency gap earlier

5 in your testimony; correct?

6 A   Yes.

7 Q   Is there a particular concept on which the

8 efficiency gap is based?

9 A   Yeah. The concept of wasted votes is at the heart

10 of the efficiency gap.

11 Q   So when you talk about wasted votes, you don't mean

12 that a voter is wasting their time voting for their

13 candidate, right, if the candidate loses?

14 A   No, no. We don't mean that at all.

15 Q   So what is wasted votes? Is it a technical term?

16 A   I guess so. It's got a precise definition in the

17 literature. Wasted votes come in two forms, as we've

18 heard over the last day or so. Form number one: Votes

19 cast for a winning party that are in excess of what the

20 party needed to win that seat or that district. And then

21 the other form that wasted votes come is where a party

22 has lost the seat and there the votes that were cast in

23 pursuit of the seat that didn't materialize for them.

24 Q   So the number of votes that a party in a district

25 has won the seat, those are essentially wasted votes if

1 it's more than 50 percent plus one vote?

2 A   Right. Those votes, right, in theory could have

3 been deployed somewhere else to help it win seats

4 somewhere else.

5 Q   Have you ever heard the term surplus votes to refer

6 to those votes?

7 A   That's right. Yes, I have.

8 Q   And when a party loses and you calculate the number

9 of votes for the losing party, what is that term usually

10 called, those wasted votes? Are they called lost votes

11 maybe or --

12 A   Lost votes, yeah. Just wasted votes in losing

13 seats, yes.

14 Q   Now, why are wasted votes a relevant concept at all

15 when we're looking at the issue of partisan

16 gerrymandering?

17 A   Because they're particularly close to the mechanisms

18 through which gerrymandering operates. So we've heard

19 about packing and cracking. When you create districts

20 that are -- have large margins for the winning party,

21 packing is one way we could get that. There the wasted

22 votes that we took, the first form of wasted votes is

23 particularly relevant. That measures the extent to which

24 the party is winning by outside margins. So its voters

25 are being put into districts that win the seat, but

1 they're winning by margins more than they needed to. And

2 that's got -- that's a direct connection to the

3 phenomenon of packing.

4   And then on the other hand, cracking -- distributing

5 a party's voters across seats where they lose, that's the

6 other phenomenon. That's cracking. And then the other

7 sense in which we talk about wasted votes speaks to that,

8 the so-called lost votes as you referred to them or

9 wasted votes where the party loses. So there's this very

10 kind of pleasing connection between the two mechanisms by

11 which gerrymandering is thought to work as a theoretical

12 matter and then the measurement strategies we might

13 deploy through the wasted-votes concept.

14 Q   We're going to get into the calculation of the

15 efficiency gap in a minute. But I want to ask you this

16 first: If an efficiency gap is 0, what does that tell

17 you in terms of whether the party supporters are cracked

18 and packed?

19 A   It means the packing and cracking is symmetric. So

20 there will always be wasted votes, one party; right?

21 When you think about the definitions of the two forms of

22 wasted votes, you win, and where you win you probably win

23 by more than 50 percent plus one, and when you lose,

24 you're going to lose some seats too. And so there will

25 always be wasted votes. The key concept here in the

1 efficiency gap is to the extent to which wasted votes,

2 the rights of wasted votes are the same for each party.

3 Q   Now, do you use actual election results when you

4 calculate the efficiency gap?

5 A   Yes.

6 Q   Do you carry out that uniformed shift or swing

7 analysis that you described earlier with respect to

8 partisan bias in calculating the efficiency gap?

9 A   No, you don't.

10 Q   Okay. You've been studying legislative elections

11 based on what you testified earlier today for a couple of

12 decades now; correct?

13 A   That's correct.

14 Q   When did you first encounter the measure known as

15 the efficiency gap?

16 A   I saw -- I was invited to comment on an early

17 version of the Stephanopoulos and McGhee paper when it

18 was still in draft working-paper mode.

19 Q   Roughly when was that?

20 A   That would have been some time in late '14, early

21 2015, somewhere in there.

22 Q   I'd like to bring up Exhibit 141 and ask you if this

23 is the Stephanopoulos and McGhee article you're referring

24 to?

25 A   Yes, it is.

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1 Q   And did you rely on this in forming your opinion in

2 this case?

3 A   Yes, I did.

4 Q   Is this the kind of -- is this the kind of scholarly

5 article that is reliable authority by experts in your

6 field?

7 A   Yes.

8   MR. HEBERT: Your Honors, yesterday you were

9 handed a notebook of articles, scholarly articles, and we

10 had highlighted in those scholarly articles some parts of

11 the articles that we felt the expert relied upon.

12 Typically, as you know, and I think in fact Mr. Keenan

13 objected to that yesterday on the grounds that typically

14 those are read into the record by the expert and then

15 asked the question I just asked. To save time, however,

16 we have given you an electronic version of the articles

17 that this witness is associated with and I'm going to

18 identify those now. You have those electronically in the

19 parts that he -- let me ask it this way to set a

20 foundation for that.

21 Q   So I'm going to mention a number of exhibits and

22 articles, Dr. Simon. So there's an Exhibit 98, the

23 McGhee article. Did you rely on that?

24 A   Yes.

25 Q   Eric McGhee. And 99 -- these are documents that

1   were not brought up yesterday. Exhibit 99 Fifield

2   article. I may be mispronouncing that.

3   MR. HEBERT: If you could bring these up one at

4   a time, Dan.

5   Q   The Gelman King, 100. Dan, Exhibit 100.

6   A   I read that piece as well, yes.

7   Q   And 102, Bruce Cain's article. I believe that might

8   have been mentioned yesterday.

9   A   Yes.

10 Q   Fryer Holman. I may have mispronounced that name.

11 A   Yes.

12 Q   Stephanopoulos and McGhee, 141, we've already done.

13 148, Gelman/King.

14   MR. HEBERT: Can you blow that up a little bit?

15 Thank you.

16 A   Yes.

17 Q   All right. We've already gone through 333 and 391,

18 but I'll list those for the record. 405, the

19 McDonald/Best article.

20 A   Yes.

21 Q   406 McGhee.

22 A   Yes.

23 Q   Samuel Wang's article, Exhibit 408.

24 A   Yes.

25 Q   Gelmen/King 414. We've already talked about with

1 you. King/Browning, which is 415. Again, this is

2 another Gary King article.

3 A   Yes.

4 Q   And we obviously brought up your 417 and 391

5 articles that you wrote. So those are -- are those

6 articles that in part you -- statements in those

7 articles, did you rely on those in forming your opinions

8 in this case?

9 A   Yes.

10 Q   And those are reliable authorities by experts in

11 your field?

12 A   Yes.

13   MR. HEBERT: So Your Honors, at this time we're

14 going to move in the exhibits I just mentioned: 98, 99,

15 100, 102, 131, 141, 148, 333, 391, 405, 406, 408, 414,

16 415 and 417.

17   MR. KEENAN: We object for the same reasons

18 before. It's hearsay, and this isn't -- they haven't

19 established the learned treatise rule. In learned

20 treatise, the documents don't actually come into the

21 evidence. The witness has to testify to the statement.

22 So I think they have to choice between either having the

23 witness testify to the statements or proceed on with

24 their regular testimony.

25   MR. HEBERT: May I respond only very quickly?

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1 Under Rule 803.18, statements in learned treatises are

2 admissible as an exception to the hearsay rule if they're

3 called to the attention of the expert on direct or cross

4 and the publication is established by -- as a reliable

5 authority by an expert in the field, which Dr. Jackman

6 is. And then if admitted, the statements themselves may

7 be read into evidence. In this case we're trying to save

8 some time and just putting the statements in rather than

9 asking the entire article to come in. So that's my

10 reply.

11   JUDGE RIPPLE: As we did yesterday, we're going

12 to admit the articles inasmuch as they are a basis of the

13 witness's testimony. However, we will reserve our ruling

14 with respect to whether they do qualify for admission as

15 a -- under the learned treatise exception to the hearsay

16 rule.

17   MR. HEBERT: Very good. Thank you, Your Honor.

18 BY MR. HEBERT:

19 Q   So the article we had just mentioned with the

20 Stephanopoulos and McGhee article before I went into my

21 highlighted articles list, is that the only article

22 you've read on the subject of the efficiency gap?

23 A   No. One of the other articles you mentioned is

24 relevant too.

25 Q   Which one was that?

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1 A   The McGhee piece in *Legislative Studies Quarterly*.

2 Q   And is the *Legislative Studies Quarterly* a

3 peer-reviewed journal?

4 A   It is.

5   MR. HEBERT: Now, if we could bring up 98.

6 Q   Is that the article that we're referring to, the

7 McGhee article?

8 A   Yes.

9 Q   Now, when you first heard about the efficiency gap

10 and you were asked to read the draft of the article by

11 Stephanopoulos and McGhee, what was your reaction to it

12 as a political scientist who's been doing election

13 studies for 20 something years?

14 A   Just to put a little bit of context here, partisan

15 bias, as I mentioned earlier, was the subject of a lot of

16 interest in the political science field on the back of,

17 like I said, that body of articles that Professor King at

18 Harvard wrote and coincided with the start of my

19 scholarly career. I published roughly around the same

20 time, you know, some work on the topic as well. And

21 then, you know, it was quite exciting to see partisan

22 bias picked up and starting to appear in legal briefings

23 and in the courts.

24   What appeared to happen though is that the Supreme

25 Court seemed to resist embracing partisan bias

1 wholeheartedly at least, and moreover at the same time I

2 think inside political science, nothing new had come

3 along to take its place. And the literature had sort of

4 stalled out, in part, I think, a reaction to what might

5 have been happening in places like this, but also

6 reflecting I think no one had had a better idea for a

7 long time back in the political science profession. And

8 so when this Stephanopoulos and McGhee working paper came

9 along, I was really quite intrigued because the concept

10 of wasted votes represented to me sort of the first new

11 idea we've had and one that potentially sort of moved us

12 down the road from where we had gotten stuck with

13 partisan bias.

14 Q   So compare, if you would, partisan bias. And you

15 mentioned earlier hypothetical elections with the

16 efficiency gap. Is that a benefit or a negative?

17 A   Yes, and that's exactly the hangup I'm talking

18 about. Partisan bias at its heart by definition invites

19 us to contemplate a counterfactual election. Wasted

20 votes on the other hand is, if you will, it's a mere

21 counting exercise. You look at an actual election and

22 very simple definitions of wasted votes for winning

23 parties, wasted votes in seats where the party is lost

24 and involves no modeling necessarily, no drawing of

25 curves, no hypothetical fantastic reconstruction of the

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1 electorate that split 50/50 statewide involves merely

2 counting the outcomes one got in an actual real election.

3 And I thought that close grounding in what actually

4 happens "on the ground" was -- would be both -- it's a

5 great simplification, which we always like on -- as an

6 intellectual matter, but also I thought would perhaps

7 resolve some of the issues with the reception of partisan

8 bias as a concept in form such as this.

9 Q   So I've brought up from Exhibit 141, which is the

10 Stephanopoulos/McGhee article, a figure out of that,

11 Figure 1. It's page 22 of their report. And you also

12 have it on the screen. I know that's probably, even

13 though we've blown it up on that board, it's a little

14 hard to probably read. Can you tell us what this shows

15 us first of all?

16 A   Okay. So what we're looking at here is 10 -- it's a

17 hypothetical example in an electorate -- in an election

18 jurisdiction with ten districts and where for convenience

19 we've got 100 voters in each of the ten districts. And

20 the thing to note, in the first two columns we've got the

21 votes cast for either party or candidates of either party

22 across -- going down across the ten districts. And the

23 first thing to note is that they've been sorted by the

24 votes cast for candidates of party A and we can just

25 simply read off that eight districts have been won by the

1   candidates of party A. Ten voters -- ten districts, 100

2   voters per district with an electorate across the

3   jurisdiction of the size of 1,000.

4   Now, we're also -- the other columns are divided to

5   trying to elucidate how the concept of wasted votes

6   operates for this hypothetical example. And so taking

7   the case of votes cast for losing candidates, and let's

8   just take District 1 to simplify matters, party B, the

9   candidate of party B lost there. Those 30 votes cast for

10   the candidate of party B are classified as wasted votes,

11   so they go into the lost votes; right? But party A won,

12   so it doesn't have any wasted votes of that form in

13   District 1.

14   The wasted votes party A does have from District 1

15   are the votes -- more than the majority it needed.

16   Strictly speaking, you need 50 plus one, so that 20 in

17   the surplus votes column for party A, strictly speaking

18   that should probably be -- actually should be 19, but to

19   keep everything nice round numbers, we'll call that 20

20   without any great violence to the point here. So you can

21   see that we've got contributions to wasted votes now

22   coming from the two mechanisms that we spoke about, the

23   surplus votes mechanism and the losing votes mechanism,

24   and then they get carried over to the final two columns,

25   wasted votes of party A 20, that's the -- because one got

1 70 and they only needed 50 plus one. And wasted votes

2 for B are 30.

3   And you can repeat that exercise now down row by

4 row. And then we arrive at the bottom right of the table

5 and we see that party A has a total of 150 wasted votes

6 and party B has a total of 350 votes. So straight away

7 we're seeing asymmetry. Party B has wasted more votes,

8 considerably more than party A.

9 Q   When you said something just now, I want to make

10 sure that for the record it's clear. When you said we

11 see asymmetry, you didn't mean a, next word symmetry, you

12 mean asymmetry as one word; correct?

13 A   We see an asymmetry.

14 Q   Okay. Thank you. And if you could step down,

15 Doctor, and make sure your microphone is on. I want you

16 to calculate and show us the actual method by which you

17 calculate the efficiency gap using these wasted votes.

18 And you can write on that chart if you would because

19 we're going to mark it as a demonstrative exhibit.

20   MR. HEBERT: We'll give it a number, Your

21 Honors, as soon as -- it's going to be 493.

22 A   Okay. So for this example, keep in mind we've got

23 an electorate of size 1,000. We have 150 votes wasted

24 for party A. We have 350 wasted votes for party B. The

25 efficiency gap from the perspective of party A, if you

1   like, we can go EG, for efficiency gap, for party A are

2   the wasted votes for party B minus party A's wasted votes

3   divided by the total number of votes. And so here we get

4   simply 150 minus 350 over 1,000 or 200 -- negative 200 of

5   a thousand or minus 20 percent. And so you would say the

6   efficiency gap or gap means the extent to which party --

7   have I got that right? I've done that wrong. I've got

8   my numbers transposed, that 350 minus 150. That's 20

9   that's negative party. That's the extent to which party

10   A is operating under an efficiency gap. It's enjoying an

11   efficiency gap rather over party B. It's got far fewer

12   wasted votes than party B. How much? 20 percent more.

13   So this is an electoral system that is working quite

14   advantageously for party A. It's translating votes into

15   seats more efficiently than party B is. And this gives

16   us a quantitative assessment of that vote.

17   Q   And is that a plus 20 percent?

18   A   Yes, it is. And so I can cross that minus sign and

19   just make it an even bigger minus sign.

20   Q   Okay. Now, is there a second method for calculating

21   the efficiency gap?

22   A   Yeah. There is. There is. And we call this

23   sometimes the *direct method* or the *simplified method*.

24   And in this case, there's another route that doesn't

25   involve all this tallying by district. We can

1 concentrate on the vote shares and on the seat shares.

2 So to be quite explicit about this, this is the so-called

3 simplified method and we can arrive at -- there's a

4 formula for it, it's S minus .5 minus two times v minus

5 .5.

6 Q   And that's the formula for the simplified method?

7 A   Simplified route to compute the same quantity as

8 I'll show right now. And what is S, S is the seat share

9 for party A. In this case it won eight seats, so seat

10 proportion is .8 minus .5. Then we're going to go 2

11 minus -- now what's v? V is the vote share, and it's won

12 550 out of a thousand votes, so v here is .55 minus .5.

13 And so if you just simply doing this sort of grade school

14 math now, it's .3 -- .55 minus .5 is .05 times .05 is .1.

15 .3 minus .1 is .2 or 20 percent.

16 Q   So you get the same result?

17 A   Yes.

18 Q   And that method that you just calculated in a red

19 pen was the simplified method?

20 A   That's right.

21 Q   All right. And in the black marker you calculated

22 the district-by-district method?

23 A   That's right. So the-district-by-district tallying

24 and dividing got us the same answer as simply going off

25 the two, if you will, jurisdiction-wide or top-level

1   quantities.

2   MR. HEBERT: And so that again is going to be

3   Exhibit 493, if Ms. Greenwood would do that. And we'll

4   move 493 into evidence, Your Honor.

5   MR. KEENAN: No objection.

6   JUDGE RIPPLE: There being no objection, the

7   exhibit is admitted.

8   MR. HEBERT: You may resume your seat, Professor

9   Jackman. Thank you.

10   BY MR. HEBERT:

11   Q   So this district-by-district method you just

12   calculated, is that also sometimes referred to in the

13   literature as the full method?

14   A   Yes.

15   Q   Okay. Now, how does the simplified method relate to

16   the full method, if it does?

17   A   Right. Well, we saw in this case we got exactly the

18   same answer. So they relate in that sense. But the key

19   thing is under what conditions is that generally the case

20   and the answer to that is that exact mathematical

21   correspondence results when, as we have in this case,

22   exactly the same number of voters in each district. In

23   that particular case, and in this case contrived, but in

24   that case you're mathematically guaranteed for the two

25   methods of calculation to give the same answer and indeed

1 that was the -- that was proved by McGhee in his LSQ

2 piece, one of the many contributions of that article.

