

**In The Matter Of:**

*William Whitford, et al., vs.  
Gerald Nichol, et al.*

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*Deposition of SIMON JACKMAN  
March 16, 2016*

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IN THE 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.,

Defendants.

=====

Deposition of:

SIMON JACKMAN

Madison, Wisconsin  
 March 16, 2016

Reported by: Lisa L. Lafler, RPR, CRR, CLR

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1 DEPOSITION of SIMON JACKMAN, called as a  
 2 witness, taken at the instance of the Defendants,  
 3 under the provisions of the Federal Rules of Civil  
 4 Procedure, pursuant to Notice, before Lisa L. Lafler,  
 5 a Registered Professional Reporter, Certified  
 6 Realtime Reporter, Certified Livenote Reporter, and  
 7 Notary Public in and for the State of Wisconsin, at  
 8 the State of Wisconsin Department of Justice, 17 West  
 9 Main Street, City of Madison, County of Dane, and  
 10 State of Wisconsin, on the 16th day of March, 2016,  
 11 commencing at 9:09 in the forenoon.  
 12

13 A P P E A R A N C E S  
 14

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12 Exh 58	Excel spreadsheet	80
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18 (Attached to original transcript with copies provided  
 19 to Mr. Keenan and Ms. Greenwood)

20 (Original transcript filed with Mr. Keenan; copies  
 21 provided to Mr. Keenan and Ms. Greenwood)

22

23

24

25

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1 SIMON JACKMAN,  
 2 called as a witness, being first duly  
 3 sworn, testified on oath, as follows:  
 4 (Exhibit No. 56 marked  
 5 for identification)  
 6 EXAMINATION  
 7 BY MR. KEENAN:

8 Q. Good morning. Professor Jackman, as you remember,  
 9 I'm Brian Keenan. I'm an attorney for the  
 10 defendants in this case.  
 11 You're here for a second deposition. Since  
 12 you just had a deposition a few months ago, I'm  
 13 not going to go over all the preliminary stuff in  
 14 great detail, but I will say that if you don't  
 15 understand a question I ask, please make sure to  
 16 let me know and I'll try to rephrase or we can  
 17 have the court reporter repeat it. Do you  
 18 understand?  
 19 A. I do.  
 20 Q. And then just as a reminder, to respond verbally  
 21 with yes-no answers and try not to cut me off in  
 22 my question, I'll try not to cut you off in your  
 23 answer, so we can get a clean transcript. Do you  
 24 understand?  
 25 A. I do.

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1 **Q. Good. So what did you do to prepare for this**  
2 **deposition?**  
3 A. After the creation of the rebuttal report, I came  
4 to Madison yesterday and we had a meeting with the  
5 team to my right here in a building not too far  
6 away from here.  
7 **Q. So who was at that meeting?**  
8 A. Doug, Annabelle, and Ruth.  
9 **Q. Okay. And that was it?**  
10 A. That was it.  
11 **Q. And then how long did that meeting last?**  
12 A. Net of lunch, approximately four hours.  
13 **Q. We have marked what's been marked as Exhibit 56.**  
14 **I'll give you a copy.**  
15 A. Thank you.  
16 **Q. If you could just identify what that document is**  
17 **for the record.**  
18 A. This is a copy of my rebuttal report.  
19 **Q. So I thought we would just go into the report and**  
20 **I'll ask you some questions as we go through it.**  
21 **So if you could turn to page 3 -- and I'm skipping**  
22 **the introduction because I think we'll get to**  
23 **those things during the body.**  
24 **So we'll start with Section 1, responses to**  
25 **Goedert's criticisms, and the first -- your**

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1 **paragraph starting "First." Focus on that for**  
2 **now. So you criticize Professor Goedert for**  
3 **believing that a plan's efficiency gap is only**  
4 **relevant to the extent it sheds light on the**  
5 **partisan intent; is that correct?**  
6 A. I criticize Professor Goedert for equating the  
7 efficiency gap -- or large values of the  
8 efficiency gap with partisan intent.  
9 **Q. And that's a word that will probably come up,**  
10 **partisan, like partisan gerrymandering is what**  
11 **this case is about.**  
12 **So you would agree that partisan intent**  
13 **behind a mapmaker's decision cannot be inferred**  
14 **from a large efficiency gap?**  
15 A. Not necessarily.  
16 **Q. And that would include a large efficiency gap in**  
17 **one election and also a large efficiency gap**  
18 **across all the elections in a plan?**  
19 A. Yes.  
20 **Q. And you would agree with me that a plan's**  
21 **efficiency gap says nothing about how the**  
22 **mapmakers adhere to traditional districting**  
23 **principles?**  
24 A. That's a slightly broader question. There, I  
25 think, the set of what we define as traditional

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1 redistricting principles could determine whether  
2 I'd say yes or no. But more narrowly on the  
3 question of intent, I think our position or my  
4 position in response to Goedert is clear. But, I  
5 think, I would want to, perhaps, talk about  
6 specific redistricting criteria under connection  
7 two, the efficiency gap, to answer that question.  
8 **Q. Sure. So would the efficiency gap measure how**  
9 **closely a mapmaking body adhered to keeping**  
10 **communities of interest together in the same**  
11 **district?**  
12 A. Not necessarily.  
13 **Q. And would it measure how a mapmaking body**  
14 **performed on measures of compactness?**  
15 A. Again, I'm going to answer not necessarily. It --  
16 X would lead to Y, meaning it's easy to conceive  
17 of situations where ignoring compactness, say, or  
18 something like that could lead to higher or lower  
19 values of the efficiency gap. But the backward  
20 inference, observing a higher value or low value  
21 of the efficiency gap and then making that  
22 inference on its face, the efficiency-gap number,  
23 you would want additional information in order to  
24 draw such an inference.  
25 **Q. Okay.**

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1 A. Or at least I would.  
2 **Q. And your research shows that large efficiency gaps**  
3 **occur in the absence of any partisan intent.**  
4 **That's correct?**  
5 A. No. That's not correct. I -- my research did not  
6 -- it was irrelevant to whether -- I -- I computed  
7 values of the efficiency gap putting questions of  
8 partisan intent completely to one side. I paid no  
9 attention to that; certainly, at the time of my  
10 initial report, yeah.  
11 **Q. Exactly. And the results of your research reveal**  
12 **that large efficiency gaps occur in plans that**  
13 **were enacted with no partisan intent?**  
14 A. I'm not in the position -- I don't know what the  
15 partisan intent was. So I can't answer that  
16 question.  
17 **Q. Okay.**  
18 A. Yeah.  
19 **Q. You would agree that large efficiency gaps**  
20 **occurred in plans that were not enacted under**  
21 **unified partisan control?**  
22 A. I'm aware of, if we may cut to the chase, one  
23 instance in this state where a court-drawn plan  
24 did yield a large value of efficiency gap.  
25 **Q. And that was Wisconsin in the 2000's decade?**

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1 A. The cycle immediately preceding the plan at issue,  
2 yeah.

3 **Q. Your report criticizes Dr. Goedert for not**  
4 **understanding that the efficiency gap is a measure**  
5 **of partisan effect, not partisan intent; is that**  
6 **correct?**

7 A. That's a fair paraphrase.

8 **Q. And why is it your opinion that a large efficiency**  
9 **gap should be a problem when a map is enacted with**  
10 **partisan intent but not when it's enacted with no**  
11 **partisan intent?**

12 A. I think the question of whether intent itself is a  
13 trigger for judicial scrutiny is beyond my area of  
14 expertise. What I can testify to is a large  
15 efficiency gap, though, is certainly evidence of  
16 partisan -- systematic, rather, partisan advantage  
17 one way or the other, and on that basis, it is  
18 something that a court might be interested in.

19 **Q. And that systematic partisan advantage, though,**  
20 **would exist in a state that had a high efficiency**  
21 **gap regardless of the intent that went into**  
22 **enacting the plan?**

23 A. Well, again, that's right. That's right. I would  
24 agree with that.

25 **Q. Moving on to the paragraph starting "Second,"**

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1 **we'll go in order here so hopefully --**

2 A. Okay.

3 **Q. -- this will be logical. You say that, "The**  
4 **appropriate universe for plaintiffs, defendants,**  
5 **and courts is limited to the first elections held**  
6 **under plans." Why do you say that?**

7 A. That is -- it would seem to me that's the  
8 operative moment to go to court, as it were, or to  
9 begin the process of judicial scrutiny. It's  
10 possible you might even begin the process of  
11 scrutiny with zero elections, right? The plan was  
12 just a plan at that point, perhaps, passed by the  
13 legislature, but we're yet to see an election  
14 generated underneath it. Seems to me you could --  
15 you could do that.

16 But the thing about the first plan is that  
17 now we have a piece of data generated from the  
18 actual plan as it is operating, and it seems to me  
19 it's not -- you know, the idea that we would wait  
20 for two or three elections under the plan so as to  
21 build a more reliable picture of how the plan is  
22 performing seems sort of unrealistic. At that  
23 point, we're closer to the end of the plan than  
24 the beginning and any damage, if you will, or  
25 partisan advantage manifest in the plan is being

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1 -- the effects of that are being felt and any harm  
2 is being felt.

3 So it would seem to me that the appropriate  
4 moment might be when we've seen one election from  
5 the plan. That -- that's probably, I think,  
6 hitting the sweet spot between uncertainty as to  
7 what the plan will do over the rest of the  
8 decade -- over the elections we will observe over  
9 the rest of the decade under that plan, if allowed  
10 to stand, versus I think the -- the more  
11 speculative exercise of taking a plan to court.

12 And particularly under this criteria, we  
13 haven't seen an election yet so we don't know what  
14 its efficiency gap is, or if we did, we would be  
15 engaged in, I think, a more speculative exercise.  
16 So that's why I think the appropriate number in  
17 terms of triggering litigation is -- is that one  
18 election, that first election.

19 **Q. But, obviously, you'd agree that's just one piece**  
20 **of data about the plan?**

21 A. I do.

22 **Q. And a plan -- you'd agree that a plan would**  
23 **produce a range of results over its lifetime under**  
24 **different electoral conditions, correct?**

25 A. And, indeed, that was considered at great length

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1 in my original report. That's right.

2 **Q. Yeah. Now, is there any particular reason why the**  
3 **-- sorry. Strike that question.**

4 **Do you think it's relevant in looking at the**  
5 **number of elections that exceed a particular**  
6 **efficiency-gap threshold in any election under a**  
7 **plan is at all relevant in determining the**  
8 **usefulness of the efficiency gap as a standard**  
9 **going forward into the future?**

10 A. I think that -- that would -- I think there are  
11 two senses of the word "threshold" that I'd want  
12 to keep distinct. So it's the value we observe --  
13 the value of the efficiency gap that we observe in  
14 the first election held under the plan, and we've  
15 talked about that being a trigger for judicial  
16 scrutiny. And then there's a second sense of the  
17 word "threshold," and that is, what is the -- you  
18 know, what values of the efficiency gap are we  
19 observing in the second, third, fourth?

20 So I -- so -- so one -- if I were to answer  
21 -- the best answer to your question might be to  
22 say that conditional on the first election under  
23 the plan triggering the threshold that we've  
24 promulgated as -- as should apply to those -- that  
25 set of first elections. It is, indeed, a

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1 pertinent question to ask what is the behavior of  
2 the efficiency gap over -- over the life of the  
3 plan; and then, indeed, the question that I  
4 concerned myself with in my original report was  
5 whether that subsequent sequence of efficiency-gap  
6 values lay on the same sign of zero that was -- it  
7 was either negative or positive, had the same sign  
8 indicating the direction of partisan advantage as  
9 we observed in that first election.