3 Q   So in order for one method to -- for both methods to

4 turn out the exact same answer, you have to have the same

5 number of voters in each district; is that correct?

6 A   That's right.

7 Q   So do you know how the outputs would compare if the

8 turnout was not equal? Have you looked at any data to

9 describe that?

10 A   Yeah, I have. There are a few cases in the

11 historical data that I talked about where every district

12 in a state legislative election is contested and you see

13 results district by district with all the variations and

14 turnout that we see in the real world are available. And

15 so on the basis of those nine cases in the data that I

16 considered, there's a very close correspondence between

17 the two methods. So although McGhee's theorem, LEMMA,

18 establishes that the only time that these two will

19 correspond exactly and as a mathematical fact is under

20 the assumption of equal turnout, equal number of voters

21 across districts, as a practical matter my experience

22 based on looking at actual data is that there's very

23 little difference and certainly no meaningful practical

24 difference between the two methods, the results you get

25 from either method of calculation.

1   Q   Now, the database that you referred to just now,

2   that is the Carl Klarner database?

3   A   Yes, that's the one.

4   Q   And that's the database that you used to perform

5   your analysis -- one of the databases you used in this

6   case. And have you done calculations based on those

7   underlying data?

8   A   Yes.

9   MR. HEBERT: And if we could bring up Exhibit

10 125. And just for the record, Your Honors, this

11 information on the database was given to the defendants

12 in November of -- last November -- seems like a long time

13 ago now -- and it's also the calculations you're going to

14 see here in 125 were included in our proposed findings of

15 fact on January 26th and were -- and then Professor

16 Jackman was deposed later on March 16. So I just put all

17 that in the record so you'll know it's been around for

18 awhile.

19 Q   Now, Professor Jackman, you referred to nine cases,

20 I think, out of the 786 state elections? What were those

21 nine cases?

22 A   There are three lower House cases: Michigan '96,

23 Michigan '14 and Minnesota '08. And then there's another

24 six upper House cases where you see fully contested and

25 you're able to put the two methods of calculation side by

1 side in a completely -- I believe the phrase is

2 apples-to-apples comparison.

3 Q   And what do you see this table showing, Exhibit 125?

4 A   Well, if you just examine the two columns, there's

5 extremely high correlation between full method and

6 simplified method. The differences between the two are

7 small, less than a percentage point except up -- as large

8 as a percentage point in the last case listed there where

9 the efficiency gaps are very large. In particular what I

10 was struck by is that the differences between the two

11 measures are small relative to sort of the range and the

12 efficiency gap values themselves.

13   So I took sort of considerable comfort that not much

14 is going to turn on estimation of the efficiency gap

15 across these two methods when the differences we're

16 talking about are only typically on the order of, at

17 most, a percentage point and typically much smaller.

18 Q   So just to make sure that I understand what this

19 chart is, these are the only nine examples you could find

20 in the entire database where every single district in the

21 entire plan was contested?

22 A   By a Democrat facing a Republican.

23 Q   And do you have an opinion now as to whether it

24 matters substantively whether you use the simplified

25 method or the full method as reflected in this chart for

1 contested elections?

2 A   My view is that it does not matter. You'd prefer

3 the full method, but relying on the simplified method

4 comes at no great cost.

5 Q   Now, you defined responsiveness earlier as that

6 slope in the seat-vote curve. Is any responsiveness --

7   MR. HEBERT: And we can take that exhibit down.

8 Q   Is any responsiveness implied by the efficiency gap

9 when it's calculated using the full method?

10 A   No.

11 Q   And why is that?

12 A   If we assume an efficiency gap of 0 -- and I think

13 that's key; right? If we first assume an efficiency gap

14 of 0, then we do assume a responsiveness of 2.

15 Q   What does a responsiveness of 2 mean?

16 A   Means that for every percentage point increasing in

17 vote, you'll get a 2 percentage point increase in seat

18 share. But the key words there are that that's assuming

19 the efficiency gap is 0. So in investigating what the

20 efficiency gap is in an actual place, you need not assume

21 that it's the other way around.

22 Q   And just so it's clear in the record here, so in the

23 full method you're doing a district-by-district test and

24 so you don't -- it doesn't have anything to do with

25 statewide vote totals; correct?

1 A   In the fore method.

2 Q   Yes.

3 A   No, in the fore method it's all district by

4 district.

5 Q   So let's look at the Exhibit 34, Figure 11, which is

6 on page 33, and tell me what the slope of the orange line

7 in this chart means. This is out of your report;

8 correct?

9 A   That's correct. I produced this chart. This is a

10 -- the orange line is the seats-votes curve one would

11 expect under the maintained hypothesis that the

12 efficiency gap were 0. So if efficiency gaps were 0

13 everywhere, all the data would lie on that line. Now,

14 the data shown on that graph, each plotted point is one

15 of the 786 elections used in my analysis. And so for

16 each election, we've plotted the statewide quantities,

17 statewide vote share on the horizontal axis and statewide

18 seat share on the vertical axis.

19 Q   And can we conclude anything about the

20 responsiveness of state House elections historically from

21 this chart?

22 A   Well, yes. For one thing, they're close to 2 as a

23 descriptive matter because the data lie close -- they're

24 probably -- it's a little, you know, the line of best fit

25 probably has a slightly steeper slope than the orange

1 line there. But 2 is not an unreasonable approximation

2 to the slope between seat share and vote share over that

3 large set of state legislative election outcomes.

4 Q   So the dots on the map cluster around the orange

5 line historically?

6 A   More or less, yes.

7 Q   And what is the significance of that?

8 A   What that means is that although the seats-votes

9 curve with a slope of 2 is implied by the assumption that

10 the efficiency gap is 0, when we turn to actual data

11 where we're trying to investigate what efficiency gaps

12 are, we see that that's not a bad first approximation to

13 what's going on; that efficiency gaps of 0 or the

14 seats-votes curve implied by an efficiency gap of 0 is

15 actually not an unreasonable approximation in an

16 unaverage sense to what's actually transpired in the last

17 40/50 years of American political history.

18   MR. HEBERT: Now, Judge Crabb, during the oral

19 argument on the motion for summary judgment you had a

20 question, I went back and looked at the transcript, about

21 would it be possible to use partisan bias in addition to

22 using efficiency gap in measuring partisan symmetry. And

23 we have an exhibit that I think addresses that issue so

24 I'm going to bring that up next. I wanted to call it to

25 your specific attention and the rest of the members of

1   the three-judge court.

2   If we could bring up 325-B.

3   Q   And I would ask you, Professor Jackman, if you

4   prepared an analysis to look into the relationship

5   between partisan bias and the efficiency gap?

6   A   Yes, I did.

7   Q   Is this it up on the screen now?

8   A   Yes.

9   Q   All right. And can you tell us what it shows?

10   A   This --

11   Q   What that comparison is.

12   A   Yeah. So again, I've used the method of a

13   scatterplot to show the relationship between two

14   quantities. The efficiency gap is plotted on the --

15   against the vertical axis and partisan bias is plotted

16   against the horizontal axis. And the data have been

17   split into two sets: One where statewide the election

18   was decided by a margin of 55-45 or closer. We're

19   calling those on the left competitive elections. And

20   uncompetitive elections are the set of elections decided

21   by margins more lopsided than 55-45, and they're on the

22   right.

23   And on the panel on the left, you see the data,

24   right? So there's a data point for each election showing

25   the two quantities, the efficiency gap score and the

1   partisan bias score. On the left, you see that the data

2   are tightly clustered around the line of best fit, that's

3   the blue line, indicating that there's a strong and

4   positive correlation between the efficiency gap and

5   partisan bias in that set of elections that we've

6   classified as competitive.

7   If you flip over to the right panel, you see that

8   that -- the scatter there is much more pronounced; the

9   relationship between the two symmetry measures is far

10   less precise; that efficiency gaps and partisan bias

11   don't stand anywhere near the tight relationship that

12   they exhibit wherein that more -- that class of

13   competitive elections.

14   Q   So what explains this result of the efficiency gap

15   versus the partisan bias?

16   A   What we're getting here, we're actually visualizing

17   some of the things I was talking about earlier. Remember

18   that partisan bias asks us to contemplate a 50/50

19   election outcome. It asks how many seats in excess of 50

20   does a party win if the vote were evenly split. Now --

21   but in the class of elections shown on the left, the

22   so-called competitive elections, we're actually -- the

23   reality is not too distant from that 50/50 hypothetical

24   election that partisan bias asks us to contemplate. And

25   under that scenario, we see that there's a tight

1   relationship between the efficiency gap and partisan

2   bias.

3   We can even state a stronger result and that is at

4   50/50, the efficiency gap and partisan bias are the same

5   thing.

6   Q   So just to follow up on that point, so because

7   you've performed that uniform swing in partisan bias

8   cases, when you have a relatively competitive election,

9   it doesn't diverge very far from the efficiency gap

10   results?

11   A   That's exactly the point I was trying to make.

12   That's right. In the set of competitive elections, we're

13   going to be at most five points away. 55-45 is the most

14   lopsided election outcome considered on the left-hand

15   panel. And so the shifting, artificial shifting we have

16   to do in order to compute partisan bias won't be

17   especially large, and in most cases will be smaller

18   than -- considerably smaller than 5 percentage points of

19   shifting. And we're very close to that stylized case

20   where at 50/50 exactly two things happen: Partisan bias

21   is no longer counterfactual because we're at 50/50, and

22   moreover, the mathematics show us that the efficiency gap

23   reduces to partisan bias in that special set of

24   circumstances.

25   Q   So following up on the other half of this chart, the

1 uncompetitive elections, so the reason, if I understand

2 your testimony, that the partisan bias scores there in

3 uncompetitive elections, you have to carry out a bigger

4 uniform swing or shift; correct?

5 A   Yes, that's right.

6 Q   And what does that -- how does that effect the

7 comparison between partisan bias and efficiency gap?

8 A   Well, now remember that the efficiency gap

9 calculation is, as I said, is grounded in the actual

10 election outcome whereas partisan bias takes the actual

11 election outcome, has to shift it back to 50/50 and

12 that's going to open up room for the two measures to

13 diverge now. The counterfactual partisan bias asks us to

14 contemplate is more counterfactual in the right-hand

15 panel and hence that accounts for the greater divergence

16 of the two measures in the set of uncompetitive elections

17 relative to the divergence in the set of competitive

18 elections.

19 Q   What does this tell us about the usefulness of each

20 metric, the partisan bias versus efficiency gap? Does it

21 tell you anything at all?

22 A   Right. So to me the takeaway from this is that the

23 efficiency gap has this more universal application or

24 range of application than does partisan bias. Partisan

25 bias and the efficiency gap reduce to the same quantity

1   mathematically only in the special case where partisan

2   bias is no longer a counterfactual. So if you're close

3   to that place, then the partisan bias will be a nice

4   complement, if you will, to the efficiency gap or

5   supplement or additional piece of information. But in

6   general to overcome the counterfactual nature that's

7   inherent in the partisan bias measure, you can rely on

8   the efficiency gap. That's going to work for you in the

9   set of cases where partisan bias cannot.

10   Q   So when you talk about how partisan bias works

11   better as kind of a supplementary test to the efficiency

12   gap and you said close to 50/50, is that basically that

13   45-55 competitive range you talked about earlier?

14   A   Yeah. That's how we defined it when I made the

15   chart on the left. I thought that was a reasonable place

16   to cut these data, yeah.

17   Q   Now, in a state like Wisconsin, how would you --

18   could you use partisan bias as a check or in addition as

19   another analysis to assess the level of partisan skew in

20   a redistricting plan?

21   A   Well, at least for the 2012 and 2014 elections in

22   Wisconsin, those were decided by margins closer than

23   55-45 and indeed those are the red dots in the lower

24   left.

25   Q   Can you circle those on the screen with your

1 finger --

2 A   Yeah.

3 Q   -- hopefully.

4 A   There's another one there.

5 Q   What does that mean?

6 A   You can see that they're very similar to one another

7 in the sense that they're very close to the line of best

8 fit there. They're both numerically not dissimilar.

9 They're both -- one is about negative 1.3, the other is

10 about the same. The other one is -- we've got one there

11 of about negative 11, negative .11 on partisan bias and

12 about negative .09, and that's because, as I've been

13 explaining, we're in a world where the counterfactual of

14 partisan bias, that is an evenly divided election,

15 statewide election outcome wasn't that distant from what

16 actually occurred. So we're in the set of circumstances

17 where we'd expect a reasonably good correspondence

18 between the two symmetry measures.

19 Q   When you said .11 and .13, is that 11 percent and 13

20 percent?

21 A   Yes. If it's more convenient to talk about

22 proportions and percentages, let's do that.

23 Q   In a state -- I want to pick a hypothetical -- not a

24 hypothetical state, but a hypothetical example. A state

25 like Wyoming or Rhode Island where we often see elections

1 results at 60 percent plus for one major party versus the

2 other, is partisan bias reliable in those situations as a

3 check?

4 A   No. As the election gets more lopsided, again, the

5 counterfactual we're being asked to contemplate is all

6 the more counterfactual and then the force of that

7 uniform-swing assumption becomes especially binding.

8   MR. HEBERT: If you could bring up Exhibit 34

9 again, Figure 1, page seven.

10 Q   You mentioned that you calculated the efficiency gap

11 for state House plans from 1972 to 2014; correct?

12 A   Yes. Yes, I did.

13 Q   So I'm showing you Figure 1 from your report. What

14 does this chart show?

15 A   Okay. So what this shows is there are 206

16 redistricting plans spanned by my analysis. For each

17 plan, you can compute -- I computed the average

18 efficiency score, efficiency gap score. So now by plan.

19 So some of these scores reflect five; right? The plan

20 ran for a whole decade and generated five sets of

21 efficiency gap scores and we averaged them. So we've got

22 206 numbers, one per plan.

23   And now we will range them from low to high with

24 the -- just sorted them with the lowest numerically. So

25 negative scores on the bottom left of the graph and

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1   positive efficiency gap scores on the top right. And we

2   sort of stepped through the distribution over the 206

3   plans as we go up the chart from low to high.

4   Q   So on the negative side, that would be a

5   pro-Republican skew?

6   A   Yes. So that's key to recognize. The way I've

7   defined terms here, and it's completely arbitrary, the

8   results are completely symmetric in the two-party case.

9   But for convenience, a pro-Republican advantage comes out

10   in these numbers as a negative efficient gap score. And

11   conversely, a positive efficiency gap score is indicative

12   of advantage to the Democrats.

13   Q   And that would be on the right side of the vertical

14   line going up; correct?

15   A   Yes. The vertical line, pardon me, going up the

16   chart is at 0 and so points to the right indicate

17   positive efficiency gap scores indicative of Democratic

18   advantage; data points to the left, negative efficiency

19   gap scores indicative of advantage for Republicans.

20   Q   So Figure 1 arranges the efficiency gaps, lifetime

21   efficiency gaps for the plans in the order from most

22   pro-Republican at the bottom to most pro-Democratic at

23   the top?

24   A   That's correct.

25   Q   Okay. What does the chart tell us about the

1   distribution of efficiency gaps historically?

2   A   Yeah. The data lie more or less evenly split on the

3   positive side, and the negative side, on the

4   pro-Democratic side, on the pro-Republican side. So the

5   average plan, if you will, that's been enacted or is

6   governed or been in place for state legislative

7   elections, averaged over 41 states, averaged over 40 odd

8   years, hasn't shown much bias one way or the other in

9   that on average since.

10   Q   Does that have anything to do with symmetry?

11   A   No, that doesn't. We want to be -- I guess as a

12   conceptual matter it does, but in the sense we've been

13   using the term here, no.

14   Q   Well, on this map, on this chart rather, are the

15   majority of the plans quite symmetric?

16   A   There's a symmetric distribution of symmetry scores.

17   Is that helpful?

18   Q   No, not really. I'll keep moving. So have you

19   looked to changes in the magnitude of the efficiency gap

20   over time?

21   A   Yeah. Yeah, certainly.

22   MR. HEBERT: If we could bring up Figure 22 of

23   Exhibit 34, your report, page 47.

24   Q   Can you tell us what this analysis shows?

25   A   Yeah. What this shows is now if you -- we step down

1   from the plan level, now we're down at the level of

2   individual elections. So there are 786 data points, one

3   for each election shown on that chart. And this time

4   we've ignored the sign of the efficiency gap score. This

5   time it's just the magnitude irrespective of -- we're

6   sort of just asking the magnitude of the bias,

7   irrespective of which party it favors or appears to

8   favor. And then the middle blue line shows the median

9   smoothed over time as we go from the 1970's on the left

10 of the graph through to 2014 on the far right-hand side

11 of the graph. And you can see that the median, the

12 running median, that middle blue line, really hasn't

13 changed too much until the 2010, post-2010 round of

14 redistricting where the median efficiency gap score and

15 absolute value in magnitude ticks up at the very end of

16 the data series.

17 Q   Can you circle where that is?

18 A   Sure. We're talking about here. (Indicating)

19 Q   Thank you. So what does all this mean in terms of

20 partisan gerrymanders?

21 A   It means that it appears that we've got some --

22 we've got some -- let's not -- you know, there are some

23 pretty egregious efficiency gap scores there from earlier

24 in the period. But they were highly abhorrent relative

25 to what was going on in the rest of the country. What's

1 noteworthy about the more recent period is that the

2 distribution has tightened up a little bit. We don't see

3 scores up in this neighborhood in -- or at least not many

4 or none in the region I just touched. But what's

5 happened is that it's this region in here that's -- we're

6 seeing more data, more efficiency gap scores are being

7 recorded in that range than in the past, sort of this, if

8 you will, more evidence of plans generating parts of

9 advantage or partisan asymmetry now than any time in this

10 40-year slew of history that I've examined.

11 Q   So the bottom of this chart is at 0; correct? And

12 all these dots are above 0?

13 A   Yes, because we're talking about absolute magnitudes

14 of efficiency gap.

15 Q   Okay. Now, is there any evidence of whether these

16 changes that we've seen over time have favored one

17 political party over another?

18 A   Yes, there is.

19 Q   All right. Let me bring up Figure 20 of your report

20 on Exhibit 34, page 45. And tell us what you've plotted

21 here.

22 A   Okay. So this essentially repeats the data shown in

23 the immediate -- the thing we were just looking at. This

24 time though we do take the sign of the efficiency gap

25 into consideration. And recall that positive scores,

1   this time going higher up the chart, are indicative of a

2   Democratic advantage, and negative scores are indicative

3   of Republican advantage going down the chart. And the

4   thing to note here is that the distribution of points is,

5   if you will, sort of sliding down the page a little bit

6   as we go from left to right. And perhaps it's a little

7   pronounced, say, in the last decade or two. The

8   distribution is -- we're seeing more points, if you will,

9   in the bottom half of this graph than in the top half in

10   recent decades. And that's the takeaway from that.

11   Just keep in mind that these negative scores

12   represent advantage to Republicans, at least those

13   reflected through the efficiency gap.

14   Q   So one question -- one point I want to make here.

15   So I notice in this one, unlike the previous chart we

16   looked at, the 0 line is in the middle and that the dots

17   that fall below that are minus efficiency gaps averages

18   and everything above it is plus efficiency gaps; correct?

19   A   Yeah, that's right. So everything above 0 is an --

20   is a positive efficiency gap indicative of -- so up

21   here -- is indicative of advantage to Democrats and

22   everything down in negative territory is indicative of

23   advantage to Democrats.

24   Q   And you just indicated --

25   A   To Republicans, sorry.

1 Q   And if you could, you mentioned that the dots were

2 kind of sliding off. Could you circle that area that you

3 were describing for the Court?

4 A   Yeah, sure. I'm referring to, if you will, this

5 area here where the distribution appears to slide in that

6 direction. (Indicating) Now, I've exaggerated with that

7 line and indeed the lines I produced on the chart itself

8 show the trend.

9 Q   So the dots in the lower right-hand southeast

10 corner, so to speak, of this chart are the pro-Republican

11 negative efficiency gaps that reflect pro-Republican

12 bias?

13 A   Yeah; right. So there's 2012 and there's 2014. And

14 I've -- you know, the lines I've just drew on the chart

15 with my finger there sort of terminate at 0. So I've

16 sort of blocked out with those two lines. I just drew

17 efficiency gaps consistent with Republican advantage as

18 recorded in 2012 and 2014.

19 Q   And just so the record is clear, the other blue

20 lines, the one -- not the middle blue line, but the other

21 ones are the 25th percentile and 75th percentile; is that

22 correct?

23 A   Yes, that's correct. So I've got a running or

24 smoothed estimate of the 25th, the median, and the 75th

25 percentile of the distribution of efficiency gap scores

1   by time.

2   Q   Now, have you looked at whether or not there is an

3   explanation or there's a pro-Republican trend in the

4   efficiency gap from the 90's to today?

5   A   Yeah. It's something I've given some thought and

6   done some analysis.

7   Q   Have you looked at an explanation for that?

8   A   Yeah.

9   Q   Okay. If we could bring up Exhibit 83, Figure 9 of

10 your rebuttal report.

11 A   Yes.

12 Q   Can you describe what this shows?

13 A   Okay. So this is a distillation or a summary of a

14 regression analysis where I looked at the extent to which

15 knowledge of which party controlled redistricting was

16 indicative or predictive of the sort of -- the efficiency

17 gap scores you would get. And the answer to the

18 regression analysis is yes, that's quite an important

19 predictor of efficiency gap scores and they're engaged in

20 the following counterfactual exercise and that is to ask

21 if the set of -- if redistricting was controlled or

22 control of redistricting was distributed across the

23 political parties the way it had been in the 1990's, what

24 sort of efficiency gap scores would we see in the 2000's

25 and in the 2010's? And the answer to that is given by

1 the red line. That is, we would see on average, average

2 over the 41 states in my analysis, you'd see efficiency

3 gap scores of about minus a percentage point on average.

4 Dips down a little in the 00's, but basically reverts

5 back to around about a percentage point of Republican

6 advantage.

7   The blue line though shows what's actually happened

8 over those three decades and that is an increasing trend

9 towards ever more evidence of there being more Republican

10 or more pro-Republican plans out there in governing state

11 legislative elections across the country, across the

12 three decades. So this confirmed for me and is sort

13 of -- I think sort of a vivid graphical presentation of

14 what came out of that regression analysis, and that is

15 that partisan control of redistricting is perhaps one of

16 the most important factors in looking to understand what

17 drives -- what makes an efficiency gap be negative here

18 or positive there or close to 0 somewhere else. So

19 variation in the efficiency gap is strongly associated

20 with who controls the redistricting.

21 Q   So what is the significance of these findings? And

22 first of all, before you say that, I just want the record

23 to reflect that the 0 percent here is at the top and all

24 of the actual and predicted values of state House plans,

25 the average efficiency gaps are all negative in the

1 negative territory; correct, Dr. Jackman?

2 A   That is correct.

3 Q   Now, what is the significance of your findings with

4 respect to this chart?

5 A   Well, that if partisan control of redistricting,

6 what's happened, and so why is the chart moving the way

7 it's moving, why is the blue line slipping down, the

8 simple fact of the matter is that Republican control of

9 redistricting is much more prevalent now than it was in

10 the 1990's. And so that fact alone accounts for a lot of

11 the variation in the efficiency gap movement, in the

12 efficiency gap that we were looking at in the previous

13 charts.

14 Q   Now, I'd like to turn next, Professor Jackman, to

15 the question of where we should set a threshold for the

16 efficiency gap which would indicate the line at which a

17 partisan skew becomes so large and durable that it's

18 outside the bounds of historical norms. You did an

19 analysis of that; correct?

20 A   I did.

21   MR. HEBERT: And Judge Griesbach, this was a

22 topic you actually brought up in the summary judgment

23 hearing. When I read the transcript, you wanted to know

24 about the level of efficiency gap above which a plan

25 would maybe hit that magic elusive number, I think is the

1 way you phrased it. So this testimony goes to that issue

2 hopefully.

3 Q   So did you recommend a threshold for the efficiency

4 gap?

5 A   Yes, I did.

6 Q   Why would it be even helpful to set a threshold?

7 A   Well, I think so places like this can go about their

8 business. I think you'd like to know at what point has

9 the efficiency gap crossed a line whereby you can be

10 reasonably confident that having seen across that line,

11 that seeking a remedy from a body such as this is

12 warranted; that the body perhaps looking to impose the

13 remedy can have some confidence in what they're doing;

14 that what you're seeing and what it is you might -- what

15 you're being asked to remedy is something real,

16 substantially important and durable if left alone would

17 be a persistent feature of the plan.

18 Q   So it enables you to distinguish large and durable

19 efficiency gaps on the one hand from smaller and less

20 durable on the other?

21   MR. KEENAN: I'm going to object as leading. I

22 feel like we're falling behind and there's a lot of

23 summarizing in questions with leading questions that we

24 just --

25   JUDGE RIPPLE: I'll ask counsel to rephrase,

1 please.

2   MR. HEBERT: Sure.

3 BY MR. HEBERT:

4 Q   So what does it enable you to distinguish among

5 plans?

6 A   Two things: The size of the efficiency gap we're

7 seeing and how durable; the efficiency gaps that you see

8 associated with a given plan.

9 Q   When you mention size, what does that mean? The

10 size of the efficiency gap.

11 A   I mean the absolute magnitude of the efficiency gap.

12 It's the number itself and the extent, and hence, because

13 it's a measure of partisan asymmetry, the extent of

14 asymmetry in the districting plan.

15 Q   What does durability refer to?

16 A   Now, durability, what I'm getting at there is the

17 extent to which an efficiency gap reading or one that you

18 might see from a given election is -- can be taken to be

19 a feature of the plan on the line set of election results

20 you saw and not a product of election-specific factors

21 that may not persist.

22 Q   Did you come up with an efficiency gap threshold?

23 A   I did.

24 Q   And what is that?

25 A   Plus or minus 7 percent.

1 Q   Generally speaking how did you come up with that

2 figure?

3 A   I looked at measures of durability for the most

4 part. I asked given that, say, the first election under

5 a redistricting plan produces an efficiency gap score

6 either below 7 percent -- below negative 7 or above

7 positive 7, so we're away from 0 by seven points in

8 either direction, 7 percentage points in either

9 direction, if you've seen that in the first election, how

10 likely is it that you've seen a durable feature of the

11 plan? And I arrived at 7 percent because that seemed to

12 be a reasonable threshold for saying yes, if the first

13 election under a plan produces an efficiency gap score at

14 least that big, then you can be confident now that you've

15 seen not just a one-off, but something that's going to

16 persist over the life of the plan as a signal of -- a

17 reliable signal as to the set of efficiency gap scores

18 and the average efficiency gap score you might see if the

19 plan were allowed to run.

20 Q   In analyzing durability, did you examine how a

21 plan's first efficiency gap relates to its lifetime

22 average efficiency gap?

23 A   Yes, I did.

24   MR. HEBERT: If we could bring up Exhibit 83,

25 Figure 7. This is page 17, Your Honors, of Dr. Jackman's

1 rebuttal report.

2 Q   Can you describe your analysis here?

3 A   Yes. This is -- again, I've used a scatterplot to

4 show the relationship between two variables. The two

5 variables in this case on the horizontal axis is the

6 efficiency gap we see from the first election under a

7 plan. And on the vertical axis, the corresponding

8 quantity is the average efficiency gap that you observe

9 over the life of the plan. And this is done where we've

10 got at least three elections under the plan. So this

11 excludes, for instance, in particular it excludes the

12 current round of plans that at this stage generated only

13 two elections. So this is based on plans generating

14 three, four or five elections. And what we see here is

15 that there's a relatively strong predictive relationship

16 between -- on the first election's efficiency gap score

17 and what you're likely to see over the life of the plan.

18 That is -- and in particular as efficiency gap scores get

19 more extreme in that first election, your ability to say

20 we're going to see efficiency gaps on average that are

21 consistent with the same message with respect to one side

22 of politics being advantaged or the other, as that first

23 election's efficiency gap score gets further away from 0,

24 your confidence in that conclusion gets greater. We're

25 more confident in making that assertion about the plan on

1 the basis of the first election to the extent that the

2 first election is generating a relatively large value of

3 the efficiency gap.

4 Q   What percentage would you say the efficiency gap

5 predicts of the lifetime average?

6 A   Yeah. The R squared or the percent of explained

7 variation first election efficiency gap explains in the

8 plan averages is on the order of about 75 percent.

9 Q   And that blue line that is on this chart?

10 A   Yeah, that's the line of best fit. That's the

11 regression relationship, the line of best fit that

12 relates -- describes the relationship between these two

13 variables.

14 Q   So staying on this chart for a minute, can you tell

15 me what the lifetime average efficiency gap would be for

16 a plan that had a first election efficiency gap of minus

17 7 percent?

18 A   Yeah, that's easy to do. All -- and I'll do it by

19 annotating the chart.

20 Q   Yes, please.

21 A   All we have to do is project up from negative 7 on

22 the horizontal axis. We hit the blue regression line and

23 we project over, and so you can see that, you know,

24 negative 7 is generating actually just a little bit less

25 than negative 7, probably about negative 5, negative 6.

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1   Q   All right. Now, stay on that same chart and tell us

2   what a lifetime average efficiency gap would be for a

3   plan that had a first election efficiency gap of plus 7

4   percent.

5   A   Yeah; right. So again, same exercise. If I can

6   draw a straight line with my finger and you can predict

7   up and then over here. And plus 7 corresponds to about a

8   prediction of a lifetime average efficiency gap for the

9   plan of about plus 4.

10   Q   And what do those findings tell you about the

11   reliability of the efficiency gap when you get an

12   efficiency gap of 7 percent or larger either way?

13   A   Yeah. The thing I didn't draw on the graph is also

14   the confidence intervals that attach to those

15   predictions, and in particular for both of them -- I'm

16   sorry, for the negative 7 in particular, the confidence

17   interval around the predicted plan average does not

18   overlap 0 or at least not by very much, and indeed we can

19   distinguish it from 0 at conventional levels of

20   statistical significance.

21   We're a little less confident, but still quite

22   confident, that we're going to see advantage on the

23   positive side; right? Remember, that's advantage in

24   favor of Democrats that -- so at plus 7, we've got a

25   reasonably confident, I don't want to say very confident

1 prediction that we'll see a positive pro-Democratic

2 average efficiency gap score over the life of the plan if

3 we saw a plus 7 in the first election.

4 Q   Did you also examine the variation of the efficiency

5 gap from election to election?

6 A   Yes, I did.

7 Q   Could you describe your analysis?

8   MR. HEBERT: And if we could bring up Exhibit

9 34, page 48 of your report.

10 Q   If you -- this is the narrative of that. But can

11 you give us just a request quick summary of what you

12 examined?

13 A   Oh, yeah. So if an efficiency gap is to be validly

14 considered an attribute of a plan and not just something

15 that bounces around from election to election, then --

16 we've heard the word cluster. Efficiency gap scores are

17 to cluster by plans. If it's an attribute of the plan,

18 then it shouldn't bounce around too much over sequence of

19 elections inside the plan. When you have a plan, then

20 you should see a new batch of efficiency gap scores that

21 look different, perhaps, from the proceeding one. But

22 under the same plan, you shouldn't be seeing too much

23 variation in efficiency gap scores election to election.

24   So what I did, I literally just did what

25 statisticians call a variance decomposition; that is how

1 much of the variation over the 786 efficiency gap scores

2 I've got, how much of the variation is associated with

3 being in the same -- the scores coming from the same

4 plan, batching by plan. How much variation is associated

5 with the plan that is within plan variation versus

6 between plan variation? And between plan variation

7 accounts for about three-quarters of the variation in the

8 efficiency gap scores. And that's reassuring. That says

9 to me that it's not bouncing around a lot inside a plan.

10 The real way the efficiency gap scores vary is across

11 plans, about three times as much as they vary within

12 plans. And so that was a signal, another signal that the

13 efficiency gap is actually measuring something that we

14 can confidently attribute to the plan and not to

15 election-specific factors that come and go election to

16 election.

17 Q   Is there any significance of the calculation and

18 analysis you did with respect to durability then?

19 A   Yeah. It's closely connected to the question of

20 durability; that is, if the variation -- if you put all

21 the pieces together perhaps, if you see -- given that

22 efficiency gap scores tend to cluster by plan and if you

23 see a particularly large one in the first election under

24 a plan, you've got a reasonably confident -- you've got a

25 good basis for concluding that you've seen something

1 about the plan and that further investigation is probably

2 warranted.

3 Q   Professor Jackman, during the hearing on the motion

4 for summary judgment, there was a question, I believe

5 from Judge Ripple, about the durability of a plan's

6 efficiency gap. So I want to turn to that now. Did you

7 carry out any sensitivity testing with respect to your

8 analysis?

9 A   Yes, I did.

10 Q   And what in broad terms -- can you tell me, first of

11 all, what sensitivity testing is so that we know what

12 you're referring to?

13 A   In general, sensitivity testing is asking if you'd

14 got a different set of data to the one you did get, how

15 would your conclusions change? Or if you made a

16 different set of assumptions to the one you made in doing

17 a particular piece of analysis. So I was trying to

18 assess how sensitive a conclusion might be to either an

19 assumption or in this particular case to just from the

20 set of data that you actually happen to have on hand.

21 Q   In your sensitivity testing, by how many percentage

22 points did you shift election results to?

23 A   Yes. So what I did was I took the 2012 and 2014

24 results across the country, state legislative elections

25 and perturbed them via the uniform-swing methodology up

1   or down by as high as a five-point swing towards the

2   Democrats or a five-point swing away from the Democrats.

3   Q   Why did you choose that amount?

4   A   That's a large band of swing relative to that which

5   we typically see in state legislative elections.

6   Q   Is it considered vigorous in statistics?

7   A   This methodology?

8   Q   Yes.

9   A   In political science subjecting election results to

10 uniform swing is a very common practice.

11 Q   Now, what plans did you include in your sensitivity

12 testing?

13 A   Well, as I said, the 2012 and 2014 plans are the

14 ones that I subjected to this exercise.

15 Q   Let's look at, if we could, Exhibit 93. And I'd

16 like -- three are the results, correct, of your

17 sensitivity testing?

18 A   Yes, they are.

19 Q   And can you tell us what these columns correspond

20 to?