10 So that's, I think, the probative value, if  
11 you will, of the sequence of values we observe in  
12 elections two, three, four, and five put up  
13 against the value we observed -- or the efficiency  
14 gap we observe in election one.

15 **Q. And your analysis has examined historical**  
16 **elections under plans and looked at the first**  
17 **election that actually happened under that plan;**  
18 **is that correct?**

19 A. That is correct.

20 **Q. And then analyzed the future elections based on**  
21 **the efficiency gap observed in that first**  
22 **election?**

23 A. Correct.

24 **Q. Okay. Now, for plans that have actually had a**  
25 **chance to run their full course, you've been able**

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1 **to examine plans from the 1970s, '80s, '90s, and**  
2 **2000s; is that correct?**

3 A. That's correct.

4 **Q. So the majority of these first elections would**  
5 **have been in 1972, 1982, 1992, and 2002?**

6 A. Yes, and 2012 we have a couple there as well.

7 **Q. Okay. But in the 2012 --**

8 A. Yeah, I know.

9 **Q. -- we haven't been able to see the full results**  
10 **over a full ten-year period, right?**

11 A. Gotcha. Gotcha.

12 **Q. And just looking at Wisconsin in the 2000's**  
13 **decade, the first efficiency gap observed in 2002,**  
14 **I believe, was a negative 7 and a half about; is**  
15 **that --**

16 A. I -- I'd want to look at my original report.

17 **Q. Sure.**

18 A. I think I've got that exactly there. Do you mind?

19 Thanks.

20 **Q. Mr. Jackman's original report was marked as**  
21 **Exhibit 11 previously, and he's referring to a**  
22 **copy of it here.**

23 A. So you asked me about which election?

24 **Q. 2002.**

25 A. Yeah. The estimate of the efficiency gap for

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1 Wisconsin in 2002 is negative 0 -- a negative  
2 0.075.

3 **Q. And that's a good topic. You like to refer to**  
4 **things in proportions; is that correct?**

5 A. Oh, I -- I'm happy to call that minus 7.5. We can  
6 multiply by 100 to stop all the decimals and  
7 zeroes in the transcript if that's --

8 **Q. It's fine to do it the way you want. I just**  
9 **wanted to establish that negative 7.5 is the same**  
10 **thing as negative 0.075.**

11 A. That's right.

12 **Q. My mind works in percentages.**

13 A. No. No. That's --

14 **MR. POLAND:** Just so we can be  
15 clear about if we're talking percentages, if  
16 we're actually talking decimal points.

17 **MR. KEENAN:** Yeah.

18 **THE WITNESS:** Sure.

19 **Q. And you were referring to Figure 35 on page 72 of**  
20 **your report?**

21 A. Correct. I was reading -- literally reading that  
22 data point off the graph, yeah.

23 **Q. And so when Wisconsin's 2000's plan is analyzed --**  
24 **when you analyze that plan in your -- in your**  
25 **work, that's treated as a plan that has a negative**

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1 **7.5 percent efficiency gap in its first election?**

2 A. (No verbal response.)

3 **Q. Is that correct?**

4 A. Correct.

5 **Q. Now, we know that the plan, though, also went on**  
6 **to produce a variety of results, correct?**

7 A. That is correct.

8 **Q. So what were the other efficiency gaps observed in**  
9 **Wisconsin's 2000's plan? We can go in order.**

10 A. Sure. Again, reading off the graph, in 2004, it's  
11 close to negative 10 percent. In 2006, it's  
12 approximately negative 12 percent. In 2008, it's  
13 approximately negative 5 percent. And in 2010, it  
14 is approximately negative 4 percent.

15 **Q. Okay. So we have a range from negative 4 to**  
16 **negative 12; is that correct?**

17 A. That is correct.

18 **Q. Now, in your analysis, is there any particular**  
19 **political science reason why negative 0 -- or**  
20 **negative 7.5 percent was the result that was --**  
21 **happened to be seen in 2002?**

22 A. No. There's nothing from the literature per se  
23 that -- that led me to -- oh, you mean the value  
24 per se?

25 **Q. Yeah.**

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1 A. I'm sorry. I misunderstood the question. Could  
2 you ask it again?

3 **Q. Sure. In 2002, Wisconsin saw a negative**  
4 **7.5 percent efficiency gap. Is there any**  
5 **particular reason why 2002 saw that number of**  
6 **efficiency gap?**

7 A. There's -- no. There's nothing in the literature  
8 that would -- would look at a given election and  
9 make a -- a -- a sharp prediction other than to  
10 say the precise value we would probably not be  
11 able to predict, but there's analysis around to  
12 suggest that depending on prevailing conditions,  
13 you know, in particular who drew the plan, we  
14 might -- we might form expectations as to whether  
15 we're going to see one side -- you know, positive  
16 or negative efficiency-gap values.

17 Now, I note that in this plan -- this was a  
18 plan that was drawn by a court. So, in this case,  
19 we wouldn't have particularly strong expectations  
20 as to what the sign nor the magnitude of the -- of  
21 the first efficiency gap that we see under the  
22 plan.

23 **Q. And you'd agree that the plan could conceivably**  
24 **produce an election anywhere from negative 4 to**  
25 **negative 12 percent efficiency gap? The Wisconsin**

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1 **2000's plan could have produced an efficiency gap**  
2 **anywhere from negative 4 percent to negative 12**  
3 **percent depending on the electoral circumstances?**

4 **MR. POLAND:** I'm going to object to  
5 the form of the question.

6 **Q. Well, you'd -- let me re -- you'd agree that the**  
7 **Wisconsin 2000's plan was capable of producing a**  
8 **range of results; is that correct?**

9 A. We observed that it, in fact, did.

10 **Q. And, in fact, it did produce negative 4 to**  
11 **negative 12 percent; is that correct?**

12 A. That's correct.

13 **Q. So before the 2012 -- or 2002 election, no one**  
14 **knows what the efficiency gap's going to be,**  
15 **correct?**

16 A. Not with any great precision.

17 **Q. Okay. And so it happened to produce an efficiency**  
18 **gap of negative 7.5 percent. That's correct?**

19 A. That's correct.

20 **Q. But it was capable of producing efficiency gaps**  
21 **that were perhaps as low as negative 4 percent or**  
22 **as high as negative 12 percent. That's correct?**

23 **MR. POLAND:** Object to the form of  
24 the question.

25 **THE WITNESS:** You're asking -- do

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1 you want me to answer all the same?

2 **MR. POLAND:** Well, it's up to you.

3 I just objected to form. It's just an  
4 objection. If you can answer, you can  
5 answer.

6 **THE WITNESS:** Okay.

7 A. It -- okay. So it did, indeed, produce that --  
8 that range of values. The value of the first one,  
9 we -- we didn't have a -- you know, it would be an  
10 interesting analysis to engage in. We've got a  
11 little bit of that in the rebuttal report. But  
12 certainly at the time I was -- at this stage of my  
13 investigation of the efficiency gap, I was not  
14 engaged in that exercise nor has it been a  
15 particularly strong focus of my work on the  
16 efficiency gap thus far.

17 **Q. But under your analysis that you've performed, had**  
18 **the 2010 election result occurred in 20 -- 2002,**  
19 **the Wisconsin plan would present itself as an**  
20 **initial plan with a negative 4 percent efficiency**  
21 **gap; is that correct?**

22 **MR. POLAND:** Object to the form of  
23 the question.

24 A. It's -- it's a -- it's a -- it's a bit  
25 counterfactual for me to try to grasp, frankly.

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1 Had everything that produced the 2010 election  
2 holding constant the district lines, which were  
3 held constant, would -- would we have seen the  
4 same efficiency-gap number? I -- I -- that's a  
5 rather speculative counterfactual I'm -- I'm sort  
6 of being asked to entertain there and one that I'm  
7 not quite sure I can -- I can -- I can answer with  
8 any great confidence or precision.

9 **Q. Okay. So you understand that you're -- the**  
10 **standard you're presenting is being asked to be**  
11 **applied by courts that would go into the future,**  
12 **correct?**

13 A. I do.

14 **Q. So it would apply to the 2020 round of**  
15 **redistricting if it was adopted by the courts?**

16 A. Yes.

17 **Q. Okay. And so do we know what type of election's**  
18 **going to occur in 2022?**

19 **MR. POLAND:** Object to the form of  
20 the question. The "type of election" is  
21 vague.

22 A. Are you asking me --

23 **Q. Yeah. Do you know -- we don't know what**  
24 **percentage of the vote the Democrats versus the**  
25 **Republicans are going to get in 2022?**

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1 A. No, we don't.  
2 **Q. We don't know whether it's going to be a 50/50**  
3 **election or a wave election one way or the other?**  
4 A. I'll -- I'll -- I'll accept what we mean by "wave  
5 election" there, but -- but -- what we might mean  
6 by wave election there, but, no, we don't know the  
7 exact vote share that Democrats or Republicans  
8 will get in the 2022 Wisconsin state election.  
9 **Q. And that would be the election that would trigger**  
10 **judicial review under the standard that you're**  
11 **advocating?**  
12 A. Or may not.  
13 **Q. Sure. Yes. It would be the election which**  
14 **determines whether there's judicial review or not?**  
15 A. If -- if the standard were adopted and if it  
16 tripped the -- the proposed standard.  
17 **Q. And before a plan -- there's an election under a**  
18 **plan, is there a way that people can know what**  
19 **type of election's going to occur in the first**  
20 **election under a plan?**  
21 A. Well, I -- again, in answer to an earlier  
22 question, this is the election -- zero-elections  
23 problem. All we have are the plan boundaries.  
24 We're yet to see an election conducted under the  
25 plan's boundaries. I can imagine a research

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1 agenda that would try to forecast efficiency-gap  
2 estimates based on some kind of statistical  
3 modeling or based on some sort of forecast as to  
4 what we thought was going to happen statewide,  
5 what was going to happen seat by seat, taking into  
6 account factors like incumbency, or what -- you  
7 know, on my feet I can think out loud about what  
8 such a research program might look like. But at  
9 the end of the day, that would be -- it would be a  
10 lot of modeling and it would be considerable  
11 uncertainty attaching to any capitalization of the  
12 plan before we've seen a real actual election  
13 conducted under the district lines.  
14 **Q. The first election's just going to be one data**  
15 **point about the plan though, correct?**  
16 A. It is one data point. It is one value of the  
17 efficiency gap.  
18 **Q. And the potential efficiency gaps are going to**  
19 **span a range of possibilities, correct?**  
20 A. That's correct.  
21 **Q. And is there a way to determine where along the**  
22 **spectrum of that range the first efficiency gap --**  
23 **the experience under a plan is, on the high end,**  
24 **the low end, or the middle?**  
25 A. Before we see it?