21 A   Okay. So this is a rather busy chart, so I'll keep

22 it as simple as I possibly can. But I've broken the data

23 into three types and they are the columns, the three

24 columns: Elections that gave us low values of the

25 efficiency score, the efficiency gap measure; elections

1 that gave us median values of the efficiency gap; and

2 elections that gave us high values of the efficiency gap,

3 that is greater than 7 percentage points either way. And

4 across the horizontal axis, you can see the levels of

5 perturbation from uniform swing that I've applied to each

6 set of results.

7   To just focus on lines here, let's just look at the

8 bottom right panel. So this is the set of cases, this is

9 real data, at least it's based on real data where we saw

10 in either 2012 or 2014 an efficient gap greater than 7

11 percent in magnitude. And then what I plotted is as you

12 perturb those actual results, what proportion of the

13 cases have the same sign of the efficiency gap. So

14 either that plus 8, plus 9, plus 10 or negative 7,

15 negative 8, negative whatever it was.

16   As you subject the underlying actual election that

17 generated this score to this range of swing that goes

18 from negative 5 to 5, is the efficiency gap changing, and

19 it will change, because it changes so much that you

20 actually get a different conclusion. What looked like in

21 the actual election a Republican advantage, under this

22 swing that you've just subjected that actual election to

23 you've got a different signal. You got -- it looks like

24 Democratic advantage. How often did that happen? The

25 answer is virtually never.

1   What I've plotted here is the proportion of

2   elections that are keeping the same sign as they

3   originally got, conditional on that original

4   efficiency -- the actual efficiency gap score being

5   large. And the vertical axis runs from 0 to 1. And if

6   we could just take the zoom a little bit to the left so I

7   can see -- no, okay. That's helpful. Thank you.

8   You can see that those data are virtually bouncing

9   along one point or basically, you know, only when we get

10 up to swings of negative 5 or 5 do we start to see only

11 in a few cases at most, you know, 4 or 5 percent of cases

12 do you start to see the efficiency gap giving you a

13 different reading.

14   In the top panel, I've sort of done another

15 similarity. The top right panel, I've done another

16 similarity exercise. And this is just to look at the

17 correlation between the actual efficiency gap scores and

18 the ones you get under the perturbed election results and

19 those vary high as well over this range of perturbations.

20 They only start to tail away and become what in the

21 social sciences we might call moderate-to-strong

22 correlations at worst are when we get up to large swings

23 of about plus five.

24   And so the other term we sometimes use in statistics

25 is *robustness*. We talk about how robust is the

1   conclusion. And this says that if we could -- right.

2   You see that those two patterns I just described in the

3   panels on the right, they don't hold up, right, as we go

4   to the median efficiency gap scores or to the low

5   efficiency gap scores. With a low efficiency gap score,

6   a small pertubation, a reasonably small pertubation or

7   relatively small pertubation will upset the result much

8   more rapidly than if the actual election gave us a large

9   efficiency gap reading. So large values of the

10   efficiency gap are robust. They are durable, sticky

11   features of the underlying plan, much more so than small

12   or median varies of the efficiency gap.

13   Q   Were you in court for Professor Gaddie's video

14   testimony on Tuesday?

15   A   I was.

16   Q   Did you see Professor Gaddie explain his S curves

17   that he used in analyzing the draft plans before Act 43

18   was finalized?

19   A   I did.

20   Q   And you heard -- were you in the courtroom when

21   Professor Mayer testified?

22   A   I was.

23   Q   In response to questions from Mr. Keenan, they were

24   discussing Professor Mayer's swing analysis. So how does

25   your swing analysis match up with Professor Mayer's in

1 terms of how it treats incumbents?

2 A   Oh.   This treats elections as we find them;

3 incumbents as we find them, if you will. It takes an

4 actual set of election results, Wisconsin or anywhere

5 else for that matter, 2012 and 2014, actual election

6 results and perturbs them, makes -- applies uniform swing

7 uniformly, irrespective of the incumbency. Holds the

8 incumbency constant, if you will.

9   JUDGE RIPPLE: I wonder if I could interrupt and

10 ask the witness a question.

11   MR. HEBERT: Absolutely.

12   JUDGE RIPPLE: The database that you're using

13 here, Professor, the swings that you have observed, they

14 are from all over the United States, am I right?

15   THE WITNESS: Yes.

16   JUDGE RIPPLE: Why are they relevant or

17 probative evidence of what would happen in Wisconsin?

18 Wouldn't the -- couldn't the swing be very different for

19 the elasticity or inelasticity of the swing be very

20 different in Wisconsin? There are parts of the country

21 where our politics are far more volatile than they are in

22 others. Some parts of the country they are very secure,

23 very concrete, us against them kind of thing. Other

24 parts of the country we don't. And this -- in reading

25 your report and listening to you today, that concerns me.

1   THE WITNESS: Couple of responses to that. One

2   is that this particular piece of analysis say these

3   swings are not atypical of what we see in Wisconsin, for

4   instance.

5   JUDGE CRABB: Looking back over different

6   elections?

7   THE WITNESS: Excuse me?

8   JUDGE CRABB: Where would you -- when would you

9   -- when would you observe, have observed those swings?

10   In prior elections?

11   THE WITNESS: 1972 to 2014. Just trying to get

12   a sense of -- given historical variation in swings, what

13   would be reasonable swings to simulate for the efficiency

14   gap for this analysis, and indeed, you know, one could

15   apply, and I have, just perturb the Wisconsin results

16   themselves, the conclusions we get for the efficiency gap

17   scores in Wisconsin in 2012 and in 2014 and take them in

18   isolation and perturb those. We got specific things.

19   You know, I've blown up analysis specific to

20   Wisconsin here as well. But this is admittedly at a

21   30,000-foot level, if you will. This averaged over all

22   41 states to be sure and I readily concede that. But I

23   don't think that as a general matter, what I'm trying to

24   provide here is a characterization of the properties of

25   the measure, as a measure, and perhaps we can talk about

1   what it says about Wisconsin. You know, I think that's

2   got to be a separate sort of set of questions and perhaps

3   a separate matter.

4   JUDGE CRABB: Did I hear you use perturb as a

5   verb?

6   THE WITNESS: Yes.

7   JUDGE CRABB: Could you explain what you mean by

8   that?

9   THE WITNESS: To change, to vary, to alter.

10   JUDGE CRABB: But it sounds like an outside

11   force is doing the varying.

12   THE WITNESS: Well, and it was me in this case;

13   right? You take a set of election results and you want

14   -- take the 2012 Wisconsin election. What would have

15   happened had the Democrats done two points better? So

16   literally on my computer I'd add two percentage points to

17   each district and then add two-and-a-half and then three

18   and so on.

19   JUDGE CRABB: I see.

20   MR. HEBERT: May I follow up with a question

21   based on your question?

22   JUDGE RIPPLE: Of course.

23   BY MR. HEBERT:

24   Q   Professor Jackman, have you done a

25   sensitivity-testing analysis for just Wisconsin?

1   A   Yes, I have.

2   Q   Okay.

3   MR. HEBERT: And we would like to show that to

4   the Court at some point. We'll put it on a flash drive

5   first and we'll come back to that. Maybe perhaps at the

6   break or something. But I think that goes to your

7   question exactly.

8   MR. KEENAN: Have we been provided with that?

9   MR. HEBERT: Pardon me?

10   MR. KEENAN: Have we been provided with that?

11   MR. HEBERT: It just came up. He just asked

12   about it.

13   MR. KEENAN: Okay. But he already has a

14   document that shows it?

15   MR. HEBERT: No, I don't have it. We can do

16   that. I mean I'm not going to say it's not rocket

17   science because even rocket science is really not rocket

18   science, but he can do that.

19   So may I continue at this point?

20   JUDGE RIPPLE: Yes, please.

21   MR. HEBERT: And I am nearing the end, so I

22   think we may be getting close.

23   BY MR. HEBERT:

24   Q   So I'd like to talk about -- I forgot to ask you

25   when I brought up Professor Gaddie's S-curve analysis and

1   I forgot to ask you before I jumped ahead to Professor

2   Mayer's sensitivity testing, how your sensitivity testing

3   compares to Gaddie's S-curve analysis.

4   A   Oh, yeah. Well, in the sense we both employ uniform

5   swing, it's identical in that respect, yeah.

6   Q   And you were looking at different plans, but the

7   methods were the same. Is that what you're saying?

8   A   That's right.

9   Q   So I'd like to turn to Wisconsin and efficiency gaps

10 in Wisconsin.

11   MR. HEBERT: If we could bring up Exhibit 122.

12 Q   Tell us -- tell the Court what the average

13 efficiency gaps are that Assembly plans in Wisconsin have

14 exhibited in prior cycles.

15 A   Yeah. So over the decades spanned by my analysis,

16 we -- this chart, the column on the right shows the

17 average efficiency gap scores associated with each plan.

18 And for three decades, they're quite small and recalling

19 the variation in the efficiency gap that we looked at

20 earlier in Figure 1, those numbers are essentially

21 indistinguishable from 0, or if they are distinguishable

22 from 0, they're of no great political consequence.

23 Remember that 0 is the neutral point. It corresponds to

24 partisan symmetry. So this being 70's, 80's and 90's,

25 negligible to small at best amount of our pro-Republican

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1 advantage apparent in the plans that were in place for

2 those state legislative elections in those decades.

3   The 2000's is an interesting sort of outlier, if you

4 will. Cuts against that trend. The average efficiency

5 gap did bump up for that decade. But for the three

6 decades prior, the efficiency gaps were, as I said,

7 negligible to at most small.

8 Q   So this takes us up through the 2000 cycle. Have

9 you calculated efficiency gaps for Act 43 in 2012 and

10 2014?

11 A   Yes, I have.

12 Q   What do those numbers show?

13 A   In 2012, the efficiency gap is negative 13 percent

14 and in 2014 it's negative 10 percent.

15 Q   How would you characterize those scores?

16 A   Those are very large. Negative 13 in particular at

17 the start of the cycle is the largest score seen in

18 Wisconsin's history and was among some of the largest --

19 is among the largest scores we've seen anywhere over the

20 span of my analysis. Out of those 786 efficiency gap

21 scores, that's in -- I believe it's in the top 3 percent

22 in terms of magnitude.

23 Q   When you say the top 3 percent, does that mean the

24 worst 3 percent of the distribution?

25 A   In the sense that yes, if symmetry is good and

1 asymmetry is bad, then yes, worst.

2 Q   Now, have you examined whether in the first two

3 elections, whether Act 43 -- how its worst efficiency gap

4 compares to any other plan between 1972 and 2010?

5 A   Yes. I'm just going to have to consult my report.

6 Q   Page seven of your report, Figure 1, where does Act

7 43 fall in that historic, modern historical period?

8 A   Is it possible to put that Figure 1 up?

9 Q   Yeah.

10   MR. HEBERT: Page seven. Just go to Figure 1 of

11 Exhibit 34, please. Exhibit 35 -- no, 34.

12 A   Thank you. Yes. So averaging the 2012 and the 2014

13 efficiency gap scores produces that red point down there

14 in the lower left of the graph meaning that the Wisconsin

15 plan is -- that's about the fourth or the fifth most

16 pro-Republican plan in terms of the asymmetry it's

17 demonstrating thus far.

18   MR. HEBERT: If we could bring up Exhibit 494.

19   JUDGE CRABB: How would I know that from this

20 chart?

21   THE WITNESS: You could count the number of data

22 points lying below -- if you could zoom right in, please,

23 on the neighborhood around -- there you go. You could

24 even zoom in tighter just in the immediate neighborhood.

25 There you go. So there's one, two, three, four points

1   below the red dot. And that's out of that -- that's rank

2   ordering them, the 206 plans that I analyzed, 1972 to

3   2014. So the current Wisconsin plan ranks No. 5 out of

4   206.

5   BY MR. HEBERT:

6   Q   And those -- following up on Judge Crabb's

7   questions, those four points below the red lines, those

8   are estimates -- four-point estimates?

9   A   Yeah. They're four other plans.

10   Q   Okay. Not from Wisconsin, I assume.

11   A   Not from Wisconsin, no.

12   Q   So I'd like to bring up now, if we could, Exhibit

13   494. And essentially the question here is where -- can

14   you show us what this chart shows, in terms of the red

15   lines, what they represent?

16   A   Yeah. So what I've done now is to highlight the

17   sequence of Wisconsin efficiency gaps decade by decade or

18   plan by plan. So the number one or the arrow there

19   points to the average efficiency gap score that was in

20   place in the 1970's, and you can see it's roughly 0 and

21   the lines coming away from it indicate a 95 percent

22   confidence interval, an assessment of uncertainty

23   associated with that estimate. And it's essentially 0

24   and the confidence overlap 0.

25   2 indicates the plan that was in place for most of

1 the 80's. 1.1 is the plan that governed just the 1982

2 election. And 2 is the plan that governed the Wisconsin

3 elections '84 through '90. And you can see it's showing

4 a small -- it's on the left of the 0 line. It's on the

5 left hand of the graph. But again, the confidence

6 interval is wide and increases -- and envelopes 0. So

7 that's not a large or statistically meaningful efficiency

8 gap there.

9   The 3, now we're up to certainly the 90's; shows a

10 slightly larger point estimate. The red dot is slightly

11 further away from the 0 reference line. But again, the

12 confidence interval is wide and encompasses 0. But we

13 can see that plan we just talked about for the 00's at 4,

14 and that's down towards -- getting down towards the

15 bottom of the chart. And this time we've got a

16 statistically significant -- we can distinguish it from 0

17 at conventional levels; of statistical significance in

18 the sense that the confidence interval does not overlap

19 0. And again, it's on the left-hand side of the chart, a

20 negative average efficiency gap consistent with advantage

21 for the Republicans or an asymmetry favoring Republicans.

22   And then finally, and it's only based on two data

23 points, the efficiency gap from the '12 election and the

24 efficiency gap from the '14 election, but that's the red

25 bar indicated with five, so the fifth decade, if you

1   will, that my analysis spans. And as we just indicated,

2   that puts it among the more extreme asymmetry measures

3   that we've seen over again 40 odd years and 40 states

4   over 206 plans. We've got, what is it, the fourth or

5   fifth -- and there's no -- at this stage, there's no

6   indication. It's only based on two elections, but we're

7   quite confident that that's negative. It's going to stay

8   negative.

9   Q   On this chart that's up on the screen now, Exhibit

10 494, what do the points mean and what do the lines mean?

11 A   Yeah; right. So the point is the point estimate,

12 our best estimate of the average efficiency gap over the

13 life of the corresponding plan. So there are 780

14 elections -- 786 elections bundled into 206 plans and

15 each election's specific efficiency gap is an estimate

16 and comes equipped therefore with some uncertainty about

17 it and so too will any average of them. When I put five

18 of them together, say, over the course of a decade and

19 compute an average, that will come equipped with some

20 uncertainty as well. And it's just a conventional way of

21 demonstrating that uncertainty through something called a

22 95 percent confidence interval and that's what those

23 lines represent. So lines that don't touch 0 correspond

24 to plans for which -- as a statistical matter, we're

25 confident we're seeing something on one side of 0 or the

1 other.

2   Dots whose corresponding horizontal lines do touch

3 0, they are corresponding to plans where the average

4 efficiency gap is either they're estimated with

5 imprecision or there's a lot of within-plan variation for

6 that particular plan and we're not -- we can't

7 distinguish the average efficiency gap score from 0.

8 Q   What does a 95 confidence interval level mean?

9 A   That's a common term in statistics. It's a way of

10 trying to communicate through, quite simply, the range in

11 which we're confident a quantity lies. When that

12 quantity has come out of a statistical procedure, an

13 estimation procedure, that has some uncertainty about it

14 and 95 percent just means that we are 95 percent sure,

15 with probability .95, we think the estimate lies in the

16 indicated bound.

17   The point remains our single best estimate. The

18 bars merely are a way of trying to communicate

19 graphically that the range of uncertainty that

20 accompanies -- and again, 95 percent is a conservative

21 but conventional statistical standard for communicating

22 uncertainty.

23 Q   All right. I'm going to turn to partisan bias in

24 Wisconsin for a second. And I want to look at partisan

25 bias and efficiency gaps over time. Do you need some

1 water, sir?

2 A   Yeah.

3 Q   Okay. I'll wait. So I'd like to bring up Exhibit

4 329, but let me ask you while it's being brought up what

5 were the partisan bias scores for Act 43 in 2012 and

6 2014?

7 A   You can see that they're roughly negative 13 and

8 negative 12-and-a-half, in that neighborhood. That's the

9 second to last black dot. And roughly the same. Almost

10 the same score in 2014 as well.

11 Q   All right. Have you looked at the trend in partisan

12 bias for Wisconsin as it relates to the trend in the

13 efficiency gap? Is that what this shows?

14 A   Yeah. Indeed that's what this chart shows.

15 Q   Can you tell us very briefly so we can wrap this up

16 what this chart shows by way of trends?

17 A   Sure. The two quantities trend together quite

18 strongly, particularly in recent decades.

19 Q   All right. And what is the significant of that?

20 A   The significance of that is that we arrive at a

21 similar conclusion about the asymmetry in Wisconsin

22 redistricting plans, particularly the current plan,

23 irrespective of whether we use a measure like partisan

24 bias or the efficiency gap.

25 Q   Thank you. So finally, I want to talk about the

1 durability of the efficiency gap with respect to

2 Wisconsin's Act 43.

3   MR. HEBERT: And if we could bring up Exhibit

4 93, page four, Figure 2. I want to take you back to

5 that.