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1 **Q. Well, after the first election.**  
2 A. Oh, after we see it. Yes. We could then look at  
3 how it lined up with the now considerable several  
4 hundred values of the efficiency gap that we've  
5 seen if -- indeed, first election under the plan  
6 efficiency gaps that we've now seen from the  
7 historical analysis.  
8 **Q. So you'd have to refer back to your historical**  
9 **analysis of the prior decades; is that correct?**  
10 A. I would, yeah.  
11 **Q. Okay. If we move on to the next paragraph in your**  
12 **report -- and you can keep the other report handy**  
13 **just in case you need to refer back to it.**  
14 A. Sure, certainly.  
15 **Q. There's some discussion of the differences in**  
16 **durability between pro-Democratic efficiency gaps**  
17 **and pro-Republican efficiency gaps; is that**  
18 **correct?**  
19 A. That's correct.  
20 **Q. Do you have an opinion as to why the efficiency**  
21 **gap shows that Republican plans are more durable**  
22 **than Democratic plans?**  
23 A. I don't have a well-formed hypothesis as to why  
24 that is the case. The most obvious one that comes  
25 to mind is Caprice, that -- that -- that first

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1 value we got is a draw from a distribution that  
2 lies actually closer to zero and that those  
3 relatively small number of cases where we do see  
4 an apparent pro-Democratic advantage in the first  
5 election. When the plan is allowed to run its  
6 course, we learn that, in fact, that, on average,  
7 it tends to be the case that there's no systematic  
8 or long-run advantage to Democrats. So that would  
9 suggest that the relatively few -- as I said, in  
10 the relatively few instances we're seeing such a  
11 positive pro-Democratic first value of the  
12 efficiency gap, it -- it -- that's why they're not  
13 durable or as durable as the ones we see on the  
14 other side, yeah.  
15 **Q. So why are then the Republican -- pro-Republican**  
16 **advantages more durable than the Democratic**  
17 **advantages seen?**  
18 A. The hypothesis that you -- the conclusion that  
19 you're sort of led to is that Republican plans,  
20 plans that are generating Republican advantage,  
21 are consistent with -- they were drawn that way.  
22 They're producing the results and they were  
23 designed to -- to do so, certainly consistent with  
24 our argument, let's say, you know, dispositive  
25 with respect to partisan intent -- we've been down

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1 that road -- but it would seem to be consistent  
2 with there being a systematic Republican advantage  
3 in more plans, particularly in the '90s, 2000s,  
4 2010s period than in the earlier period.  
5 **Q. Is it that Republicans are better at**  
6 **gerrymandering than Democrats?**  
7 A. I'd resist, perhaps, that exact form of words for  
8 what's going on, but something like that might --  
9 might be the -- might be the case, that the --  
10 that the plans that are being drawn to -- that  
11 generate Republican advantage are -- yes, have  
12 been done, perhaps, more strongly, more  
13 systematically. Maybe that does that up better.  
14 **Q. Do you have any opinion on whether the underlying**  
15 **political geography on which any map is going to**  
16 **be drawn just happens to be more favorable to the**  
17 **Republicans than the Democrats regardless of who's**  
18 **drawing the lines?**  
19 A. I try to resist -- we talk about political  
20 geography, but it's not geography in the sense of  
21 lakes and rivers and mountains. Political  
22 geography arises through the very exercise that  
23 we're scrutinizing here, and that is, line  
24 drawing, right? We break up states into  
25 districts. We note that some districts after that

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1 exercise tend to be more Democratic or more  
2 Republican in their election results or other data  
3 that might point that way. But I -- I try not to  
4 put -- it's almost putting the cart before the  
5 horse a little bit to say -- at the same time I'm  
6 being asked to examine properties of a -- of a  
7 districting system to then ask about was there  
8 some underlying, quote, political geography that  
9 made it the outcome the way it had to be? It's --  
10 you know, I'm sort of conflating the sort of cause  
11 and consequence there.  
12 **Q. Sure. And maybe the term "political geography"**  
13 **might be poor.**  
14 **But what about the distribution of a party's**  
15 **voters throughout the state? Is there any -- do**  
16 **you have an opinion on whether a particular**  
17 **party's voters are more advantageously distributed**  
18 **throughout the state to the other party?**  
19 A. Well, what I do know is that's a very active area  
20 of debate inside political science and, in  
21 particular, among political scientists interested  
22 in redistricting. But -- but my position would be  
23 to say that, you know, in particular, the words  
24 "natural political geography," I tend to bristle  
25 at that. The whole point of the exercise is -- is

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1 that the lines subject, you know, constraints --  
2 legal and sometimes and traditional redistricting  
3 criteria, that does impose constraints on line  
4 drawers, but line drawers also have many, many  
5 degrees of freedom to produce the districts they  
6 do.  
7 And we have it -- you know, I've done some  
8 subsequent analysis that suggests, perhaps, one of  
9 the biggest drivers of the efficiency gaps that we  
10 observe is who controlled the redistricting  
11 process, not so much -- that would suggest that  
12 that's -- that's an incredibly important predictor  
13 more so than anything to do with the speculation  
14 about the distribution of partisans through --  
15 through -- through the state.  
16 **Q. And the analysis you just referred to, that's**  
17 **contained in your rebuttal report?**  
18 A. It is.  
19 **Q. So we'll get to that later.**  
20 A. Okay.  
21 **Q. We'll talk about that.**  
22 **But based on your testimony, your analysis**  
23 **has only looked at the results of the elections**  
24 **that have been seen and hasn't factored into**  
25 **account at all the potential distribution of**

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1 **partisans in a particular state?**  
2 A. No. I -- I -- no. That's -- no.  
3 **Q. A little bit ambiguous, but --**  
4 A. No.  
5 **Q. Your analysis just looked at the results seen in**  
6 **various elections. That's correct?**  
7 A. Yes.  
8 **Q. And it doesn't go back and try to adjust anything**  
9 **to establish any sort of like baseline efficiency**  
10 **gap that would be expected under traditional**  
11 **districting principles?**  
12 A. I did not consider alternative plans.  
13 **Q. And it measures all plans against a baseline of**  
14 **zero efficiency gap?**  
15 A. No. It -- it -- it computes the efficiency gap  
16 election by election; and it could be positive, it  
17 could be negative, but there's nothing magic about  
18 zero. It didn't -- zero didn't play any role in  
19 -- in my analysis.  
20 **Q. Why do you say that?**  
21 A. In the sense that -- it's not like I -- I -- we  
22 compute an efficiency-gap number for each  
23 election. Some are positive, some are negative.  
24 We just let literally the chips fall where they  
25 may and observe the distribution of efficiency-gap

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1 values afterwards. But there's nothing -- and  
2 zero -- as a theoretical matter, a zero efficiency  
3 gap does have a special status, right? That's a  
4 plan that shows no advantage one way or the other.  
5 But in terms of doing my analysis, the fact  
6 that zero -- you know, the special theoretical  
7 status of a zero efficiency gap played -- played  
8 no role. It was purely an empirical  
9 investigation, an empirical investigation of -- of  
10 -- of the efficiency-gap values in that historical  
11 data set.  
12 **Q. I think we'll move on to Section 2.**  
13 A. Okay.  
14 **Q. I think maybe it would be helpful to look at the**  
15 **chart on page 6 --**  
16 A. Yeah.  
17 **Q. -- that talks about true positives, false**  
18 **positives, false negatives, and true negatives,**  
19 **and just have you explain -- maybe I'll just go in**  
20 **order.**  
21 **What is a true positive for purposes of your**  
22 **test?**  
23 A. Okay.  
24 **MR. POLAND:** So objection; vague.  
25 Can you give him specific questions to take

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1 him through it?  
2 **MR. KEENAN:** Sure.  
3 **Q. I mean, well, first why don't you explain what you**  
4 **did in terms of the -- Section 2? I don't want to**  
5 **characterize it as a particular thing.**  
6 **What type of tests were you doing in**  
7 **Section 2?**  
8 A. I -- okay. What I did was to put ourselves in the  
9 position of something akin to a doctor making a  
10 diagnosis, almost like a medical test; and so we  
11 observed the efficiency gap from the first  
12 election under a plan -- and that's a number. And  
13 we've also proposed a threshold; and just as you  
14 might with your doctor, your cholesterol is above  
15 a certain number, the doctor's going to do  
16 something. They will suggest you do something,  
17 perhaps.  
18 And here it's exactly analogous, right? We  
19 are proposing that if we see a first value of the  
20 efficiency-gap line above the threshold, that such  
21 a plan would invite scrutiny. And, that is to  
22 say, if the first election under the plan exceeds  
23 that threshold, we say it has tested positive just  
24 in the same way that your blood cholesterol, for  
25 instance, has tripped a threshold.

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1 And then we can ask about how good an  
2 indicator the actual underlying condition, -- that  
3 is, partisan advantage one way or the other -- is  
4 that test result, right? And so if over the life  
5 of the plan -- you know, there are various ways  
6 that Markham might be wrong, and the one I  
7 considered in my original report was at any point  
8 over the life of the plan in election two, three,  
9 four, or five did we see a value of the efficiency  
10 gap that contradicted the signal we got from the  
11 first election. And in such a case, we have a  
12 first election has tripped the threshold, so it  
13 has tested positive but, in fact, it is a negative  
14 case. That plan as allowed to run generated  
15 values of efficiency gap that contradicted the  
16 initial sign, and so that's a false positive, all  
17 right? So such cases would fall in the top right  
18 corner of the two-by-two table that appears on the  
19 bottom half of page 6.  
20 **Q. Maybe I can just stop you. So a false positive is**  
21 **a plan that triggered the threshold, but then**  
22 **actually went on to produce an election with an EG**  
23 **of the opposite sign?**  
24 A. Correct.  
25 **Q. Okay.**

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1 A. A true positive, on the other hand though, right,  
2 is now we've tripped the threshold and, indeed,  
3 the -- over the life of the plan the subsequent  
4 sequence of efficiency-gap values stayed on that  
5 same side of zero as, indeed, case in point would  
6 be the Wisconsin plan 2002 through 2010 we were  
7 discussing.  
8 **Q. And then what are the -- what's a false negative?**  
9 A. Let's talk about those. So negative is that that  
10 first election we've got a small -- in magnitude a  
11 small value of the efficiency gap, and so based on  
12 the proposed threshold, we'd say there's nothing  
13 to see here. Your cholesterol is normal, right?  
14 But then as we allow the plan to run, we -- we,  
15 indeed, observe that it produces values that are  
16 large.  
17 And then a true -- a true negative is just  
18 the other case. It tested negative. It looked  
19 like there was nothing -- it didn't trigger a  
20 threshold in the first election and, indeed, went  
21 on to small values of the efficiency gap or even  
22 values of the efficiency gap that alternated in  
23 sign. Sometimes it looked like there was a  
24 Republican advantage. Sometimes it looked like a  
25 negative. So that's a true negative; and that

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1 is -- you know, you've got low cholesterol and  
2 turns out that was the right call. What -- we  
3 don't need to make an invention in those -- in  
4 that case.  
5 And so this is a conventional way of looking  
6 at the behavior of any prognostic procedure that  
7 yields a binary outcome, would trip a threshold or  
8 not, positive or negative, so it admits this  
9 rather simple two-by-two classification of the  
10 possibilities, you know, the relationship between  
11 what we see with the initial test and then the  
12 underlying behavior of -- of the plan over the  
13 rest of the decade.  
14 **Q. Okay. And so just to clarify on the negative, is**  
15 **the negative based on a sign flip or is it based**  
16 **on a magnitude?**  
17 A. Being a true negative, a true negative is -- is --  
18 let me be clear on that. Yeah. A true negative  
19 is -- it's -- it's, in fact, bouncing around.  
20 It's changing sign over the life of the plan.  
21 **Q. And so would a false negative be a plan that came**  
22 **in below the threshold and, thus, escaped your**  
23 **view but then never changed signs?**  
24 A. Well, a false -- a false negative is a case that  
25 tested negative, but that was the wrong call.

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1 **Q. And why was it the wrong call? Is it because it**  
2 **was the same sign throughout its existence?**  
3 A. Yeah.  
4 **Q. Okay.**  
5 A. That's right.  
6 **Q. So this is -- these positives and negatives are**  
7 **based on whether a change in the efficiency-gap**  
8 **sign occurs or not?**  
9 A. Yeah. Yeah. Describing under the columns  
10 "actual," that's what we mean, yeah, yeah.  
11 **Q. And why is the sign flip the determining factor**  
12 **for whether a plan should trigger the threshold or**  
13 **not -- or sorry. That was a poor question.**  
14 **Why is the sign flip the determining factor**  
15 **for whether the threshold is accurately capturing**  
16 **the positives and negatives?**  
17 A. Yeah. The answer to that is I -- in my initial  
18 report, I seized on that -- I thought that was  
19 the -- absolute one of the most rigorous,  
20 strenuous tests we could submit the efficiency-gap  
21 measure to.  
22 Let's take another analogy from the world of  
23 testing, one we might be familiar with. We ask  
24 here -- your kid takes a math test and scores  
25 70 percent, say. Now we're asking not just what

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1 will the average test score be in other math  
2 tests. You know, what does that 70 percent tell  
3 us? Now we're asking what's the probability we  
4 will ever see a score below 50, say? And that's a  
5 -- that's a -- we're asking just one election,  
6 right, taking on the other sign is enough for us  
7 to say, no, that has sent us the wrong message.  
8 So I thought -- I thought, as I did my  
9 initial report, what's an extremely strenuous test  
10 we could submit the efficiency gap to such that --  
11 right? Because at the end of the day what we're  
12 in the business of doing is trying to promulgate a  
13 standard here that we'd want people to be able to  
14 rely on. So we want to have pretty high  
15 confidence that when we were calling something a  
16 positive, it was, indeed, a positive.  
17 So that's why -- and the -- and a true  
18 positive -- what -- a true positive or true  
19 negative being, you know, held up to this high --  
20 not just the on average or the median, but just do  
21 you ever see an efficiency-gap score taking on --  
22 there's even one election where the efficiency gap  
23 bounces over to the other side of zero would be  
24 enough to say no.  
25 And so that struck me at the time of my

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1 initial report as -- as one of the more strenuous  
2 tests I could submit the efficiency gap and,  
3 indeed, what -- what the -- the efficiency gap  
4 from the first election submitting --  
5 investigating the prognostic value of that -- that  
6 number.  
7 **Q. First, a clarification question. In your**  
8 **analysis, are you using the point estimate of the**  
9 **efficiency gap and not the confidence interval in**  
10 **terms of the sign change?**  
11 A. Everything -- for instance, the -- if I could  
12 direct your attention --  
13 **Q. Sure.**  
14 A. -- to -- to -- to, say, just for example, to  
15 Figure 1 in my rebuttal report on page 8, the  
16 shaded regions around each of those lines are, in  
17 fact, 95 percent confidence intervals on each of  
18 those quantities on the prognostic measures that  
19 in turn stem from the fact that we have confidence  
20 intervals that are some certainty accompanying the  
21 value of the efficiency gap in the first election  
22 and, indeed, in subsequent elections as well. So  
23 that uncertainty is, if you will, propagated down  
24 through other things I say about the efficiency  
25 gap or the prognostic value of the first

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1 efficiency gap under a plan.  
2 **Q. But the -- would the lines themselves be based on**  
3 **the point estimates?**  
4 A. In some cases, yes, yes.  
5 **Q. Yeah. I guess maybe an example would help just**  
6 **for my mind.**  
7 **So say a plan -- in determining whether it's**  
8 **a positive or a negative, a plan was all of the**  
9 **same sign point estimates but, perhaps, some of**  
10 **the confidence interval went to the other side.**  
11 **Would that count as a positive or a negative?**  
12 A. Well --  
13 **MR. POLAND:** I'm going to object.  
14 Just object to the form of the question. You  
15 can answer, if you understand.  
16 A. As a -- as a practical matter, yes. The way this  
17 is done is with -- I don't want to get too  
18 technical here, but the way this is done is with  
19 Monte Carlo simulation. So the efficiency gap for  
20 a given election is only known up to a  
21 distribution, right, and we can summarize that  
22 distribution with the mean and we call that  
23 conventionally the point estimate; and we also  
24 summarize the width of that distribution with  
25 something like a confidence interval.

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1 But for the purposes of generating, again,  
2 downstream quantities, if you will, such as the  
3 prognostic value of the first efficiency gap,  
4 there's -- I use something that's called a  
5 Monte Carlo method and, that is, to sample out of  
6 that distribution that characterizes our  
7 uncertainty with respect to any given efficiency  
8 gap; and, indeed, for all efficiency gaps I do  
9 this.  
10 And then -- if you will, then I've got a  
11 sequence of efficiency gaps for that decade and  
12 they're each being drawn from the predictive  
13 distributions -- posterior distributions, rather,  
14 and then -- and it's wash, rinse, repeat. You  
15 literally are counting how many times you see a  
16 sign flip under that draw and you've stacked --  
17 you know, you literally count that across plans  
18 and then you take another draw.  
19 So sometimes, right, the efficiency gap  
20 you're working with for a given election -- on any  
21 given iteration of that scheme, the efficiency gap  
22 value you're working with for -- for a particular  
23 election will be above the mean or below the mean,  
24 but that uncertainty is -- is -- and this is what  
25 Monte Carlo methods do for us in -- in the

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1 quantitative sciences, is allow us to propagate  
2 uncertainty in quantities up here in the analysis  
3 down through the analysis such that bottom-line  
4 things like, for instance, the things I'm  
5 reporting in Figure 1 reflect the uncertainty and  
6 the inputs.  
7 **Q. So -- it's not a binary yes-or-no decision whether**  
8 **a plan counts as a positive or a negative. It**  
9 **could vary depending on the particular Monte Carlo**  
10 **simulation?**  
11 A. In any given Monte Carlo simulation, the answer is  
12 yes. Averaged over Monte Carlo simulations we get  
13 -- that's why we attach a probability to that  
14 threshold number, the probability that we will see  
15 a sign flip given the first election -- efficiency  
16 gap above or below a threshold. That's where that  
17 language of -- of probability comes from.  
18 **Q. And then stepping back, is there a theoretical or**  
19 **reason why you're using a sign flip from positive**  
20 **to negative or negative to positive as the -- the**  
21 **focal point of this analysis?**  
22 A. Yeah. And now we're back to the special meaning  
23 of zero, right? Right, because zero represents an  
24 unbiased -- or a plan that has no apparent  
25 advantage one way or the other, right? Seeing

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1 something on the other side of zero, as it were,  
2 you know, the plan is generating an election  
3 that's got a different message now to -- to the  
4 other messages you may have got, particularly the  
5 message, say, from the first election.  
6 So that's why -- and -- and -- that's why I  
7 thought that was, like I said, a strong test that  
8 -- that -- you know, you get a -- to the extent,  
9 right -- think about it the other way. If you get  
10 all the efficiency-gap values, what we're calling  
11 positive, they're all on the same side of zero,  
12 you've never seen it tell you anything other than  
13 there is partisan advantage for one side or the  
14 other here versus, oh, in one election it did.  
15 And so that's why I thought that was a -- you  
16 know, the -- your ability to characterize a plan  
17 in those terms struck me as really strong. We  
18 have never -- in five out of five elections, it  
19 never -- given all the vagaries and wave  
20 elections, all that stuff, right, we never saw it  
21 send a contrary message, and that struck me kind  
22 of intuitively as a -- as a -- as a strong set,  
23 right? It's not the average. It's not the  
24 median. It's did it ever say anything different  
25 to what we saw in the first election? Yeah.

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1 **Q. And so a false negative, would that cover a plan**  
 2 **that -- using a negative 7 percent threshold that**  
 3 **its first election was under negative 7 percent,**  
 4 **let's just say negative 5 or something like that.**  
 5 A. Right.  
 6 **Q. And then it could have subsequent efficiency gaps**  
 7 **of negative 3, negative 2, negative 1, negative 4.**  
 8 **That's a false negative?**  
 9 A. That would count.  
 10 **Q. Yeah.**  
 11 A. It didn't trip the threshold in election one and  
 12 went on to state -- nonetheless, went on to rack  
 13 up values of the efficiency gap all in the same  
 14 side of zero as the first one.  
 15 **Q. And that would work the same way for a positive**  
 16 **number as well?**  
 17 A. Yes. I know. There's many senses of the word  
 18 "positive" and "negative" being thrown around at  
 19 the moment. But, yes, I know what you mean and  
 20 you're right, yes.  
 21 **Q. So why don't we -- maybe I can just get you to**  
 22 **explain the -- there's seven different --**  
 23 A. Yes.  
 24 **Q. -- measures here and we can go -- go through them**  
 25 **one by one starting with --**

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1 A. Sure.  
 2 **Q. -- sensitivity or the true positive rate. What is**  
 3 **that?**  
 4 A. Well, let me just back up by saying these are all  
 5 quite standard in the literature on assessing  
 6 diagnostic performance, right, and indeed, the  
 7 first two are straight out of the -- the -- the  
 8 medical literature.  
 9 So the true positive rate, known in the  
 10 medical literature as -- as the sensitivity, is  
 11 simply the proportion of positives that test  
 12 positive. So it's cases -- in this case, a  
 13 definition of positive, right, is that we're  
 14 seeing the plan have a sequence of efficiency-gap  
 15 values that are all on one side of zero or all on  
 16 the other side of zero, and the test, right, is  
 17 what we saw in the first election. Did it trip  
 18 some threshold? And so it's just a proportion of  
 19 all those positives that would have tested  
 20 positive, yeah.  
 21 **Q. Okay. And just so -- with all these, there's some**  
 22 **abbreviations here.**  
 23 **So TP stands for true positive?**  
 24 A. Correct.  
 25 **Q. And then FN is false negative?**

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1 A. That's right. And that's to help you out with the  
 2 table, right? Each one of these quantities is  
 3 essentially adding and dividing different  
 4 quantities if you had populated the four entries  
 5 in that two-by-two table. So sometimes we're  
 6 going by -- by rows and sometimes we're going by  
 7 -- by columns. But the abbreviations map back to  
 8 the interior of that table we were just  
 9 discussing.  
 10 **Q. And just to be complete, FP is false positive --**  
 11 A. False positive.  
 12 **Q. -- where we see it later on?**  
 13 A. Yep.  
 14 **Q. And then TN is true negative?**  
 15 A. Correct.  
 16 **Q. Okay. So I think I understand true negative now**  
 17 **after you've explained it.**  
 18 A. Okay.  
 19 **Q. Can you explain what balanced accuracy is?**  
 20 A. Okay. So balanced accuracy, right? So now we've  
 21 got a true positive rate. We've got a true  
 22 negative rate. So balanced accuracy is -- is the  
 23 average of the two, right, because why would we  
 24 want to average them? And the answer is because  
 25 the true positive rate, we're just looking at

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1 positives that test positive. The true negative  
 2 rate, we're just looking at negatives that test  
 3 negative. We want to talk about the overall  
 4 behavior of the test. We've sort of got to put  
 5 those two together, either the two rows or the two  
 6 columns together. And in this case, the balanced  
 7 accuracy measure is a way of combining the  
 8 performance with respect to positives and the  
 9 performance with respect to negatives in a single  
 10 number, and it's called balanced accuracy for --  
 11 as opposed to accuracy. We just confuse  
 12 everybody. That's fine.  
 13 **Q. Yeah. There's also accuracy. Could you explain**  
 14 **what that is?**  
 15 A. Yeah. That's right. So now -- now these are the  
 16 -- now we're doing something else which is --  
 17 right? There are many ways to -- a surprisingly  
 18 large number of ways to analyze a two-by-two table  
 19 and -- and Item 4 there, accuracy, is -- is -- if  
 20 you will, is summing the diagonal. How many of  
 21 the elements line up on the diagonal, because  
 22 they're right calls, right?  
 23 So a true positive, it tested positive and,  
 24 in fact, was positive; and true negative and it  
 25 was, in fact, negative and you -- you know, what

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1 -- what percentage of your cases fall on the  
2 diagonal of this table is essentially the  
3 proportion of, if you will, correct calls out of  
4 the whole universe of -- of cases being tested,  
5 not just positives, not just negatives.