6 Q   So given Act 43's initial efficiency gap that you

7 testified of minus 13 percent, what does your sensitivity

8 testing tell us about the likely durability of Act 43's

9 pro-Republican advantage?

10 A   Well, at negative 13 we fall fairly and squarely

11 into the right-hand column of large efficiency gap scores

12 and absent a colossal, almost historically unprecedented

13 political earthquake, we're going to continue to see

14 negative efficiency gap scores under the current

15 Wisconsin plan.

16 Q   And let's take a look at Exhibit 83, page 17, which

17 is Figure 7 of your rebuttal report, and I ask you this

18 question: Given Act 43's initial efficiency gap minus 13

19 percent, what's the expected lifetime average efficiency

20 gap of that plan?

21 A   Well, this is again another relatively simple

22 graphing exercise. And so if we go to negative 13, which

23 is about here, we go up and over, you get in the

24 neighborhood of negative 10 percent as being the expected

25 lifetime average efficiency gap. Moreover, that negative

1 10, again just to talk about confidence intervals, we can

2 be -- that comes with a confidence interval that

3 comfortably does not envelope 0 and we can be virtually

4 certain on the basis of the historical relationship

5 between the first efficiency gap we see under the plan

6 and the lifetime average efficiency gap that given what

7 we've seen out of the Wisconsin plan, its 2012 efficiency

8 gap, that it will, left to run over its life, it will

9 produce a very large pro-Republican efficiency gap.

10 Q   So to conclude, how confident are you that Act 43

11 will exhibit a large and durable advantage in favor of

12 Republicans over the rest of the decade?

13 A   Virtually certain. Virtually 100 percent.

14 Q   In light of the data that you've described today,

15 how would you character Act 43 affects on Democratic

16 voters in Wisconsin?

17 A   It treats them unequally. To go back to the

18 seats-votes curve that we began with, their ability to

19 translate their votes into seats is not the same as

20 Republicans. Republicans are better to translate votes

21 into seats than are Democrats and by margins that are, in

22 a way, that relatively speaking is large relative to the

23 historical variation in asymmetry. An almost

24 historically unprecedented degree of asymmetry is being

25 presented by Act 43.

1 Q   You were in the courtroom yesterday when Judge

2 Ripple asked Professor Mayer why so many political

3 scientists use presidential votes when analyzing

4 elections. Were you there for that?

5 A   Yes.

6 Q   Can you talk -- is the validity of the presidential

7 vote as a measure of partisanship a topic that you've

8 written about in the scholarly work?

9 A   Yes, it is.

10 Q   Can you tell us about your article that you wrote on

11 that topic just briefly, what it measured?

12 A   Yes. So the goal of that was to -- what does -- how

13 might we measure partisanship at the district level given

14 that we can't run surveys in every district. There's a

15 limit to -- you know, we can't put a representative

16 survey in each state legislative district or each

17 congressional district, so how do we measure that? And

18 the answer is what we do observe are votes from those --

19 we observe all sorts of votes. We observe presidential

20 vote, we observe vote for the statewide office, we

21 observe vote for Congress, we observe vote for U.S.

22 Senate. And if you were to build a composite using all

23 those different votes we get from the different

24 elections, which is the single most strong -- what's the

25 strongest vote to use, if you had to pick one, not that

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1 you have to, you'd use a composite. But what dominates

2 that composite, and this is what my analysis discovered,

3 was presidential vote. It is the election that generates

4 the most interest, the highest turnout. It's held at the

5 same time. It's available when state-level officers

6 aren't. And it -- year after year, analysis after

7 analysis, it has that property. It dominates as a

8 measure of district-level partisanship other election

9 outcomes that might be available for analysis. And

10 that's why, if forced to choose just one, it's become

11 conventional political science to fall back on

12 presidential vote. But strictly speaking there's no need

13 to. One can use a composite, although the marginal

14 impact of using extra votes, other votes of the sort, I

15 said treasurer, attorney general, governor, other

16 statewide offices really piles once you've got

17 presidential vote in there.

18   JUDGE RIPPLE: If I may, does your research show

19 that there is, in fact, a correlation between voting

20 behavior for the presidency and voting behavior for

21 statewide offices?

22   THE WITNESS: Yes, absolutely there is. Yes.

23 And that's why the other offices are redundant to some

24 extent. That's why they add -- they don't add

25 particularly much. Once you've got presidential vote

1 there, you're essentially getting the same signal, just

2 diluted a little bit from those other offices. That's

3 not to say they don't have extra information, but you've

4 captured most of the signal about the district once

5 you've got presidential vote in your pocket. You don't

6 get much extra precisely because they are correlated.

7   JUDGE GRIESBACH: Can I? You use the 2012

8 presidential election, the re-election of the first

9 African American. His opponent was characterized fairly

10 or unfairly as a millionaire, a multi-millionaire with --

11 at war with women. And you kind of ignore three other

12 elections between 2010 and 2014 in which Governor Walker

13 wins significant. How do you -- why is the presidential

14 election a more accurate indication of partisan breakdown

15 in the state than the Governor election?

16   THE WITNESS: I'm going to be -- I want to be

17 very, very clear about the way presidential vote entered

18 my analysis. So at no point in my analysis did I equate

19 presidential vote with district-level partisanship. I

20 took it as an indication, but I only took it as that

21 indication when I was dealing with a state legislative

22 district that was uncontested. And what I did was I used

23 the observed relationship between state legislative

24 elections, actual election outcomes, and presidential

25 vote where I had both in order to make a prediction as to

1   what the state legislative election outcome might have

2   been had there actually been a Democrat/Republican

3   contest in that state legislative district. So at no

4   point was I engaged in the exercise, which I would not

5   recommend, of equating, you know, what would, you know --

6   an outcome in a hypothetical unobserved state election

7   contest with the presidential outcome. But what I would

8   use is to look at the statewide relationship between

9   Assembly vote and presidential vote with some adjustments

10   for incumbency in order to be on a firm foundation for

11   making an invitation as to what would have happened in a

12   particular district had, in fact, we observed a

13   Democratic/Republican contest.

14   So I hope that's clear, but at no point at least in

15   my analysis would I equate partisanship of the district

16   or what would happen, literally equate partisanship or

17   what would happen to state legislative outcome with what

18   we observed in the last presidential. At no point would

19   I do that.

20   JUDGE GRIESBACH: How does -- I mean the

21   analysis that you do is based entirely on a mathematical

22   calculation. It doesn't take into consideration issues

23   in a campaign or issues in -- and personalities. And

24   Wisconsin, as you know, we've discussed Act 10 yesterday,

25   but the 2012 and 2014 elections were very significant

1 elections in the state in which Act 10 and the battle

2 between the Republicans and the Democrats in our

3 Legislature played such a significant role. That kind of

4 actual factual event plays no role in your analysis

5 though. Should it? Or is there -- you know, does that

6 have no role at all?

7   THE WITNESS: My response to that would be to

8 fall back on the force of history; that I've presented an

9 analysis of efficiency gap scores from 41 states over 40

10 years where I'm sure there were factors at work in

11 those -- some of those elections as well; that were

12 election specific; that were one-offs that persisted for

13 an election or two. And that's why I subjected and

14 testified to how the relationship between that first

15 efficiency gap we see, or in general, a large efficiency

16 gap over that long run, over all the data frankly that's

17 available to us in the United States, how confident can

18 we be that on the basis of seeing that we're not seeing a

19 one-off, that you've seen a signal you can rely on. How

20 big an efficiency gap score do you need in order to make

21 that leap, to make that inference that you were not

22 seeing an election specific thing; that you've seen a

23 property of the plan. And that's what my analysis was

24 geared to answer. Because as I said, I'm sure that some

25 of these 786 elections had exactly some of the

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1 local-specific factors and year-specific factors in them

2 as well. But with averaging over all of that still and

3 day, that's in my analysis and is reflected in the

4 uncertainty that comes out.

5   You know, I can't predict with 100 percent certainty

6 what exactly the efficiency gap score will be in

7 Wisconsin under this plan if it's left to run. But what

8 I am confident in asserting is what side of 0 it will be

9 on, and my best guess would be about 10 percent. And I'm

10 close to 100 percent confident it won't on average be --

11 will turn around at the end of the decade and say you

12 know what? That plan turned out to actually have some

13 Democrat advantage in it based on the historical

14 relationship that I reported on. I attach essentially 0

15 probability of that happening.

16   JUDGE CRABB: That happening, being that the

17 Democrats would turn around and start winning is what

18 you're saying.

19   THE WITNESS: Absent a massive swing, absent

20 something approaching a 7, 8, double-digit point swing or

21 something like that that could overcome -- it's not that

22 the seats-votes curve doesn't get them to a majority in

23 the Legislature at some point, it's just that that's a

24 long way up the tree.

25   JUDGE GRIESBACH: This is a very interesting

1 year. It will be interesting to see what happens. This

2 may be throwing everything out the window as they say.

3 But thank you.

4   MR. HEBERT: If I may follow up on one point,

5 Judge Griesbach.

6 BY MR. HEBERT:

7 Q   Professor Jackman, just to follow up on that

8 question about actual issues and candidates, which is a

9 very good one I think. In a 2012/2014 efficiency gap

10 analysis you did for Wisconsin, that was based on actual

11 elections in Wisconsin, taking into account things like

12 the actual issues that were involved in candidates;

13 correct?

14 A   Yeah. I hadn't thought of it like that, but yeah,

15 that's right. I take those elections as I found them.

16   MR. HEBERT: All right. I have actually two

17 questions and I think we'll be ready for the break. And

18 I know --

19   JUDGE RIPPLE: Why don't we go with two

20 questions before we take a break.

21   MR. HEBERT: Now I'm limited to two questions.

22 I shouldn't have imposed that. I think I can do it.

23   THE WITNESS: So the pressure is on me to

24 keep --

25 BY MR. HEBERT:

1 Q   So we heard some testimony earlier today when

2 Mr. Keenan was cross-examining Dr. Mayer, testifying

3 about the data for the governor 06 column and errors in

4 that. Were you in the courtroom for that?

5 A   Yes, I was.

6 Q   Question No. 1. And he testified that you,

7 Dr. Jackman, had calculated a correlation between the

8 political composite that Ottman, Foltz, and Handrick used

9 in 2011 and a version of the composite that corrected the

10 data for the 06 column. And did you conduct such an

11 analysis?

12 A   Yes.

13 Q   All right. Let's bring up Exhibit 492 and if you

14 could explain to the Court what you found.

15 A   While it's coming up --

16 Q   We only have paper. I'm sorry.

17 A   Thank you. There it is. We got this. Well done.

18 Okay.

19 Q   Okay. If you could tell us what you did here.

20 A   I wasn't caught. I did hear the issues about that

21 column for the governor 06 results and how they produced

22 nonsensical percentages, in some cases wildly

23 nonsensical. And the question I asked myself was suppose

24 we simply recomputed the composite with the offending

25 column removed and what would you get. And so I was able

1   to do that, and that's shown on the horizontal axis and

2   resorting yet again to a scatterplot to show the

3   relationship between two variables. But the point is

4   it's similar to the point we just had about -- the

5   conversation we just had about when you've got multiple

6   indicators, there were -- I forgot -- there could have

7   been as many as 12 or 13 different things going in that

8   composite. So deleting one of them didn't especially

9   perturb the results that there's a strong relationship

10   between the two. And so the fact that there was one of

11   those columns that was contaminated, was bad data,

12   doesn't at all frankly disrupt the overall set of -- the

13   pattern of results at all. You can have the bad data in;

14   you can have the bad data out. The relation between the

15   two resulting composites is .999 and virtually they line

16   up and replicate one another. It's not that it was of no

17   consequence, but it was just of very little consequence

18   because the signal in that data was so strong from the

19   other elements that were going into the composite.

20   MR. HEBERT: And I managed to do it in two, even

21   though his answer probably took up more time than my

22   questions. During the break, Your Honors, we are

23   actually going to actually do that sensitivity testing

24   that you, Judge Ripple, asked about earlier for just

25   Wisconsin. We're going to give that to the other side

1   right now after Professor Jackman verifies that it's

2   correct and then maybe afterwards I can just open up with

3   just showing that and then I'll be finished.

4   JUDGE RIPPLE: We'll start there. And we'll see

5   everybody in about 15 minutes.

6   MR. HEBERT: Thank you.

7   (Recess   3:35-3:55 p.m.)

8   THE CLERK: This Honorable Court is again in

9   session. Please be seated and come to order.

10   JUDGE RIPPLE: Counsel, you can continue.

11   MR. HEBERT: Thank you, Your Honor. And this

12 will be a two-question conclusion.

13 BY MR. HEBERT:

14 Q   Professor Jackman, you mentioned that you had

15 carried out a sensitivity testing for Wisconsin

16 specifically as opposed to the country generally;

17 correct? I call up Exhibit 495. Is this the chart on

18 Wisconsin that you prepared?

19 A   That's right.

20 Q   Please explain it to the Court.

21 A   Okay. So this replicates the uniform-swing analysis

22 we were looking at earlier but only for Wisconsin in

23 2012. And what it does is it shifts statewide Democratic

24 share of the vote by as much as plus five points or down

25 by as much as minus five points and in steps of half a

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1 percentage point. And at each stage, I recompute the

2 efficiency gap had -- holding everything else constant

3 about 2012 but just shifting the district results up by

4 these amounts. And the actual 2012 result we got, of

5 course, is where the shift is 0, and that's in the middle

6 of the graph, when we see the efficiency gap estimate of

7 approximately negative 13. And, of course, the

8 efficiency gap, you can read those against the vertical

9 axis.

10   But the point of this is that as we move over a

11 large 10 points worth of swing, the efficiency gap

12 estimates never get anywhere near 0, which is the neutral

13 point by the way. We're all comfortably far into

14 negative pro-Republican territory and don't move around

15 much at all until you get outside the neighborhood of

16 about 2, two-and-a-half points worth of swing. You've

17 got to go out to 5 points of swing to see the magnitude

18 of the efficiency gap fall from what we observed,

19 negative 13 to the far left of the graph down to about

20 negative seven-and-a-half. But even then we're still

21 talking negative seven-and-a-half, which by historical

22 standards is still a reasonably, perhaps even a very

23 large efficiency gap score.

24   MR. HEBERT: Any questions on that, Your Honors?

25   JUDGE CRABB: I really don't understand how this

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1 is formulated. Why --

2   THE WITNESS: Okay. The question was how

3 confident can we be that we're seeing the result we

4 observed for Wisconsin reflects a systemic feature of the

5 redistricting plan and this is another attempt to answer

6 that question by, if you will, replaying the 2012

7 election multiple times. But each time we replay it, we

8 imagine that the Democrats did better, perhaps even a lot

9 better than they actually did or worse or perhaps even a

10 lot worse than they did. And under each of those reruns

11 of the 2012 election, we ask ourselves so what efficiency

12 gap score do we get? Remember, it's the same plan each

13 time; right? It's the same districts each time. All

14 we're doing is adding some -- imagining that the

15 Democrats did a little better to a lot better as we go to

16 the right of the graph, or a little worse to a lot worse

17 as we go to the left.

18   JUDGE CRABB: You're starting from the left?

19   THE WITNESS: The starting point is actually the

20 0 point. That's in the middle of the graph. That's the

21 election we actually got. And then the horizontal axis

22 tells us how far away from the actual 2012 result we're

23 going in. Now, it's indicated as proportions, but the

24 way to read it is actually as percentage points. Each

25 successive jump to the left or to the right is adding

1 half a percentage point statewide to how the Democrats

2 did relative to what they actually did indicated at the

3 middle of the graph. And the conclusion, right, is that

4 we don't start to see much movement in the efficiency

5 gap. The black dots are reasonably similar to one

6 another until we start to get out to the far left-hand

7 edge of the graph where we're imagining that the

8 Democrats did a lot worse and at which point the

9 efficiency gap starts to tear away. But this shows in a

10 nutshell the efficiency gap isn't particularly sensitive

11 or alternatively is quite robust to perturbations of the

12 2012 actual result.

13 BY MR. HEBERT:

14 Q   Maybe Judge Crabb had the same question I did which

15 is what do those dots represent starting out from 0? I

16 mean what are those dots supposed to show?

17 A   Each dot is an estimate of the efficiency gap. So

18 under an imagined or in one case a real scenario, the

19 real one being the one at the 0 point. And then as we

20 step away from 0, we're getting a different set of

21 election results and hence a different value of the

22 efficiency gap.

23 Q   So you adjusted the vote share up and down and then

24 plotted it along the other dots?

25 A   Yes.

1 Q   Okay.

2   MR. HEBERT: Does that make any sense? I hope

3 it does. All right. I have no further questions.

4 Mr. Keenan, if -- unless the Court continues. (4:01 p.m.)

5   MR. KEENAN: Would you mind just keeping this

6 up? I'll start here since I don't know that we have

7 this. Just keep it up and then we'll switch over --

8   MR. HEBERT: We emailed it to Mr. Keenan at his

9 request during the break when we verified it.

10   MR. KEENAN: I just don't think my paralegal has

11 it.

12   MR. HEBERT: We're happy to leave it up.

13   CROSS-EXAMINATION

14 BY MR. KEENAN:

15 Q   Good afternoon, Professor Jackman. So just to

16 explain, this is a sensitivity analysis and the dots are

17 the efficiency gaps, and when you run a swing analysis

18 and then calculate in an efficiency gap, a 1-point swing

19 to either way, you need to change more than 2 percent of

20 the seats in order to get a change in the efficiency gap;

21 right?