6 **Q. Okay. And, I guess, maybe we should just go on  
7 and do all the rest of them. What is the false  
8 positive?**

9 A. Okay. The false positive rate is the proportion  
10 of -- of negative cases that -- that -- that test  
11 positive. That's why we say it's a false  
12 positive, right? It's -- it's tested positive,  
13 but in -- but in -- but, in fact, it's actually a  
14 negative case.

15 **Q. And then the false discovery rate?**

16 A. Right. The false discovery rate is -- and, you  
17 know, we call it discovery because we think we've  
18 made a discovery that is with our case that has  
19 tested positive, but it's -- but it's -- but it's  
20 actually negative. So it's of your -- right, the  
21 denominator there, your -- your cases that have  
22 tested positive, but you -- in the numerator, it's  
23 the -- it's the number of false positives.

24 **Q. And then the false omission rate?**

25 A. Right. And this is cases that tested negative but

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1 actually turned out to be positive.

2 **Q. And then you have several figures --**

3 A. Yes.

4 **Q. -- that represent these? Figure 1, it says it's  
5 the absolute EG threshold. Does it mean it's the  
6 absolute value with --**

7 A. That's right.

8 **Q. -- respect to sign?**

9 A. Yeah. So we don't take into account whether it's  
10 Republican advantage or Democratic advantage.  
11 It's just tripped because that's what the sign  
12 tells us, so yeah.

13 **Q. And why don't we just go to Figure 1.**

14 A. Yep.

15 **Q. And just to make sure I'm understanding this  
16 right, on the vertical axis there's the rate. So  
17 maybe just explain what does 1.00 mean there?**

18 A. So, for instance, let's take -- or sensitivity is  
19 a very good one, right? Remember that sensitivity  
20 is the proportion of positives that test positive;  
21 and if you set the threshold to zero, then  
22 everything tests positive and they fall -- all of  
23 -- all of your positives tested positive because  
24 everything tested positive and -- and you end up  
25 with a sensitivity of 1.0. That's like your

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1 doctor setting the correct level of -- the healthy  
2 value of the cholesterol to zero so we all test --  
3 we all have high cholesterol, and that, by  
4 definition, captures the people who, in fact, do  
5 have high cholesterol or heart disease, right?

6 So -- so -- and so as you move -- sorry to  
7 interrupt, but as we move from left to right in  
8 each panel, it's the -- the corresponding measure  
9 of prognostic performance is -- is changing and --  
10 but what I've just called rate, you know, panel by  
11 panel we could just substitute in whether we're  
12 talking about sensitivity, whether we're talking  
13 about specificity, and so on across the seven  
14 panels there.

15 **Q. And so in using percentages, 1.0 would be  
16 100 percent?**

17 A. Correct. We're back to that again, yes.

18 **Q. And then .75 would be 75 percent --**

19 A. Correct.

20 **Q. -- and so on down the row? And then on the -- the  
21 horizontal axis, does that refer to the efficiency  
22 gap in the first election held under a plan?**

23 A. That's right.

24 **Q. Okay.**

25 A. On the absolute value of the efficiency gap.

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1 **Q. Correct.**

2 A. Okay.

3 **MR. KEENAN:** We've been going about  
4 an hour. I don't know if you want a break.  
5 I can keep going, but --

6 **MR. POLAND:** I could use a  
7 two-or-three-minute break.

8 **MR. KEENAN:** Okay. Let's do that.

9 **THE WITNESS:** Yeah. Cool.  
10 (Recess)

11 **MR. KEENAN:** We're back on the  
12 record.

13 **Q. Going back to Figure 1, which we were examining  
14 before the break, just a couple of finalizing  
15 things. I take it that the label at the top of  
16 each graph refers back to the various tests we  
17 were just referring to in your testimony?**

18 A. That is correct.

19 **Q. And then in reading the caption to Figure 1, this  
20 says that it spans all the state legislative  
21 elections and district plans 1972 to 2014?**

22 A. That's correct.

23 **Q. So this analysis does include the plans enacted in  
24 the 2010s?**

25 A. We had the same question last time, and I -- I

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1 would need to check whether I kept them in -- I  
2 remember -- and just to -- you know, I'm sure, as  
3 you know, we had this discussion last time. We've  
4 only observed two and -- and I don't -- you know,  
5 I don't think you want the mean. But I would --  
6 and I -- on the basis of our conversation the last  
7 time we spoke, I -- I -- I thought I'd kept them  
8 out, but I can -- I can -- I can verify whether I  
9 did or not.

10 **Q. Yeah. That would be --**  
11 **A. Off the top -- from memory I can't recall. I'd**  
12 **need to consult something to verify if that's the**  
13 **case.**

14 **Q. And that would be fine. Do you have your computer**  
15 **here where you'd be able to do that?**  
16 **A. I could do that if you wished me to.**

17 **Q. I don't need to do it right now, but I think it**  
18 **would be fine at a certain point. We can have you**  
19 **get the computer out and check any information**  
20 **that you don't know offhand that you need to check**  
21 **your computer.**

22 **A. Yeah. Yeah.**

23 **Q. Okay. So just moving to -- we'll go to Figures 2**  
24 **and 3. So if you could just explain to me what**  
25 **Figure 2 is.**

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1 **A. Right. Figure 2 is a -- in effect a rerun of**  
2 **Figure 1 but now restricting our attention to**  
3 **where we've seen the -- the first election under a**  
4 **plan has produced a negative score of the**  
5 **efficiency gap and, of course, a negative score is**  
6 **consistent with the plan having an advantage for**  
7 **Republicans. So it's a subset of the data shown**  
8 **in Figure 1.**

9 And, moreover, that's why some of the lines  
10 have a different shape, because now we're coming  
11 in from negative values to -- along the horizontal  
12 axis -- negative values all the way up to zero  
13 versus the previous graph that was with respect to  
14 absolute values and went from zero up through  
15 positive scores.

16 **Q. And so the right-most line on each of these graphs**  
17 **is zero?**

18 **A. Yeah. Each panel the X axis terminates at zero.**

19 **Q. And then what is Figure 3?**

20 **A. Pardon me?**

21 **Q. Figure 3, just referring to that.**

22 **A. Figure 3 does the opposite now. Now, it's looking**  
23 **at plans that -- whose first value of the**  
24 **efficiency gap is positive, indicative of**  
25 **Democratic advantage, and now we're considering**

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1 the prognostic performance of a threshold;  
2 hypothetically, you know, moving the threshold  
3 over. You know, it's obviously now bounded on the  
4 left at zero right up through, you know, extremely  
5 high values of the efficiency gap -- positive  
6 values of the efficiency gap left to right.

7 **Q. And I believe you testified to this earlier, but**  
8 **the -- there's a line here and there's also like**  
9 **gray area surrounding the line. Could you just**  
10 **explain what those two things are?**

11 **A. Yeah. The -- the line shows what happens when we**  
12 **plug in, you know -- as you correctly referred to**  
13 **them -- all the point estimates and do the**  
14 **computation with the point estimates ignoring the**  
15 **uncertainty accompanying any point estimate of the**  
16 **efficiency gap. And the -- the vertical shading**  
17 **indicates how variable, right, the corresponding**  
18 **prognostic measure is given the uncertainty in the**  
19 **underlying inputs; that is, the uncertainty in the**  
20 **efficiency gap measures themselves. And so those**  
21 **shaded lines span what in statistics we call a**  
22 **95 percent confidence interval.**

23 **Q. Okay. So we'll go back to page 7. I'm referring**  
24 **to the text that's describing these graphs.**

25 **A. Yes.**

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1 **Q. So you say that the .07 threshold is conservative**  
2 **because the rate of false positives is reasonably**  
3 **low at 25 percent and the -- without letting the**  
4 **false omission rate -- omission rate go above**  
5 **50 percent; is that correct?**

6 **A. Yes.**

7 **Q. So at the .07 threshold absolute value, the rate**  
8 **of false positives is 25 percent?**

9 **A. Yeah. Yep.**

10 **Q. And then what -- you say that the false omission**  
11 **rate does not go above 50 percent. Do you know**  
12 **what the actual false omission rate is?**

13 **A. Oh, at .07?**

14 **Q. Yeah.**

15 **A. No. I'm just doing my best to read it off the**  
16 **graph at this -- at this point. But it's -- it's**  
17 **right around -- getting close to .5, perhaps may**  
18 **not have -- it might be around .5, yeah.**

19 **Q. And then what would the false discovery rate be?**  
20 **Could you --**

21 **A. Okay. At .07, it's roughly 32 percent, meaning**  
22 **that, right, the -- of -- of cases that trip the**  
23 **threshold that they go on to -- the proportion of**  
24 **cases that trip the threshold that are actually**  
25 **negative cases, yep.**

<p>Deposition of SIMON JACKMAN 3-16-16 Page 53</p> <p>1 <b>Q. And, I guess, maybe if I could just get you to identify the sensitivity.</b></p> <p>2 <b>identify the sensitivity.</b></p> <p>3 A. Uh-huh. At .07?</p> <p>4 <b>Q. Correct.</b></p> <p>5 A. Okay. Again, I'm reading this off the -- off the graph myself. But, I believe, in the -- in the text, I don't refer to those two measures per se, but I'm -- so I'll just read them off the graph as best I can. About -- about -- again, about -- at .07, the sensitivity is about 32 percent and the specificity is -- is much higher in Figure 1. That's up at about point -- almost .7, high .6s, pushing .7.</p> <p>12 <b>Q. And then the balanced accuracy?</b></p> <p>13 A. Uh-huh.</p> <p>14 <b>Q. Can you tell me what that is at .07?</b></p> <p>15 A. It's about point -- I'm just seeing if the actual number appears in the report. No. So it is -- again, reading off the graph, it is slightly above .5.</p> <p>21 <b>Q. And then the same with --</b></p> <p>22 A. With balanced accuracy?</p> <p>23 <b>Q. Right.</b></p> <p>24 A. It's perhaps a tiny bit higher, about, say -- well, again, just this is a rough guess based on</p>	<p>Deposition of SIMON JACKMAN 3-16-16 Page 55</p> <p>1 -- the false omission rate, things that you should have thrown a flag on but you don't, with the threshold at .07 is -- is actually -- is actually getting up pretty high. What we've done there at .07 is done -- we're literally trading off -- that's the sense in which it's conservative. We're willing to let cases like that go through more so than we're willing to throw a flag when, in fact, we should -- we're quite conservative in setting .07 inviting scrutiny in the first instance.</p> <p>12 <b>Q. So durably skewed means a plan that had elections all with the same EG sign?</b></p> <p>13 A. That's correct.</p> <p>14 <b>Q. Would I be able to get you to give the point -- sorry, the values at a .1 EG threshold on Figure 1?</b></p> <p>15 A. For -- for each of the seven quantities?</p> <p>16 <b>Q. Yeah, for each of the panels. Or is that something that would be easier to do with your computer?</b></p> <p>17 A. I could provide that later on, if we wished --</p> <p>18 <b>Q. Okay.</b></p> <p>19 A. -- and take the guesswork out of it, yeah.</p> <p>20 <b>Q. Okay.</b></p>
<p>Deposition of SIMON JACKMAN 3-16-16 Page 54</p> <p>1 just eyeballing the graph, but about 55 percent.</p> <p>2 <b>Q. Is 55 percent the accuracy or the balanced accuracy?</b></p> <p>3 A. Again, I'm just doing my best here with the --</p> <p>4 <b>Q. Yeah. Just like you gave slightly about --</b></p> <p>5 A. They're about the same, actually --</p> <p>6 <b>Q. Okay.</b></p> <p>7 A. -- as I -- as I kind of lean right in and squint at the graph hard, yeah.</p> <p>8 <b>Q. Okay.</b></p> <p>9 A. Yeah. In the -- in the -- yeah, about 55 percent each.</p> <p>10 <b>Q. Turning back to page 7 --</b></p> <p>11 A. Uh-huh.</p> <p>12 <b>Q. -- the last sentence you say, "To reiterate, the proposed standard for judicial scrutiny is cautious and conservative erring on the side of letting even durably skewed plans stand."</b></p> <p>13 A. Uh-huh.</p> <p>14 <b>Q. What do you mean by "durably skewed plan"?</b></p> <p>15 A. Well, a durably skewed plan there is a synonym for an actual positive and the threshold is -- is letting -- at .07, you've set the threshold high that the -- that you're letting -- a lot of actual positives are actually testing negative. So the</p>	<p>Deposition of SIMON JACKMAN 3-16-16 Page 56</p> <p>1 A. Yeah. Happy to help like that, yep.</p> <p>2 <b>Q. And I think, perhaps, I'll have you do the same thing for Figures 2 and 3. We can just get the exact answers from the code.</b></p> <p>3 A. Okay. And the idea is we'll just do that orally or you want me to --</p> <p>4 <b>Q. I'm fine asking you the question and having you tell the answer on the record.</b></p> <p>5 A. And just read it off the machine later?</p> <p>6 <b>Q. Yes.</b></p> <p>7 A. Is that --</p> <p>8 <b>MR. POLAND:</b> We could do that or we could also -- I mean, we could take a break and we can look it all up and we could have that, you know, ready to go.</p> <p>9 <b>MR. KEENAN:</b> Whatever's easiest, I mean.</p> <p>10 <b>MR. POLAND:</b> Okay.</p> <p>11 <b>THE WITNESS:</b> Okay.</p> <p>12 <b>Q. I'm not as familiar with how "R" code works and how it would be easiest for you to do it. So going to page 10 --</b></p> <p>13 A. Yes.</p> <p>14 <b>Q. -- you talk about an asymmetry in the results. What asymmetry did you see between the</b></p>

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1 **pro-Democratic and pro-Republican?**  
 2 A. Well, at .07, you're -- you're letting plans that  
 3 begin life with a Democratic advantage -- so let's  
 4 just go to that graph. That's Figure 3. You're  
 5 -- you're making some -- some false discoveries  
 6 there more so than you would for Republican  
 7 advantage. In Figure 2, you'll observe that. If  
 8 you were to compare the panel labeled false  
 9 discovery in Figure 3 with Figure 2, it's my sense  
 10 that those are offset by -- by a -- by a -- by a  
 11 -- a considerable -- they're considerably  
 12 different from one another.  
 13 So the false discovery, right, for plans that  
 14 trip negative .07, that is Republican advantage,  
 15 is -- is -- is -- is quite low, but up -- up to  
 16 about three times as high on -- on -- on the  
 17 Democratic side.  
 18 So you'd be actually submitting -- on that  
 19 set of plans on the Democratic side, you'd be  
 20 inviting -- didn't think it would turn out this  
 21 way, but as it turns out, you'd be inviting more  
 22 scrutiny of -- of -- of -- of Democratic plans  
 23 that actually turn out to be negative cases. And  
 24 that goes back to the earlier point we were  
 25 talking about about the durability of apparent

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1 pro-Democratic bias in the first election in a  
 2 sequence under a plan. That's -- those two are  
 3 essentially analogous things, equivalent things  
 4 we're seeing, yeah.  
 5 **Q. So the reasons for this asymmetry, your opinions**  
 6 **for the -- about the reasons for this asymmetry**  
 7 **would be the same testimony you gave previously to**  
 8 **that?**  
 9 A. Yeah. Yeah. What explains this -- because it is  
 10 the same phenomena, so the explanation for one is  
 11 the explanation for this behavior as well.  
 12 **Q. Go on to Section 3, the plan -- the plan**  
 13 **average --**  
 14 A. Yes.  
 15 **Q. -- efficiency-gap sign. Maybe you could just**  
 16 **explain what type of analysis you did that's**  
 17 **listed here in Section 3.**  
 18 A. Okay. Okay. So this asks a different question to  
 19 what I've asked hitherto. Now we're asking --  
 20 we've got the same threshold testing in mind, what  
 21 is the value of the efficiency gap we observe  
 22 under the first election, but now we're asking not  
 23 do we have to see a sign flip. Now we're asking  
 24 does the average efficiency-gap value under the  
 25 plan have the same sign as the first value you

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1 saw? So it's asking about where is the average  
 2 now rather than will you ever see a draw from that  
 3 distribution with one or more of the -- of the  
 4 draws being on the other side of zero to the first  
 5 draw.  
 6 So it's a less strenuous test of the proposed  
 7 standard, and that's reflected in the behavior of  
 8 it as a prognostic -- we have -- you know, has  
 9 better prognostic -- the first election is a  
 10 better predictor of that subsequent behavior than  
 11 -- than the more extreme test we were subjecting  
 12 the first election to in the previous analysis.  
 13 **Q. Now, in this calculation, the first election's EG**  
 14 **will be a component of the plan average, correct?**  
 15 A. That's right.  
 16 **Q. So how do you account for that, or do you?**  
 17 A. Well, that is -- this is what it is, right? You  
 18 can do it two ways. You can compute the average  
 19 holding out the first one or you can have the --  
 20 have -- you know, are we going to have -- compute  
 21 an average of five observations or are we going to  
 22 have to compute an average of four observations,  
 23 you know, typically? And -- and we could -- we  
 24 could do it either way and, indeed, I may have  
 25 played with that. It's ringing a bell that that

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1 might have been something I looked at, but -- but,  
 2 you know, it's part of the sequence. It's -- it's  
 3 -- it's -- it's -- the first election is still,  
 4 nonetheless, indicative of what the average will  
 5 be, you know.  
 6 **Q. Sure.**  
 7 A. We --  
 8 **Q. Sure. And your calculations include the first**  
 9 **election in the calculation?**  
 10 A. I believe so, but I -- I'm happy to verify that  
 11 when we take that break and go at some of the  
 12 code.  
 13 **Q. And then there is a series -- Figures 4, 5, and 6**  
 14 **here.**  
 15 A. Yep.  
 16 **Q. I don't think we need to go into them as much**  
 17 **detail as we did for 4.**  
 18 A. For sure.  
 19 **Q. But the -- the horizontal/vertical axis and labels**  
 20 **correspond to what we talked about before with**  
 21 **respect to Figures 1, 2, and 3; is that right?**  
 22 A. Precisely. And, if you will, even sequentially 1,  
 23 2, and 3 have respectively -- they're analogs now  
 24 with 4, 5, and 6.  
 25 **Q. All right. So I think we can move on from**

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1 **Section 3 --**  
 2 A. Okay.  
 3 **Q. -- on to Section 4.**  
 4 A. Oh, right, yes.  
 5 **Q. Could you explain the analysis that you did that's**  
 6 **contained in Section 4?**  
 7 A. Yeah. Well, it's closely related to what we were  
 8 just discussing about Section 3. This is the  
 9 extent to which the first election efficiency-gap  
 10 reading and -- that is to say, the efficiency-gap  
 11 value you get from the first election under a plan  
 12 is -- is predictive of the average efficiency gap  
 13 you'll see over the totality of elections under  
 14 the -- under the -- under that plan.  
 15 And, for instance, Figure 7 is essentially a  
 16 summary of that. We're talking about the  
 17 relationship between two numbers now. The first  
 18 value of the -- the first election efficiency-gap  
 19 score and the plan average efficiency gap; and the  
 20 idea is, you know, let's investigate the  
 21 relationship between those two quantities.  
 22 **Q. And I see --**  
 23 A. You'd like there to be a relationship, or at least  
 24 one -- one could imagine being interested in the  
 25 extent to which there is a relationship between

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1 those two given everything I just said, you know.  
 2 **Q. And I see in this paragraph -- the paragraph that**  
 3 **starts Figure 7 on page 15, it says that, "Only**  
 4 **plans with a" -- "with three or more elections are**  
 5 **included," so that means that the most recent --**  
 6 A. That's right.  
 7 **Q. -- round has been excluded?**  
 8 A. Would be out, yes, would be out, right, and it --  
 9 and Figure 7 has the same restriction.  
 10 **Q. I'm in the middle of that paragraph. There's a**  
 11 **sentence that says, "Instead, we see a classic**  
 12 **'regression-to-the-mean' pattern with a positive**  
 13 **regression slope of less than one," and it says in**  
 14 **parentheses "(as indeed we should given that the**  
 15 **first election EG on the horizontal axis**  
 16 **contributes to the average plotted on the vertical**  
 17 **axis)."**  
 18 **Maybe you can just explain what you mean**  
 19 **there to someone who's not as well versed in**  
 20 **statistics as you are.**  
 21 A. Yes. I believe you -- you hit on it in about  
 22 three or four questions ago; and that is, if  
 23 you're analyzing the relationship between the  
 24 average for -- based on a small number of cases,  
 25 it's a mathematical fact that there's going to be

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1 some reasonably predictable relationship between  
 2 any one of those data points; the first, the  
 3 second, but it doesn't really matter, but -- and  
 4 the average, right? And we can take the absurd  
 5 case of where we have the average just based on  
 6 one case in which it's that case and that would  
 7 give us a perfect relationship. So now we're up  
 8 to computing an average based on four, typically  
 9 five cases, and we're asking what's the  
 10 relationship between the first of that sequence of  
 11 four or five values and the average of the four or  
 12 five values?  
 13 So that is to say -- and in statistics, okay,  
 14 regression to the mean, that -- that language  
 15 refers to a well -- you know, if -- if you have  
 16 data of that sort, as we do here, one ought to  
 17 expect some kind of relationship between the two.  
 18 It would be kind of implausible that the  
 19 relationship there didn't bear some -- some kind  
 20 of relationship.  
 21 But regression to the mean picks up on the  
 22 fact that often on any one draw, if it's an  
 23 extremely low score, it -- the corresponding mean  
 24 will lie further towards the interior of the data  
 25 than, you know, a typical score close to -- in

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1 this case, close to -- zero is going to be close  
 2 to the mean, closer to the mean, and with an  
 3 extreme value.  
 4 You see, the phrase comes from, actually, the  
 5 very first users of the word "regression" in  
 6 statistics where people noticed that the children  
 7 of exceptionally tall parents tended not to have  
 8 quite as tall, and the children of exceptionally  
 9 short people, their kids tended not to be --  
 10 tended to be shorter than average but not quite as  
 11 short as -- as the parents, and that's -- the  
 12 phrase has stuck. And anytime we have sort of  
 13 patterns like that, we -- we -- in statistics, at  
 14 least, refer to that with the shorthand regression  
 15 to the mean, and we have some of that going on in  
 16 Figure 7.  
 17 **Q. Sure. And it says that -- continuing on a couple**  
 18 **sentences later it says, "The variation in plan**  
 19 **average efficiency gaps explained by this**  
 20 **regression is quite large --**  
 21 A. Uh-huh.  
 22 **Q. -- about 73 percent."**  
 23 A. Uh-huh.  
 24 **Q. And then there's some language above the**  
 25 **confidence intervals.**