22   Maybe I'll put it another way. If you swing 1

23 percent down, say, and lose 2 seats, your efficiency gap

24 is the same; correct?

25 A   That -- I actually don't know how many seats changed

1 hands or I can't tell you.

2 Q   Yeah.   I wasn't meaning to say that this represented

3 the seats change.   What I'm saying is the efficiency gap

4 doesn't change -- the seats can change and the efficiency

5 gap might not change because if you stay along the same

6 distance away from the orange line, you're having the

7 same efficiency gap?

8 A   That's correct.

9 Q   Because the efficiency gap works by one point extra

10 in vote shares.   You're supposed to get two points extra

11 in the seat chair.   So if you run a uniform swing of one

12 point and add two seats, the efficiency gap actually just

13 stays the same; is that correct?

14 A   That's correct.

15 Q   So we can't tell from here who -- if the Democrats

16 would win a majority of seats or Republicans would lose a

17 majority of seats from this graph?

18 A   I would hazard that -- given the gaps are still so

19 negative, I'd almost -- I should resist making a

20 conclusion until I did the calculation.   But what I was

21 going to say, just given the magnitude of these

22 efficiency gaps, I'd be surprised if for the bulk of

23 these scenarios if we -- any of them saw the Democrats

24 actually getting a majority in the Legislature.

25 Q   All right.

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1   MR. KEENAN: We can take that down and switch

2   over to ours.

3   Q   We've put up your report, Exhibit 34. This is page

4   three, the intro where you lay out the things you're

5   going to do. You say the efficiency gap measure is a

6   "excess seats measure reflecting the nature of a partisan

7   gerrymander." That's correct; right?

8   A   That's what it says there, yes.

9   Q   Okay.

10   MR. KEENAN: So then we'll move to page 18,

11 Figure 4. Blow this up.

12 Q   And the -- I guess it's a orange line or yellow line

13 represents the 0 efficiency gap seats-to-votes curve,

14 although I guess it's really more of a line; is that

15 right?

16 A   That's right.

17 Q   And so what we see here is, this has the slope of 2

18 that I believe you've talked about with Mr. Hebert --

19 Hebert. Sorry.

20   MR. HEBERT: It's okay.

21 Q   And so this is the baseline seats-to-votes curve

22 against which plans are judged under the efficiency gap;

23 is that correct?

24 A   Well, that's not how I -- if the efficiency gap was

25 0, you would see -- and turnout was equal everywhere

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1 across districts, then election results would line up on

2 that curve.

3 Q   Okay. And so, for example, a negative 10 percent

4 efficiency gap could result if Democrats won 50 percent

5 of the votes but only 40 percent of the seats? We would

6 be --

7 A   That would give us -- we can just read off the math,

8 so that's the vote share.

9 Q   You would be right there with a 40 percent seat

10 share. They're 10 below the 50 percent where the yellow

11 line is and that's a 10 percent efficiency gap.

12 A   So just repeat the scenario. 50 percent of the

13 vote.

14 Q   Yeah. They're at 50 percent of the vote, so we go

15 down to the bottom to 0.5.

16 A   Yeah.

17 Q   And then we go up to --

18 A   Exactly. Then it's negative. I concede that.

19 Q   It's negative 10 because it's 10 below the yellow

20 line there.

21 A   The calculation is very simple when votes are at 50

22 percent, that's right.

23   MR. KEENAN: If we could go to page 44.

24 Q   You analyzed the changes in the efficiency gap over

25 time; correct?

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1   A   Yes.

2   Q   And you found that the distribution of EG measures

3   trends in a pro-Republican direction through the 1990's

4   such that by the 2000's EG measures were more likely to

5   be negative, which is Republican efficiency over

6   Democrats?

7   A   That's correct.

8   Q   Okay.

9   MR. KEENAN: We can go to the next page, Figure

10   20. And if we can blow this up.

11   Q   And you went over this chart on direct. You

12   remember?

13   A   Um-hmm.

14   Q   So here we have on the top is the 25th percentile,

15   we have the median in the middle, and then the 75 percent

16   percentile on the bottom; correct?

17   A   It's the opposite way.

18   Q   Sorry. I guess --

19   A   The median is in the middle though.

20   Q   So make sure I understand this correctly, the bottom

21   one is the 25th?

22   A   25th, 50th, 75th.

23   Q   All right.

24   MR. KEENAN: So if we could zoom in more, like,

25   on the lines. And then move down so we can see the

1 years.

2 Q   Now, the trend you see starts in the 1990's;

3 correct? And we see this in the mid 1990's where all the

4 lines start trending down; correct?

5 A   Yes.

6 Q   It starts right here. And you divided things up

7 into decades; correct? Because these districting plans

8 tend to be in ten-year chunks after each census; correct?

9 A   Usually.

10 Q   There's some exceptions, but so this 1990's period,

11 the elections stem from 1992 through 19 -- or 2000; is

12 that correct?

13 A   That's right.

14 Q   All right. And then this line here is 2000;

15 correct?

16 A   That's 2000.

17 Q   Now, this trend occurred during a time when

18 Republicans controlled a very few states in terms of

19 controlling the districting process; correct?

20 A   The Republicans controlled two out of the 40 odd

21 states in the analysis.

22 Q   In your analysis. Nationwide, I believe, they

23 controlled about 10 percent of the states; correct?

24 A   Yeah. They controlled two other states that did not

25 make it into my analysis.

1   Q   So the trend we see here wasn't caused at all by any

2   sort of partisan gerrymandering on behalf of the

3   Republicans; correct?

4   A   There's a couple things going on here. One is that

5   some of that trend we're seeing is this smoothness. It's

6   trying to draw a smooth curve between the 80's and the

7   2000's, so there is an extent to which some of that trend

8   is exaggerated by the smoothing out that I've employed

9   there. But nonetheless, it is the case that there is

10   some movement within, you know, within plans in a

11   pro-Republican direction over the course of the 1990's.

12   Perhaps not as much as this graph may lead us to believe

13   though.

14   Q   And then the median cross the 0 threshold about here

15   in the mid 1990's; correct?

16   A   That's correct.

17   Q   And ever since that time it's been below 0?

18   A   That's correct.

19   Q   And we see the highest point that it's ever reached

20   since then is right here in 2010; correct?

21   A   Um-hmm.

22   Q   And that was a wave year in favor of Republicans;

23   correct?

24   A   I know it certainly was at the level of US Congress.

25   Q   And in that 2010 year, that's when Republicans won

1 control of a lot of states; correct? And that's why

2 Republicans now control, I believe you say it's 40

3 percent of the states in terms of districting?

4 A   Yes.

5 Q   We also see the bottom line also jumped up in 2010;

6 correct?

7 A   It's -- there's a kink there. But remember the

8 elections that we then see after Republican control.

9 2010 was, right -- the elections were under the previous

10 plans. It's 2012 and 2014 are the elections that we see

11 under Republican -- conducted under maps that were drawn

12 with that higher level of Republican control. So it's

13 the last two columns of results reflect elections from

14 that set of elections.

15 Q   You have a lot of graphs and I can kind of estimate

16 where the point is, but I'd rather have you tell me so

17 that we're on the same page. If we're looking at -- the

18 median in the year 2000 --

19 A   Um-hmm.

20 Q   -- what's above the efficiency gap there?

21 A   Again, this is a little rough and ready, but I'm

22 going to say negative 2 percent, like a negative 3

23 percent.

24 Q   And then if we look at the median in 2012, what is

25 it there?

1   A   Negative 4 to negative four-and-a-half, something

2   like that.

3   Q   And then we go to 2014?

4   A   About negative 2 to negative 3.

5   Q   So it's about a same as it was in 2000?

6   A   You wouldn't be able to distinguish the two

7   statistically.

8   Q   Let's go to the 25th percentile in the year 2000.

9   What's the value there?

10 A   The 25th percentile is there. That's about negative

11 8.

12 Q   So that's -- I don't know whether to say above or

13 below, but greater than the constitutional threshold you

14 said?

15 A   That I recommend.

16 Q   Correct. And then what's the 25th percentile here

17 in 2012?

18 A   About the same.

19 Q   Okay. And in 2014?

20 A   About the same --

21 Q   If we could turn to Exhibit 83 of your rebuttal

22 report.

23   MR. KEENAN: And we'll look at page 17 which is

24 -- I'm sorry. I'm sorry. 18. If we could blow up this

25 bottom paragraph. Maybe we should skip ahead to the next

1 page here. We'll come back to this. Next page. Okay.

2 Blow up this diagram here.

3 Q   This is something you went over with Mr. Hebert, do

4 you recall? And this shows --

5 A   Yes.

6 Q   -- the solid line shows the actual efficiency gaps

7 and then the dotted line shows like an adjusted

8 efficiency gap that you calculated when readjusting for

9 party control; correct?

10 A   That's correct.

11 Q   Okay. And you adjusted back to the party control

12 that existed in the 1990's?

13 A   That's correct.

14 Q   Okay. And in the 1990's nationwide, the Democrats

15 controlled 30 percent of states?

16 A   That's correct.

17 Q   And then the Republicans controlled 10 percent of

18 states?

19 A   That's correct.

20 Q   And then neutral bodies, commissions or bipartisan

21 controlled 60 percent?

22 A   It divided government commissions or courts

23 controlled 60 percent, yes.

24 Q   Okay. And then in the 2000's that changed to where

25 Democrats controlled 20 percent of states; correct?

1   A   Redistricting plans.

2   Q   Redistricting plans. And the Republicans controlled

3   20 percent of redistricting plans?

4   A   15 percent for Democrats in the 2000's.

5   Q   Okay. And then what was Republicans?

6   A   It's 20 versus 15 Republicans versus Democrats.

7   Q   And the rest would be the neutral commissions;

8   correct?

9   A   Yeah.

10 Q   And would that be like 65 percent then?

11 A   Well, divided government.

12 Q   Correct.

13 A   Commissions or courts.

14 Q   And so what you did to adjust the solid line and the

15 dot we see for the 2000's to the square on the dotted

16 line that we see for the predicted is take that 20

17 percent Republican, 15 percent Democrat and 65 percent

18 nonunified, we'll say, and adjust it back so now the

19 contributions would be 30 percent Democrat, 10 percent

20 Republican and 60 percent nonunified.

21 A   That's essentially correct, yes.

22 Q   Okay. And that shows that even if Democrats control

23 30 percent of districting, Republicans 10 percent, and

24 the rest with nonunified, we'd have this efficiency gap

25 of about negative one-and-a-half?

1 A   Yeah, you essentially restore the status quo.

2 Exactly.

3 Q   But in the actual -- when the Republicans had

4 slightly more states, it was negative 2?

5 A   Right.

6 Q   And then when we move forward to the 2000's, the

7 actual -- why don't you tell me what the actual

8 distribution of party control is in the 2010's?

9 A   It's 40 percent of plans were designed by

10 Republicans and 20 percent by Democrats and the rest in

11 that catch-all category, 40 percent were in that

12 catch-all divided government, commissions or courts.

13 Q   Okay. And then what you did is recalculate the

14 efficiency gaps, assuming that instead of that

15 configuration we went back to 30 percent Democrat

16 control, 10 percent Republican control, and 60 percent

17 nonunified control?

18 A   Yeah, that's right. The distribution we had back in

19 the 1990's.

20 Q   So if Democrats controlled 30 percent of plans,

21 Republican only 10 percent of plans and nonunified had 60

22 percent of plans, the efficiency gap would be slightly

23 closer to -- maybe like negative .9 or something like

24 that?

25 A   Something like that, yes.

1 Q   Okay. Now, if geography were neutral, wouldn't you

2 expect that -- wouldn't Democrats control 30 percent of

3 plans, Republicans control 10, and nonunified control 60

4 percent that you'd actually have a positive efficiency

5 gap because Democrats are able to control more

6 districting?

7 A   A couple things to remark about that. Neutral plans

8 designed under that other body in that catch-all other

9 category tend to have a slight small but slight

10 pro-Republican direction. And the other thing is that

11 the party averages, if you will, the typical efficiency

12 gap you see under Democratic-drawn map verse the

13 typically efficiency gap you see under a Republican map

14 aren't quite symmetric. There's a slight tendency for

15 efficiency gaps for maps that came out of

16 Republican-controlled processes to be slightly larger

17 than those. So that's why it doesn't quite fall all the

18 way back to 0.

19   MR. KEENAN: If we could go back to the original

20 report, Exhibit 34 at page 45, what we were on. This is

21 the national or the trend across all states.

22 Q   And in Wisconsin in the 90's and 2000's, there was a

23 similar trend to this one seen across all states, wasn't

24 there?

25 A   Yes.

1   Q   Okay.

2   A   Well --

3   Q   If we go to page 72.

4   A   Yes.

5   Q   All right. In this chart -- which figure is this?

6   Can we move down?

7   A   34.

8   Q   Figure 34 -- Figure 35. This shows your

9   calculations of the efficiency gap in Wisconsin through

10   the entire dataset from 1972 through to 2014; correct?

11   A   That's correct.

12   Q   And what we see here is there's a line at 0.00 and

13   that's obviously 0; correct?

14   A   That's right.

15   Q   And then we have some lines at like .05 and negative

16   .05. Your graphics are often in proportions. In my

17   deposition I always refer to percents so the .05 is 5

18   percent; correct?

19   A   That's correct.

20   Q   And then we also -- you have lines for negative 10

21   percent and negative 15 percent. And then the dot we see

22   for each year, that's your point estimate of the

23   efficiency gap; correct?

24   A   That's correct.

25   Q   And then the line we see, on either side of that is

1 the confidence interval?

2 A   Correct.

3 Q   And then the confidence intervals have different

4 sizes. The confidence interval -- I guess those lines

5 are longer for elections when there's more uncontested

6 races; is that correct?

7 A   That is correct.

8 Q   Because that generates more uncertainty in your

9 calculations and therefore less confidence in that point

10 estimate?

11 A   That's correct.

12 Q   So we looked at a summary chart with Mr. Hebert of

13 the average efficiency gaps seen in the plans over the

14 decades. Do you recall that? And the 70's plan, the

15 80's plan, the 90's plan, the 2000's plan and the 2010's

16 plan. We see from 1972 through 1996, we see the

17 efficiency gaps generally range -- they're always within

18 5 percent either plus or minus; correct?

19 A   Correct.

20 Q   I guess one of the confidence intervals maybe

21 extends beyond that, but the point estimates are within 5

22 percent?

23 A   Yes.

24 Q   Now, this was during a time frame when the 70's and

25 80's -- at least at 70's and 80's and 1990 the Democrats

1 always had the majority in the Assembly; correct?

2 A   Yes.

3 Q   And they had seat shares in the high 50's and 60's

4 during this time frame.

5 A   I'd have to check my original data, but I believe

6 so.

7 Q   Okay. And then the last positive efficiency gap

8 we've seen in Wisconsin is 1994 and that one is right

9 here; correct?

10 A   The point estimate is positive, but we wouldn't --

11 would not -- we're reasonably confident that's positive,

12 but the 95 percent band does overlap 0.

13 Q   Okay. And this election in 1994 was when the

14 Republicans gained control of the Assembly for the first

15 time since the 1960's? Are you aware of that?

16 A   I wasn't aware of that.

17 Q   Okay. And then the next election we see an

18 efficiency gap right around 0? Do you see that?

19 A   Yes.

20 Q   Okay. And then in 1998, from then on Wisconsin has

21 been unambiguously negative in its efficiency gaps which

22 means that not even the confidence intervals extend to

23 the other side of 0.

24 A   That's correct.

25 Q   Okay. And if we see -- the efficiency gap closest

1   to 0 after 1996 happened in 2010, right here; correct?

2   A   That's correct.

3   Q   And so that was the same that we saw with the

4   national data; correct?

5   MR. HEBERT: Object to the form of the question.

6   MR. KEENAN: To the data for all states that we

7   just looked at?

8   JUDGE CRABB: I didn't understand that.

9   MR. KEENAN: Sure.

10 BY MR. KEENAN:

11 Q   You recall we looked at the graph with the three

12 blue lines for the median, 25th percentile, and 75th

13 percentile figure?

14 A   30 something.

15 Q   Exhibit -- it's page 45. I have it written down.

16 A   Yes, I have it.

17 Q   And we saw that for the median, it was 25th, the

18 years closest to 0 since 1996 were in 2010. Do you

19 recall that?

20 A   Yes.

21 Q   And so if we go back to Wisconsin --

22   MR. KEENAN: I guess I've got to clear this. It

23 doesn't make sense anymore.

24 Q   The efficiency gap that is closest to 0 is 2010.

25 A   In recent years.

1 Q   Okay. Now, you went through some averages of the

2 plans over time and there was an average of the 1990's

3 plan that was about negative two-and-a-half or so? Do

4 you recall that?

5 A   That's right.

6 Q   Now, that average is two-and-a-half because it's

7 made up of three-point estimates up here and two down

8 here; correct?

9 A   That's right. They're the five points that went

10 into the average.

11 Q   So then we get an average right here. But from 1998

12 on, we've seen unambiguous and negative efficiency gaps

13 in Wisconsin in every election; correct?

14 A   That's correct.

15 Q   That's through seven elections that were conducted

16 in the court-drawn plans: 1998, 2000, 2002, 2004, 2006,

17 2008 and 2010; correct?