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1 **What do you mean by "the variation in plan**  
 2 **average is explained by regression"?**  
 3 A. Literally what we mean is, if I could refer to  
 4 Figure 7 in answering that, the vertical spread of  
 5 the data, the spread of the data in the vertical  
 6 dimension is well accounted for by the spread of  
 7 the data in the horizontal dimension, and that is  
 8 merely to say that X is a good predictor; in fact,  
 9 you might even say a very good predictor of Y  
 10 here. The preceding language about regression to  
 11 the mean is indicating we shouldn't be too  
 12 surprised that there's some relationship, right?  
 13 As you noted in your earlier question, you know,  
 14 there has to be some kind of relationship between  
 15 data point one and the mean of the succeeding four  
 16 or five data points.  
 17 But what I'm noting with that comment about  
 18 the amount of variation explained is that it -- by  
 19 social science standards, that's a pretty good  
 20 fit, might be even a very good fit, to the data.  
 21 You can do a pretty good job, perhaps even a very  
 22 good job, of predicting plan average efficiency  
 23 gap given the efficiency gap you see from the  
 24 first election.  
 25 **Q. And then it says it's 73 percent. What would we**

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1 **think of the other 27 percent that's not accounted**  
 2 **for here?**  
 3 A. Yeah. That's where the first election is  
 4 unusually different from what the plan turned out  
 5 to be. That's -- that's -- that's where -- so  
 6 indeed, you know, there's a few cases labeled on  
 7 the graph where the first election lies a long way  
 8 from -- from the -- from the mean. So there's a  
 9 -- there's some of the more extreme examples that  
 10 are labeled on the graph. But, in general, the  
 11 pattern is one of a strong relationship between  
 12 first election efficiency gap and the plan average  
 13 efficiency gap.  
 14 **Q. And, I guess, we can look at that Figure 7.**  
 15 A. Sure.  
 16 **Q. And you mentioned a couple of labels there. For**  
 17 **example, I see VT4 --**  
 18 A. Uh-huh.  
 19 **Q. -- listed there. What does VT4 mean?**  
 20 A. Okay, VT4. VT is Vermont, so it's just the  
 21 two-letter abbreviation for each state. Then the  
 22 number is the -- refers to the decade. And the  
 23 way this works is conventionally that '70s plan is  
 24 one, '80s are two, '90s are three, '00s are four,  
 25 and the '10s are five.

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1 **Q. Okay. So I'm reading this correctly, Vermont 4,**  
 2 **that would be the 19 -- or 2000's plans?**  
 3 A. '70s, '80s, '90s, yes, yes.  
 4 **Q. It started out with a negative efficiency gap in**  
 5 **its first election of, I don't know, maybe**  
 6 **negative .04 or 5?**  
 7 A. Maybe not that big, but yeah.  
 8 **Q. All right.**  
 9 A. Or close.  
 10 **Q. And then it -- but then its average ended up**  
 11 **being --**  
 12 A. Yes.  
 13 **Q. -- positive?**  
 14 A. Right, .5 or -- .05 or 5 percent.  
 15 **Q. Okay. And then if we look at another one, WA3,**  
 16 **would that be Washington from the 1990s?**  
 17 A. Exactly right, and that's gone the other way where  
 18 the first election produced a positive value of  
 19 the efficiency gap, right, of about, let's call  
 20 it, 6 percent, but has gone on to produce a plan  
 21 average of, you know, negative -- what is that,  
 22 yeah, negative 6 percent, yeah.  
 23 **Q. If we think of the Wisconsin 2000's plan, it had a**  
 24 **first election that was negative .75 and the**  
 25 **average was fairly close to that as well. Would**

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1 **its data point then be close to the -- the**  
 2 **diagonal -- black diagonal line that goes from**  
 3 **corner to corner?**  
 4 A. Correct.  
 5 **Q. Okay.**  
 6 A. Absolutely correct. To the extent the first data  
 7 point -- if -- indeed, if it was a perfect  
 8 relationship between the first efficiency gap and  
 9 the average, if -- if we hit the average dead on  
 10 every time, all the data would lie on that  
 11 45-degree line. But you're right. I think that  
 12 Wisconsin case would be -- would lie very close to  
 13 the 45-degree line for the '00 decade.  
 14 **Q. And then going to the next page --**  
 15 A. Sure.  
 16 **Q. -- the top paragraph on page 16 --**  
 17 A. I'm sorry. Yep.  
 18 **Q. I'm sorry.**  
 19 A. No. I got it.  
 20 **Q. I meant the previous page. The paragraph says,**  
 21 **"The historical relationship between first**  
 22 **election EG and plan average EG shown in Figure 7**  
 23 **indicates that a first election EG of negative .07**  
 24 **is typically associated with a plan average EG of**  
 25 **about negative .053." Did I read that correctly?**

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1 A. Yes.  
2 **Q. So -- and then I noticed it has a 95 percent**  
3 **confidence interval. That's what CI means, right?**  
4 A. That's correct.  
5 **Q. Of negative .111 to .004. That seems like a large**  
6 **confidence interval to me. Can you explain why**  
7 **it's such a large range?**  
8 A. Well, because it doesn't fit the data perfectly,  
9 right? It's not a -- right. The data are --  
10 there's some variability around the fitted  
11 regression line, which is the blue line on -- if  
12 you've got a color copy of Figure 7 on -- on  
13 page 17. It won't be a perfect relationship  
14 between the first election efficiency gap.  
15 And the other thing why -- confidence  
16 interval why, is we're out in the tail of the data  
17 too. Recall -- keep that in mind. Now, when we  
18 predict out of a regression model, the imprecision  
19 accompanying a prediction is a function of how  
20 unusual the hypothetical case you're considering  
21 is as -- as an input to the regression.  
22 So the input we're considering is a first  
23 election EG of negative .07, right, which is  
24 unusual or relatively unusual in -- in -- in these  
25 data and, therefore, the regression prediction's

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1 conditional on an unusual event. Subsequent  
2 predictions tend to be accompanied with more  
3 uncertainty than if we're predicting, say, at the  
4 middle of the data set.  
5 So that's why that confidence interval will  
6 -- is as large as it is. I -- I point out the --  
7 the words that appear in the -- in the -- in the  
8 very next line, that "conditional on a first  
9 election efficiency gap of negative .07." Even  
10 taking into account the confidence interval  
11 accompanying this unusual scenario, the  
12 probability that resulting expected plan average  
13 efficiency gap is negative -- is 96 and a half  
14 percent, all right? So that confidence interval  
15 does -- 95 percent does just touch positive  
16 territory, as you pointed out in your question to  
17 me; but, indeed, that's why the next remark  
18 appears indicating that the probability -- we  
19 would expect to see a negative average value of  
20 the efficiency gap is still above 95 percent and,  
21 indeed, it's 96.5.  
22 **Q. And then the -- going on it says, "The first**  
23 **election EG of positive .07, there's typically a**  
24 **plan average EG of .037." Do you see that?**  
25 A. That's right. That's right.

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1 **Q. But, in this case, the probability that the**  
2 **resulting expected plan average is positive is**  
3 **89.8 percent; is that correct?**  
4 A. That's right.  
5 **Q. And is this another instance of the asymmetry**  
6 **we've been talking about?**  
7 A. Exactly. Now, there's the third manifestation  
8 this morning of the -- of that -- of that  
9 behavior, that the apparent pro-Democratic  
10 advantage, as evident in the first efficiency gap  
11 reading under a plan, does not appear to be as  
12 durable. Therefore, in this case, as we try to  
13 predict the average value of the efficiency gap,  
14 we'll see over the life of the plan it's  
15 accompanied with more uncertainty, right?  
16 So two things to note there: That the  
17 prediction has come much further back in toward  
18 zero, right, all right, where we go from negative  
19 .07 and the prediction about the average is now  
20 negative .053. If we saw positive .07, our  
21 prediction for the plan average comes all the way  
22 back into .037 and -- and the confidence interval  
23 has to at that point have more mass on -- on the  
24 other side of zero, yeah.  
25 **Q. For both positive and negative .07, we see that**

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1 **the plan average is closer to zero than the first**  
2 **election; is that correct?**  
3 A. Yes, and that's regression to the mean, that  
4 regression-to-the-mean phenomenon I was  
5 describing.  
6 **Q. Is that true for each -- each possible first**  
7 **election EG you calculated?**  
8 A. And, indeed, that's what the regression line  
9 describes. The -- and the regression line, just  
10 so I'm being perfectly clear, is the blue line on  
11 Figure 7. And if you -- that provides the -- if  
12 you will, the set of predictions about plan  
13 average efficiency gap given first election  
14 efficiency gap, and you can literally project up  
15 from the horizontal axis, hit that blue line, and  
16 project over to the vertical axis will give you a  
17 prediction in every instance.  
18 **Q. So, on average, after we see one data point in the**  
19 **first election, we would expect that the plan**  
20 **average would be closer to zero than what we see**  
21 **in the first election?**  
22 A. That's correct.  
23 **Q. I guess, I suppose, I'd say for like a positive EG**  
24 **it would be closer to --**  
25 A. Less positive.

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1 **Q. Less positive, and a negative EG would be less**  
 2 **negative?**  
 3 A. Less negative, yes, yes. But by an amount,  
 4 though, right? This is the key thing about  
 5 regression to the mean; that is, it's  
 6 self-decreasing as we get closer to zero. So if  
 7 you started close to zero, you wouldn't go as  
 8 close to zero, right, as if you'd -- if you're out  
 9 in the tails, and we would just hark back to that  
 10 discussion, the analogy about regression to the  
 11 mean, yeah.  
 12 **Q. The regression back to the mean is larger the**  
 13 **further away from zero you are?**  
 14 A. Correct.  
 15 **Q. All right. I'm learning. Okay. Going on in the**  
 16 **next paragraph, it talks about Wisconsin in**  
 17 **2012 --**  
 18 A. Right.  
 19 **Q. -- and the initial efficiency gap of negative**  
 20 **.133. Could you explain why you predict that the**  
 21 **probability that it will have an average**  
 22 **efficiency gap of positive is less than .1**  
 23 **percent?**  
 24 A. Could you just --  
 25 **Q. Sure.**

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1 A. Oh, oh, right, the end of the paragraph. I'm  
 2 sorry. I see. Okay. So -- okay. So I'll just  
 3 walk you through, if you don't mind --  
 4 **Q. Sure.**  
 5 A. -- the -- the logic in -- in that -- in that  
 6 paragraph. Now we -- we take as an input to this  
 7 exercise the first value of the efficiency gap we  
 8 see in Wisconsin in 2012. What we have now with  
 9 reference to Figure 7, we're starting off now at  
 10 negative .133 on the horizontal axis, right,  
 11 almost at the very edge of the observed data, all  
 12 right, and perhaps maybe even slightly to the left  
 13 of it. I'm not quite sure. And then we project  
 14 up and we hit the blue line; and then we go over  
 15 against the vertical axis to get our prediction of  
 16 what the plan average efficiency gap will be and  
 17 we arrive at .095, or negative 9.5 percent.  
 18 Now, we're able to put a confidence interval  
 19 on that prediction and that confidence interval is  
 20 bounded, right? They're both negative numbers,  
 21 the limits of confidence interval. And, moreover,  
 22 you can even ask a further question -- and  
 23 remember, I'm -- let the record show I'm  
 24 describing a bell-shaped curve with my -- with my  
 25 finger here, one of the -- how much of that