18 A   I wasn't aware that '98 was a different plan to --

19 you said seven court-drawn --

20 Q   Seven elections over two court-drawn plans.

21 A   Oh, right. Yes. It's the 90's plan, yeah.

22 Q   And if we look at the latest plan, we see this was

23 about the negative 13 you talked about; correct?

24 A   That's correct.

25 Q   And then this is about negative 10 right here?

1 A   That's correct.

2 Q   Okay. And so under the previous court-drawn plan we

3 had 2004, which was a negative 10 right here; correct?

4 A   That's correct.

5 Q   And the reason this was negative 10 was because the

6 Republicans got 60 seats on 50 of the votes; correct?

7 A   I'd have to check the original data.

8 Q   Okay. And then we see a negative 12 here in 2006?

9 A   That's right.

10 Q   And that's because the Democrats got 54 percent of

11 the votes but couldn't actually get to a majority of the

12 seats. And I can --

13   MR. KEENAN: We can go to the stipulated facts.

14 Paragraph 255 maybe. Okay. Blow up 253 and 254.

15 Q   These are stipulated facts and I have to say that

16 they're not quite as precise as what your R code would

17 have, but it's my grounding version of it. And so that

18 in 2004, the Democrats seat share was 40 percent rounded.

19 You calculated an EG of negative 10, so we can tell that

20 the Democratic vote share was 50 percent. Do you see

21 that?

22 A   Yes, I see it.

23 Q   Okay. And then in 2006 the Democrat seat share was

24 47.5 percent and their vote share was 54.75 and that

25 yielded an EG of negative 12. Do you see that?

1   A   Yes.

2   Q   Okay. And then we see the same trend we saw in

3   Wisconsin and then also in the data for all states and

4   some other similar individual states.

5   MR. KEENAN: Let's look at Exhibit 34 at page

6   34. And we'll have to blow this up. Why don't we focus

7   in on Minnesota and Missouri here in the middle. Blow

8   those up. All right.

9   Q   So this graph -- these graphs I should say represent

10 your calculations for the efficiency gap in several

11 different states; correct?

12 A   That's correct.

13 Q   Okay. And so you see the name of the state at the

14 top here and then the blue square is your point estimate

15 for the efficiency gap; that's correct?

16 A   That's correct.

17 Q   Okay. So if we look at Minnesota.

18 A   Yes.

19 Q   So this is the 1990's -- 1990 line. And we see that

20 since 1996, Minnesota has had negative point estimates

21 with the exception of these two years that are slightly

22 positive; correct?

23 A   Yes.

24 Q   And Minnesota was districted by a commission in each

25 of these decades; correct?

1   A   I'd have to consult my data to verify that.

2   MR. KEENAN: Can we go over to the next one,

3   Missouri.

4   Q   This is 1990. And we see in the 1990's point

5   estimates there are negative but just slightly negative;

6   correct?

7   A   That's what it says.

8   Q   And starting in 2000 we see consistently negative

9   point estimates; correct?

10   A   Yes.

11   Q   We see a few of them that are actually like negative

12   10 here; correct?

13   A   I see them, yes.

14   Q   And Missouri was districted by the commission in the

15   2000's and the 2010's; correct?

16   A   I'd have to consult my data to verify that.

17   MR. KEENAN: If we go to page 55.

18   MR. HEBERT: What exhibit are we referring to?

19   MR. KEENAN: 34. The same exhibit,

20   Mr. Jackman's report. You can blow up this chart at the

21   top here.

22   BY MR. KEENAN:

23   Q   And this chart represents the list of plans that you

24   found to be unambiguous as to sign; is that correct?

25   A   That's correct.

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1   Q   And that means that every election of the plan was

2   either positive or negative without any of the confidence

3   intervals extending to the other side of 0.

4   A   It's even stronger than that. It's not just a 95

5   percent confidence interval didn't extend to the other

6   side, it's a 100 percent confidence interval didn't

7   extend to the other side.

8   Q   Thanks for the clarification. And if we see here 16

9   of these 17 are negative -- unambiguously negative and

10   then we have one that's unambiguously positive; is that

11   correct?

12   A   That's correct.

13   Q   And then one unambiguously positive is way at the

14   bottom. It's Florida from the 1970's; that's correct?

15   A   That's correct.

16   Q   And if we look at -- on this chart is Wisconsin from

17   the prior plan; correct?

18   A   That's right.

19   Q   And this shows that the range of efficiency gaps

20   under the last plan was -- the closest to 0 was way on

21   the right, negative 0.39, about negative 4, and then the

22   lowest, so to speak, was negative .118 which is about

23   negative 12; correct?

24   A   That's correct.

25   Q   And the average was negative 7.6?

1 A   That's correct.

2 Q   That plan was drawn by a court; correct?

3 A   As I understand it, yes.

4 Q   And actually several of these plans were drawn by

5 either courts or bipartisan plans; correct?

6 A   That's correct.

7 Q   And from this though, we know that having

8 unambiguously -- a plan that is unambiguous as to sign

9 does not necessarily prevent the party that's

10 disadvantaged from gaining control of the Legislature?

11 A   No.

12 Q   Because Wisconsin, we saw that in 2006, there was a

13 negative efficiency gap, but the Democrats still managed

14 to win a majority of seats in the Legislature.

15   MR. HEBERT: Your Honors, I believe -- excuse

16 me. Your Honors, I believe counsel may have misspoken.

17 I thought he said 2006?

18   MR. KEENAN: Yeah, 2008. I'm sorry.

19   THE WITNESS: Would have been surprised. But

20 with a big enough swing, you can -- a party can overcome.

21 But, you know, there isn't any -- what we're measuring

22 here is the asymmetry. It's not an impossibility result,

23 it's an asymmetry result.

24 BY MR. KEENAN:

25 Q   And this would probably be a good point to jump into

1 the threshold that you determined. You picked the

2 negative 7 threshold because at that level you were

3 confident that the plan would not produce an election

4 that had an efficiency gap of the opposite sign; correct?

5 A   That was one of the criteria I used for assessing

6 the threshold, yeah.

7 Q   So, for example, like if Wisconsin had a negative 7

8 election in the first election, negative 7 EG in the

9 first election, we wouldn't expect to see a positive EG

10 in one of the other elections that followed?

11 A   Typically, no.

12   MR. KEENAN: If we could go to page 57 of 34.

13 We can -- if you could --

14 Q   Okay. Do you have your report in front of you,

15 Dr. Jackman, as well?

16 A   Yes.

17 Q   If you could -- so if you could explain what this

18 chart represents.

19 A   Just bear with me one second. Figure 34 -- could

20 you repeat?

21   MR. KEENAN: What's the figure number here?

22 Q   27.

23 A   Thank you. Okay. So this is one of many such

24 charts I produced and this particular one is a prelude to

25 settling on the threshold that I recommended. But two

1 quantities are plotted here. Remember that 0 is the

2 neutral point where we have partisan symmetry. And as we

3 go to the left across the graph, we're getting

4 increasingly pro-Republican levels of the efficiency gap.

5 And as we go to the right, we're getting increasingly

6 pro-Democratic levels of the efficiency gap.

7   Across the grid of values, of efficiency gap values

8 shown on the horizontal axis I compute two quantities.

9 The quantity shown in blue is the proportion of plans

10 that have an efficiency gap -- one or more efficiency gap

11 scores at least as extreme as the value shown, and as you

12 expect, that -- the blue quantities tail away as we

13 consider more and more extreme varies of the efficiency

14 gap, the proportion of plans that present such an extreme

15 value kind of naturally by definition tends to tail away.

16 That's the quantity in blue.

17   The quantity in red is a second probability. It's

18 saying okay, conditional on having tripped that

19 threshold, what's the probability that some other point,

20 either before or after the election that tripped the

21 threshold that we, under the same plan, seen an

22 efficiency gap measure with the opposite sign. So that

23 is, you'd get an efficiency gap, say, bigger than -- I

24 don't know, just pick a point, more extreme, more

25 negative than negative 10. What's the probability of

1 that event. But conditional on that event, what's the

2 probability that you then see an efficiency gap in the

3 same plan but with the opposite sign. And that's what

4 the quantity in red is presenting.

5 Q   And to be clear, this denotes the proportion of

6 plans that have an EG in any election under the plan;

7 correct?

8 A   Yeah, not just the first.

9 Q   Not just the first. So if we wanted to -- if

10 someone wants to look at this chart and figure out how

11 many -- what proportion of plans had exhibited an

12 efficiency gap in at least one election of a particular

13 value, what you would do is find where the blue dot is to

14 the left in the negative and then also go to the blue dot

15 on the positive and you have to add those together;

16 correct?

17 A   This is where I need to be careful. Are we ever

18 going to get to a point where we're going to be -- I'm

19 not sure that's quite right.

20 Q   Okay. I mean I guess if we were at like the

21 negative 7 level or the negative 10 level, somewhere

22 around where your threshold is, would we be able to do

23 that?

24 A   I can help you out. The proportion of plans that

25 exceed -- have an efficiency gap even just 1 -- actually

1 the proportion of efficiency gaps greater than the

2 threshold is 26 percent. That's not the proportion of

3 plans, that's just the proportion of how much of the data

4 lies of the total distribution of efficiency gap measures

5 lies, you know, above or below plus or minus 7 percent.

6 Q   Okay. And that's all elections?

7 A   Yes, that's not all plans. I've only got that

8 information for the first plan, but we could read it off

9 this chart.

10 Q   Okay. And then the red dot would show -- for

11 example, if we look at negative five just because it's on

12 a line here, it shows a blue dot at about 42 percent or

13 something, and that means there's 42 percent of plans

14 that have had at least one election that's negative five

15 or to the left; correct?

16 A   That's correct.

17 Q   And of those plans, the red dot shows that 40

18 percent of those plans actually did go on and produce an

19 election with a positive EG?

20 A   That's correct.

21 Q   Okay.

22   MR. KEENAN: If we could move on to Exhibit 30

23 or Figure 28, which is the next figure.

24 Q   Now, this is basically a rerun of the chart we just

25 saw except this is limited to the plans from the 1990's

1 to today; correct?

2 A   That's right.

3 Q   But the concepts work exactly the same; that's

4 right?

5 A   That's right.

6 Q   Okay. Now, you did two different charts because you

7 saw differences in the data when looking at the whole

8 time frame and then also then from the 90's forward?

9 A   Yeah. In particular some of the -- you saw some

10 extremely large efficiency gap measures in the 1970's,

11 particularly from some very noncompetitive southern

12 states and they sort of fade away under the sort of more

13 like cases to subset the analysis to 1991 to the present.

14 Q   And this plan shows an asymmetry, correct, with

15 respect to the positive efficiency gaps and the negative

16 efficiency gaps?

17 A   That's right.

18 Q   And what that shows is there's actually fewer plans

19 that trip the positive thresholds because this blue line

20 here is lower than this blue line here; correct?

21 A   That's correct.

22   JUDGE CRABB: You mean the red line?

23   MR. KEENAN: No, the blue line.

24   JUDGE CRABB: The blue line on the right is

25 lower than the blue line on the other side.

SIMON JACKMAN - CROSS

1 BY MR. KEENAN:

2 Q   So for example, that .5 percent, there's only like

3 28 percent of plans that would trip that threshold;

4 correct?

5 A   Yeah, that's correct.

6 Q   But then add the 5 percent negative, we're at like

7 half of plans; correct?

8 A   That's correct.

9 Q   Okay. But we also see the red line is well above --

10 on the positive side on the right here is well above the

11 red line on the left negative side; correct?

12 A   That's right.

13 Q   And talking about the red line on the right here,

14 this shows that those pro-Democratic efficiency gaps can

15 be rather fleeting because a large proportion of them

16 actually do flip signs to the positive or to the negative

17 in favor of the Republicans?

18 A   That's right.

19 Q   Okay. But it's the opposite on the Republican side.

20 The negative efficiency gaps are much less likely to flip

21 in favor of the Democrats; correct?

22 A   They're both more prevalent and more durable.

23   MR. KEENAN: If we could go to Figure 29 is the

24 next figure.

25 Q   You said there's a series of these charts. This is

1 the next in the series; correct? And this one works the

2 same as the ones we've seen before, but this is -- the

3 blue dot is about just the first election in the plan;

4 correct?

5 A   That's right. Now we're looking at what's the first

6 efficiency gap we observe under the plan.

7 Q   And your report talks about a threshold that's

8 conditioned on the efficiency gap we see in that first

9 election; correct?

10 A   That's correct.

11 Q   Okay. And so if we want to determine the number of

12 plans that would trip a particular threshold or at least

13 have tripped that threshold in the past, what we would do

14 is look at the blue dot at whatever particular threshold

15 we were looking for? For example, at negative 10 we see

16 just under 10 percent; correct?

17 A   Yes.

18 Q   And then we'd have to also look at the positive side

19 though too; correct?

20 A   If you wished, you could look at the positive side

21 as well.

22 Q   And there is about 9 percent over there as well?

23 A   That's right.

24 Q   And these -- these blue dots are mutually exclusive,

25 correct, because each plan only has one first election?

1   A   That's correct.

2   Q   Okay. All right. And then the red dots are the

3   same in which that's a proportion of plans that would go

4   on and produce an EG of the opposite sign?

5   A   Remember, you're conditional on meeting that first

6   subset down to that. So having tripped the indicated

7   threshold, then of that set how many -- what proportion

8   go on to flip back.

9   Q   And if we were to use a negative 10 threshold, the

10   red dot would actually represent false positives;

11   correct?

12   A   The red dots would be false positives. Let me

13   check. That's a question. Let me remind myself. The

14   red dots are -- they've tested positive, but they're

15   actually -- that's right, they're false positives.

16   Q   Okay. So at the 10 percent, you're seeing about

17   maybe -- the red dots at about 12 percent or so? So 12

18   percent of the plans that trigger the threshold would be

19   false positives; correct?

20   A   Actually I have the false positive on my computer.

21   I can -- yes, that's about right. Yes.

22   Q   And we see here there's also an asymmetry because

23   the red line on the right here shows that Democratic

24   plans, even the pretty high efficiency gap ones are much

25   more likely to flip side than the high Republican

1 efficiency gaps over here; correct?

2 A   Actually I think I misspoke before. I think we're

3 referring to the false discovery route would be the

4 technical way to refer to proportional cases testing

5 positive. They're actually negative, if I recall.

6 That's the false discovery route, just to clear up the

7 nomenclature. But sorry, could you repeat your question?

8 Q   Sure. The red lines on this graph also represent an

9 asymmetry because we see the pro-Democratic plans on the

10 right here are much more likely to flip positive than the

11 high Republican efficiency gaps on the left?

12 A   That's right. The plans that begin life showing an

13 apparent pro-Democratic advantage are much more likely to

14 flow -- give us the contrary signal -- a contrary

15 message, a contrary value of the efficiency gap over the

16 life of the plan.

17 Q   And so we have the red points, but we also have the

18 red lines on the side -- up and down from the points?

19 Those are the confidence intervals; correct?

20 A   Yes. And they're wide precisely because relatively

21 few cases are tripping that threshold and we don't have a

22 lot of confidence as to what happens conditional and

23 having tripped that threshold, and that explains why

24 there's a lot of uncertainty as to plans with respect to

25 apparent Democratic advantage.

1   MR. KEENAN: And if we could just go to Figure

2 30 then. We'll go to the last one of these. Back up.

3 Q   Now, Figure 30, this is an identical chart to the

4 one we just looked at except this is just for the 1990's

5 forward; correct?

6 A   That's correct.

7 Q   Okay. And we see the same asymmetry that we've seen

8 before in that there's more plans that are tripping these

9 negative thresholds than the positive thresholds;

10 correct?

11 A   That's correct.

12 Q   And then we also see that the Democratic plans are

13 much more likely to flip negative and the Republican

14 plans are likely to flip positive?

15 A   Yeah. Although I think the more appropriate

16 conclusion is we don't really know much about what

17 happens to pro -- because (a) there are so few of them.

18 So indeed the far right of the graph, it's -- there's

19 almost no data and that's why the bounds on the red

20 essentially span 0 to 100 percent.

21 Q   These are the -- like over to the far right of the

22 blue dots; correct?

23 A   Where the plan opens up showing very, very strong

24 Democratic advantage.

25 Q   There just aren't enough of them for you to have

1 confidence in the red dot there.

2 A   It's very difficult to predict because of their

3 instability and because of their paucity as to what will

4 actually occur.

5 Q   You did a uniform-swing analysis, correct, for some

6 sensitivity testing?

7 A   That's correct.

8 Q   Okay. And when you did your uniform-swing analysis,

9 you took, for example, the 2012 election in a state and

10 then swung that election a number of points up and down;

11 correct?

12 A   That's correct.

13 Q   You didn't take that election and then add an

14 incumbency advantage anywhere and then do your uniform

15 swing, did you?

16 A   The incumbency advantage was baked in, if you will.

17 To the extent the election results themselves were the

18 consequence of incumbency advantage, so too were

19 simulated elections that are generated.

20 Q   And the swing was operated off of that baseline --

21 A   Yeah.

22 Q   -- correct?

23   MR. KEENAN: What's the exhibit number of the

24 data -- the analysis you did of the faulty spreadsheet

25 data with the governor 06 total?

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1   MR. HEBERT: 495.

2   BY MR. KEENAN:

3   Q   Okay. I just want to make sure I understand what

4   this is. So you compared the composite with the

5   erroneous data? That's the vertical axis there?

6   A   Correct.

7   Q   And then you compared it to the composite taking out

8   all information related to that governor 06 column that

9   had an error?

10   A   It's literally computing an average with 13 numbers

11   for each district and then computing an average for each

12   district, the 12 numbers where the missing number was

13   that bad column you identified.

14   Q   Okay. So I just wanted to be clear that this

15   horizontal column is not going back and correcting the

16   results of that '06 election?

17   A   No. That would be more heroic than I certainly had

18   time for here.

19   MR. KEENAN: Apparently this is an Exhibit 492.

20   If we could put up Exhibit 125. This is a plaintiffs'

21   exhibit. It would not have been in my outline. This is

22   the -- so while we're getting it up, this is the

23   comparison of the plans that had no uncontested races

24   with the simplified method and the full method. Here we

25   have it.

1 Q   In looking at this, I see that one, two, three, four

2 -- there's ten series of elections here; correct? Or

3 nine?

4 A   No, three House and six Senate.

5 Q   I miscounted. So there's nine. And eight of them

6 are from Michigan; correct?

7 A   That's correct.

8 Q   And so we do know that there's -- what this would be

9 with respect to Michigan and then one election in

10 Minnesota. We don't have data from any other states;

11 correct?

12 A   No.

13 Q   And then looking at that top line there, it says the

14 full method is negative 6.7 percent and so the simplified

15 method is negative 7.5 percent; correct?

16 A   Correct.

17 Q   So we have a value there that's on both sides of

18 your proposed threshold; correct?

19 A   Yes.

20 Q   Okay.

21   MR. KEENAN: I have no further questions.

22   JUDGE RIPPLE: Thank you, sir. Redirect.

23   MR. HEBERT: Just a little bit, Judge. Thank

24 you. (4:58 p.m.)

25

SIMON JACKMAN - CROSS

1

2   REDIRECT EXAMINATION

3   BY MR. HEBERT:

4   Q   I want to discuss first some of the

5   cross-examination by Mr. Keenan regarding the 2000's

6   maps. Mr. Keenan mentioned the average efficiency gap of

7   Wisconsin's 2000's map. How does the average efficiency

8   gap of Act 43 compare to those of the -- that of the 2000

9   map?

10 A   The average of the 2000's is around about negative

11 7, negative 8 percent. And right now the two elections

12 we're seen under Act 43 have produced an average of about

13 -- well, it's the average of negative 13, about negative

14 10. So about negative eleven-and-a-half. So we're four

15 points, three to four points more pro-Republican than the

16 average of that previous plan.

17 Q   Mr. Keenan also mentioned with regard to the 17

18 unambiguously signed plans, do you remember those

19 questions?

20 A   Yes, I do.

21 Q   Mr. Keenan mentioned that the 17 plans with

22 unambiguously signed efficiency gaps listed in your

23 original report, which is Exhibit 34 at Table 1, do you

24 claim that those plans were designed with a partisan

25 intent in any way?

1 A   No. I've got nothing to say about intent.

2 Q   Do you claim that those plans exceed any efficiency

3 gap threshold?

4 A   No. And indeed more than one or two of them do not.

5 Q   And lastly on that point, do you claim that any of

6 those plans were unjustified by legitimate or traditional

7 factors?

8 A   I have no opinion on that.

9 Q   Now, let's talk a little bit about the sign flip

10 questions. Mr. Keenan brought up an analysis in your

11 original report involving likelihood of the efficiency

12 gap flipping signs over the lifetime of the plan;

13 correct?

14 A   Correct.

15 Q   Okay. Now, what is your opinion of the stringency

16 of that approach to setting an efficiency gap threshold?

17 A   Yeah. So as I did my initial report, I deliberately

18 asked myself -- you know, asked what's the strongest test

19 I could think of on the stability question and that is

20 asking not just what the expected behavior of the

21 efficiency gap will be over the life of a plan, but to

22 ask do I hold it to the highest standard I could think of

23 at the time. And that was would you ever see it change,

24 throw off an election result with a different sign and

25 that's a much higher bar for a diagnostic test to cross.

1   Subsequently I've looked at other measures of

2 stability in the efficiency gap. In particular, I

3 testified about the ability to predict the average value

4 of the efficiency gap over the life -- not just whether

5 you'll see an election with a different sign, but the

6 long-run average efficiency gap score over the life of a

7 plan. And the news there is that the proposed threshold

8 of plus or minus 7 is completely in -- it files one time.

9 1 out of 206 times do you see a plan begin life with an

10 efficiency gap score of -- tripping the threshold of 7

11 points, then go on to have an average on the other side

12 of 0 than the signal we originally got from the first

13 election.

14   So with respect to the average efficiency gap over

15 the life of the plan, the proposed threshold of plus or

16 minus 7 I think is incredibly reliable. It has a success

17 rate of 205 out of 206. Or we could actually even put to

18 one side the 50 odd plans that are currently in operation

19 and call that 1 out of 150. Still an extremely

20 impressive success rate.

21   The sign flipping analysis I think holds the

22 proposed threshold to a much much higher standard, and in

23 fact, I can't think of a more stringent one frankly. But

24 that was my first impulse, to stress test this new

25 measure that had come through the literature to the

1 hardest test I could think of, and by the time we were

2 pushing out to minus 7's and minus 8's or positive 7's

3 and positive 8's, those extreme values, we see that our

4 ability to -- it's not surprising that you get the test

5 -- it fails now and then, but nonetheless I was still

6 impressed with the performance of the measure of that

7 threshold and I was comfortable recommending it as a

8 threshold in my first report and would buttress that with

9 the analysis of the long-run average over the life of the

10 plan where the performance of the threshold is as solid

11 as anything I was worked on actually.

12   MR. HEBERT: Exhibit 34, could we bring that up,

13 page 67, Figure 34 -- 32. I'm sorry. Figure 32.

14 Q   Can you explain to the Court as simply as

15 possible -- sorry. Can you explain what this chart shows

16 for the Court?

17 A   Yep. So this was an attempt to assess the overall

18 accuracy of the proposed threshold. And pardon me for

19 the complexity of this, but what I'm doing in this

20 exercise is considering -- this is me with my analyst hat

21 on now. I'm asking where shall we set the threshold.

22 And I'm moving the threshold away from 0, which is the

23 neutral point and in the middle of the graph, and then

24 proceeding out away from -- away from 0 in both

25 directions. And I ask myself at each proposed level of

1 the threshold, candidate level of the threshold, I

2 compute the following quantity: What proportion of plans

3 either do not trip the threshold so they'll never invite

4 scrutiny, but if they did invite scrutiny, that was the

5 right thing to do in the sense that they go on never to

6 exhibit a sign flip. And I called that my confidence

7 rate in the proposed decision rule. And you see this

8 v-shaped pattern and that's because as I set the bar

9 higher and higher, two things are happening: Fewer cases

10 are tripping the threshold, and of the ones that do,

11 that's the -- it was the right -- you're making the right

12 call. You're either not throwing the flag, but when you

13 do throw the flag it was corrected. So the limiting

14 behavior of this is 100 percent in the limit on the very

15 extremes of the graph. And the point of this is to show

16 that by the time we get to negative 7, you're making

17 right decisions, as it were, over 95 percent of the time,

18 and on the other side, on the positive 7 side, the

19 predictive performance with respect to this stringent

20 indicator, by the way, isn't quite as impressive,

21 although it's still, you know, about 93 percent and

22 that's because this phenomenon that we picked up on in my

23 conversation with Mr. Keenan that it is an empirical fact

24 that plans beginning life showing apparent Democratic

25 advantage are not quite as durable as plans that begin

1 life demonstrating an equivalent level of apparent

2 Republican advantage. But the good news here is that by

3 the time we get to the proposed threshold of plus or

4 minus 7, our confidence rate, if you will, in the

5 decisions we would make around that threshold is -- the

6 first digit is a nine and approaching 95 or even better.

7   JUDGE GRIESBACH: Why is the durability of a

8 high or efficiency gap in a Republican plan greater than

9 the durability on one of an efficiency gap favoring

10 Democrats?

11   THE WITNESS: I do not know. I have -- that is

12 a topic for future research, as we say, and something I'm

13 actively investigating right now. There's one -- one

14 hypothesis is that -- that is borne out by the data is

15 that there is a slight tendency for Republican-controlled

16 plans to be slightly more aggressive than

17 Democratic-controlled plans. It's not a big difference,

18 but it's there. And so you begin life in a slightly

19 stronger place to begin with.

20   JUDGE GRIESBACH: But I thought the same

21 positive efficiency gap is less durable --

22   THE WITNESS: Right.

23   JUDGE GRIESBACH: -- than a given negative --

24   THE WITNESS: That's right. Conditional in

25 tripping the threshold, you've tripped it further out.

SIMON JACKMAN - REDIRECT

1   So at a given point -- I'm saying now you're at plus 7 or

2   better, while on the Democratic side plus 7 or better

3   tends to be closer to 7 where on the Republican side

4   being beyond 7 sometimes means 9, 10, or as we saw in

5   Wisconsin, 13. So there's a little bit of that going on.

6   That's sort of the first thing I've discovered. But it

7   is a legitimate open question I think in this kind of new

8   arena that's opened up on the back of this measure and

9   others like them. It's -- I don't think anybody has much

10   more to say about that at this stage than that.

11   BY MR. HEBERT:

12   Q   Were your conclusions about the durability of a

13   large initial efficiency gap confirmed by your analysis

14   of how plans' initial efficiency gaps are related to

15   their lifetime efficiency gaps?

16   A   Yes, and we just sort of spoke about that. We have

17   various graphs that I think demonstrate that quite

18   vividly.

19   Q   And were those conclusions about the durability of

20   the large efficiency gaps confirmed by the sensitivity

21   testing you did?

22   A   That's correct. And we looked at that earlier as

23   well.

24   Q   What's your opinion about the conservatism of a 7

25   percent efficiency gap threshold?

SIMON JACKMAN – REDIRECT

A   With respect to the lifetime average, you'll --
there are many more plans that are staying on one side of
0, but you're not throwing the flag at than the other way
around. So false positives versus false discoveries.
You're erring on the side of not inviting scrutiny of
plans even though at negative 4, negative 5 being the
first efficiency gap you see. There's still a reasonable
degree of confidence, even a fairly high degree of
confidence that that's a plan that's going to continue to
display advantage on that side of politics. Nonetheless,
I thought that I didn't want to come to a place like this
and be proposing a standard that was anything sort of
less than, you know, as rigorous as the one I presented;
that it would be better to let small apparent advantages
go through than to -- than to incorrectly, you know --
what am I trying to say -- that the balance on throwing
the flag, you want to be really confident before you
invite a plan for scrutiny rather than being kind of
permissive with the standard and encompassing more plans
are called in for scrutiny when their apparent advantage
is either small or less likely to be durable. You want
to be extremely confident before you begin the scrutiny
process and that's why the threshold got doiled up as
high as it has been.
Q   One final clarifying question. In the course of

SIMON JACKMAN - REDIRECT

1 your testimony you used a word that frankly I didn't

2 quite understand why that word was used and it was the

3 word perturbed. You kept saying that you perturbed

4 something. What did that mean?

5 A   I'm just trying to say change. I don't mean to up

6 end, I just mean to change.

7   MR. HEBERT: That's all the questions I have,

8 Your Honor. I do have a few exhibits that were

9 identified, including some actually Mr. Keenan questioned

10 about as well. 122, 125, 325, 329, 488, 492, 493, 494,

11 and 495. A couple of those were exhibits I would point

12 out that were specifically drafted in response to

13 questions the Court had asked during the summary judgment

14 hearing. I just want to call those out, which was 325

15 and 495. And I move those into evidence at this time.

16   MR. KEENAN: I have no objection to 122 and 125.

17 I'm trying to find the other ones here on the list. 325,

18 no objection. Was it 325 or 329?

19   MR. HEBERT: 329 is the next one.

20   MR. KEENAN: No objection to that one either.

21 Can you just tell me what those are and describe them. I

22 don't think I have them on a list.

23   JUDGE CRABB: 493 and 494 were the charts.

24   MR. KEENAN: Those charts I have no objection

25 to -- what he drew up there? That's fine.

SIMON JACKMAN - REDIRECT

1   JUDGE GRIESBACH: 495 I think was the Wisconsin

2   sensitivity analysis.

3   MR. KEENAN: I mean I suppose it's not -- I just

4   got that before the examination, so I guess I'd object.

5   But I probably understand the Court's going to allow it

6   in. But I didn't --

7   JUDGE GRIESBACH: Do you think you were

8   prejudiced by it?

9   MR. KEENAN: Probably not; so...

10   JUDGE GRIESBACH: That's kind of key.

11   JUDGE CRABB: One of the charts is 488.

12   MR. KEENAN: All of the charts that he drew up

13   there, I don't have any objection to any of those. And

14   492, is that the -- oh, that's the one from this morning,

15   the correlation? No objection to that either.

16   MR. HEBERT: And do I need me to describe the

17   other exhibits for Mr. Keenan?

18   MR. KEENAN: I just don't -- I wasn't able to

19   write them all down. I don't know what's still

20   outstanding.

21   MR. HEBERT: I can do that real quick. We only

22   have four left. 492 was the correction chart -- the

23   correlation chart.

24   MR. KEENAN: We just did that.

25   MR. HEBERT: So you're okay with that one? 493

1 was the EG calculation demonstrative. You said you were

2 okay with that?

3   MR. KEENAN: Yep.

4   MR. HEBERT: That was the one where we had the

5 -- that's that one that's up there now?

6   MR. KEENAN: That's fine.

7   MR. HEBERT: 494 was the Figure 1, Exhibit 34

8 annotated. That's the -- there it is there.

9   MR. KEENAN: Yeah, that's fine.

10   MR. HEBERT: And then 495, I assume you have no

11 problem with that one because it's the sensitivity

12 testing done primarily in response to the Court's

13 inquiry.

14   MR. KEENAN: Yeah, and we just discussed that

15 one. That one is fine too.

16   JUDGE CRABB: So those are all received.

17   JUDGE RIPPLE: All received.

18   MR. HEBERT: And this witness may be excused,

19 Your Honor.

20   JUDGE RIPPLE: Thank you, Professor Jackman, for

21 your testimony. You may step down.

22   (Witness excused at 5:15 p.m.)

23   MR. POLAND: Your Honors, at this time subject

24 to any rebuttal that we might have at the end of the

25 case, the plaintiffs rest.

1   JUDGE RIPPLE: Thank you. It is 4:15 -- 5:15.

2 I'm sorry. It's maybe better to just stop now and to

3 start fresh in the morning.

4   MR. KEENAN: Yeah, I think we would get through

5 some introduction and then have to stop, so I don't know

6 if it's worth starting.

7   JUDGE RIPPLE: Why don't we wait and we'll start

8 in the morning at -- suppose we ask counsel where we

9 stand now. You have your case. What do you need to do

10 tomorrow?

11   MR. KEENAN: Sure. We have two expert

12 witnesses, so we will be presenting our two experts. We

13 have to put the two experts on direct and then obviously

14 there would be the cross from the plaintiffs. I

15 anticipate we can get that done tomorrow. I'm thinking

16 maybe like two hours for the direct and then that should

17 give time for the cross, and then do another one and then

18 we should be done on time.

19   Now lawyers are notoriously bad at estimating time,

20 so -- but I think we should be able to get done. I will

21 say that Professor Goedert, my second witness, has a

22 flight out at, like, 6:05 or something like that, so

23 that's kind of our...

24   JUDGE GRIESBACH: Could he be your first

25 witness?

1   MR. KEENAN: Well, Sean Trende was supposed to

2   fly out tonight and now is like bumped back to today;

3   so...

4   JUDGE RIPPLE: I think just to be safe we will

5   start at 8:30 as we did this morning, give everybody a

6   certain amount of comfort margin to get the job done and

7   done the way you want it done. And so we'll recess now,

8   begin at 8:30 in the morning, and Mr. Keenan, you'll have

9   the floor.

10   MR. KEENAN: Okay.

11   MR. HEBERT: Your Honor, may I ask one

12   housekeeping question? If we do the two witnesses

13   tomorrow and say by some miracle we finish around 3:30,

14   would you want to quit at that time or would you want to

15   hear closing arguments? I know that's an optimistic

16   question.

17   JUDGE RIPPLE: We would -- I think we would like

18   to do the oral closing tomorrow. We anticipate giving

19   you an opportunity to file post-trial briefs if you wish

20   as well. So you want to keep that in mind in preparing

21   your closing arguments because we do anticipate giving

22   you that opportunity. Okay?

23   MR. HEBERT: Very well. Thank you, Your Honors.

24   JUDGE RIPPLE: Thank you very much. Have a

25   pleasant evening. We'll see you at 8:30 in the morning.

1   (Proceedings concluded at 5:20 p.m.)

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4   I, LYNETTE SWENSON, Certified Realtime and

5 Merit Reporter in and for the State of Wisconsin, certify

6 that the foregoing is a true and accurate record of the

7 proceedings held on the 26th day of June 2016 before the

8 Honorables Circuit Judge Kenneth Ripple, District Judge

9 Barbara B. Crabb, and District Judge William Griesbach,

10 in my presence and reduced to writing in accordance with

11 my stenographic notes made at said time and place.

12 Dated this 8th day of June 2016.

13

14

15   /s/_____

16   Lynette Swenson, RMR, CRR, CRC
                                Federal Court Reporter
17

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