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1 bell-shaped curve spills over into -- into  
 2 positive territory. That is -- you would --  
 3 right? What's the probability that --  
 4 nonetheless, we were at a point estimate of  
 5 negative -- for the average of negative 9 and a  
 6 half percent. There's some uncertainty around  
 7 that. I just want to be perfectly clear, right,  
 8 that we're up to -- we're better than 99.9 percent  
 9 sure that given the historical relationship  
 10 between first plan efficiency gap and average --  
 11 plan average efficiency gap, that the Wisconsin  
 12 plan, if left to run, will -- will have a -- a --  
 13 a pro-Republican average efficiency gap.  
 14 **Q. And --**  
 15 A. So they're less than 0.1. Perhaps the more  
 16 dramatic way of putting that might be more than  
 17 99.9 of -- of -- of continuing to show Republican  
 18 advantage.  
 19 **Q. And then just -- maybe we could just go to**  
 20 **Figure 7 and I can ask the same questions on that**  
 21 **just to make sure I can understand it and apply**  
 22 **it.**  
 23 A. Sure. Uh-huh.  
 24 **Q. So maybe we could just take a look at negative .07**  
 25 **on the horizontal.**

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1 A. Yeah.  
 2 **Q. So that horizontal axis refers to the first --**  
 3 A. That's correct.  
 4 **Q. -- election efficiency gap? And so if I -- if**  
 5 **there's an election with a negative .07 and I go**  
 6 **up from there to the blue line --**  
 7 A. Uh-huh.  
 8 **Q. -- that would tell me what the expected average**  
 9 **efficiency gap would be?**  
 10 A. That's correct.  
 11 **Q. Okay.**  
 12 A. If we were then to project over to the vertical  
 13 axis, that's right.  
 14 **Q. And then that would apply for any observed first**  
 15 **efficiency gap. I would go to the relevant spot**  
 16 **on the horizontal axis and move up to the blue**  
 17 **line?**  
 18 A. That's correct.  
 19 **Q. Okay. All right. I think it might be helpful to**  
 20 **maybe get the computer now and we can talk about**  
 21 **the --**  
 22 A. Oh, because you were ready to --  
 23 **Q. Move on.**  
 24 A. -- go on to five and -- yeah. Okay.  
 25 **MR. KEENAN:** So we can take a short

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1 break.  
2 **THE WITNESS:** Will that be okay  
3 before I --  
4 **MR. POLAND:** Yeah. That's fine.  
5 (Recess)  
6 **MR. KEENAN:** We're back on the  
7 record.  
8 **Q. So we're back from a short break, and I was going**  
9 **to follow up with some questions that I postponed**  
10 **earlier --**  
11 A. Yes.  
12 **Q. -- to allow you to consult with your "R" code to**  
13 **get the answers. Have you been able to do that**  
14 **during the break?**  
15 A. I have.  
16 **Q. Okay. So I think the first question was in**  
17 **looking at the analysis in Section 2 --**  
18 A. Yeah.  
19 **Q. -- whether that analysis included the plans that**  
20 **were enacted following the 2010 census or whether**  
21 **they were excluded?**  
22 A. They're in.  
23 **Q. Included, okay. And then we also had some**  
24 **questions on -- I had some questions on the**  
25 **precise values of some of the graphs that are**

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1 **contained, like Figure 1, 2, and 3, and were you**  
2 **able to look at that information?**  
3 A. Yeah. What we did was to get the number exactly  
4 corresponding to .1 --  
5 **Q. Correct.**  
6 A. -- I believe, on the -- is what you're asking. So  
7 I've got those viable for Figures 1, 2, and 3.  
8 **Q. Okay. So why don't we just -- we'll go in order,**  
9 **Figure 1, and then we'll start with sensitivity --**  
10 A. Exactly.  
11 **Q. -- and work our way to the right.**  
12 A. Yes. From left to right, the corresponding  
13 numbers go: Sensitivity, .20; specificity, .91;  
14 balanced accuracy, .56; accuracy, .52; false  
15 positive, .08; false discovery, .26; and false  
16 omission, .51. And that's all conditional on  
17 the -- being at .10 on the horizontal axis.  
18 **Q. Okay. So then, I guess, we move to Figure 2,**  
19 **which would be now negative .1.**  
20 A. Exactly. The numbers run in sequence.  
21 Sensitivity, .17; specificity, .98; balanced  
22 accuracy, .58; accuracy, .65; false positive, .02;  
23 false discovery, .12; and false omission, .38.  
24 **Q. Okay. And then head to Figure 3 --**  
25 A. Uh-huh.

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1 **Q. -- and use .10.**  
2 A. Correct. We go .11, .95 -- I'm sorry. I'll read  
3 each one. Balanced accuracy, .53; accuracy, .64;  
4 false positive, .05; false discovery, .43; and  
5 false omission, .35.  
6 **Q. Okay. Thank you. And now we can turn to**  
7 **Section 5. This deals with party control.**  
8 A. Let's go to that then. Great.  
9 **Q. And maybe I -- we'll mark two exhibits.**  
10 A. Oh, right. Yes, yes, yes.  
11 **MR. KEENAN:** This will be 57.  
12 (Exhibit Nos. 57 and 58  
13 marked for identification)  
14 **Q. First, could you just identify what Exhibit 57 is?**  
15 A. 57 appears to be an email from  
16 Nicholas Stephanopolous to myself with some other  
17 parties cc'd.  
18 **Q. And what was Mr. Stephanopolous sending you**  
19 **attached to this email?**  
20 A. There were two attachments to the email, two Excel  
21 spreadsheets.  
22 **Q. And what was your understanding of what the data**  
23 **that would be on those spreadsheets was?**  
24 A. One would contain efficiency-gap values for  
25 congressional elections. The other contained data

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1 indicating which group, partisan or otherwise, was  
2 nominally designated as controlling the  
3 redistricting process in a given state in a given  
4 year.  
5 **Q. And, for the record, I have not made a copy of the**  
6 **congressional EG data attachment, because I wasn't**  
7 **going to ask you about it. So to save some trees,**  
8 **I haven't done that, but if you could identify**  
9 **what Exhibit 58 is.**  
10 A. Yes. Exhibit 58 --  
11 **Q. And it's a -- it's a two-sided document --**  
12 A. Yes. I've got it.  
13 **Q. -- so you know.**  
14 A. I'm familiar with this. This is a printout of the  
15 Excel spreadsheet, the second one I referenced,  
16 the party control Excel spreadsheet.  
17 **Q. Could you explain the information that's contained**  
18 **on Exhibit 58?**  
19 A. Yes. It is organized in -- each record -- each  
20 row of the spreadsheet is a state election year  
21 combination and it's blank, has no data for  
22 election year, it appears, in 1970. But beginning  
23 in 1972, it contains an indicator for whether the  
24 redistricting plan under, which the corresponding  
25 election was held, whether that redistricting plan

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1 was -- came -- was the product of an independent  
2 commission, a court, and then there's also  
3 indicators for whether it came out of a process  
4 controlled by the legislature or the state  
5 government more generally, and if so, was that  
6 state government under unified Democratic control  
7 or unified Republican control or, as we call it,  
8 divided government; say, a mismatch between the  
9 party of the governor and the parties that were  
10 controlling the state legislature would be an  
11 indicator -- that would be an instance of what we  
12 meant by divided government.  
13 **Q. So did your historical analysis, both in your**  
14 **original report and in the rebuttal report, did it**  
15 **consider elections in the year 1970?**  
16 A. No.  
17 **Q. Okay. So we can ignore those.**  
18 A. Okay. Yes.  
19 **Q. And then if we could -- what does -- maybe you can**  
20 **just explain what a zero or one indicates in a**  
21 **particular column.**  
22 A. It's -- it's -- literally, zero connotes no and  
23 one means yes --  
24 **Q. Okay.**  
25 A. -- for -- for the -- for the attribute indicated

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1 by the column header.  
2 **Q. And then we see the state name. That's pretty**  
3 **obvious --**  
4 A. Uh-huh.  
5 **Q. -- I would think. And then the abbreviation for**  
6 **the state.**  
7 A. Uh-huh.  
8 **Q. What does the number in the FIP column stand for?**  
9 A. Oh, that's a FIPS code, which is a  
10 Federal Information Processing Standard.  
11 Sometimes states are labeled with a -- with their  
12 so-called FIP code, and that's helpful to have  
13 depending on -- as you would with these data,  
14 you'd be merging them against some other data set  
15 and in that other data set where the state's  
16 labeled by the full name, their postal  
17 abbreviation code, or by their FIPS code, and  
18 you've got three butts of the cherry there, as it  
19 were, to help you if you want to bring other --  
20 other data sets to bear, which is what we're going  
21 to do with these data.  
22 **Q. Okay. And so, for example, if I see Wisconsin is**  
23 **listed here with -- on the second page with 55 --**  
24 A. That's its FIPS code.  
25 **Q. And so every time Wisconsin appears in this**

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1 **document, it will have a 55 next to it?**  
2 A. It should.  
3 **Q. Okay. And every other state will have a unique**  
4 **number associated with it?**  
5 A. Yeah, just as it's got a unique two -- two-letter  
6 postal abbreviation too.  
7 **Q. And then just so I understand it, if there's**  
8 **multiple elections under the same plan, are those**  
9 **elections listed multiple different times in this**  
10 **document?**  
11 A. That's the way these data are organized. Perhaps  
12 not efficiently, right? It means there are  
13 redundant rows, but they're being organized at the  
14 level of state election when the more efficient  
15 rendering, perhaps, might be, as the question  
16 presupposes, you know, election plan, yeah.  
17 **Q. Okay. So just, for example, like Wisconsin 2012**  
18 **and 2014 will be listed two times even though it's**  
19 **under the same plan?**  
20 A. Let me just -- I'll verify that. Well, so there's  
21 -- right. There's an entry for Wisconsin 2012 and  
22 another entry for -- where was it? Oh.  
23 **Q. I notice that some of them are a little bit out of**  
24 **order, but --**  
25 A. No. It was just on the back page. Yeah. That --

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1 that's correct.  
2 **Q. But elections under the plans -- same plans should**  
3 **have the same zeros and ones in the same columns?**  
4 A. That's my understanding of the organization of  
5 this data set.  
6 **Q. And is it your understanding that this chart would**  
7 **refer to the body that instituted both state**  
8 **legislative plans and congressional plans?**  
9 A. That I don't know.  
10 **Q. But it's your understanding it definitely covers**  
11 **state legislative plans?**  
12 A. That's my understanding of these data.  
13 **Q. All right. And then was this document the source**  
14 **of the information for your party control analysis**  
15 **that is reflected in Section 5 of your report?**  
16 A. That's correct.  
17 **Q. So you can put that aside. I don't know that**  
18 **we'll refer to it, but --**  
19 A. Okay.  
20 **Q. So there has been a change in the party control of**  
21 **the districting process over time, correct?**  
22 A. That's correct.  
23 **Q. And so can I just get you to outline what the**  
24 **party control was in terms of Republicans and**  
25 **Democrats? And then I don't know what the correct**

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1 term should be for a nonpartisan or bipartisan  
2 body. What should we call that?  
3 A. All others.  
4 Q. Okay.  
5 A. So everything from commissions to courts to plans  
6 that were brought up under divided government,  
7 yeah.  
8 Q. Okay.  
9 A. So it's literally -- there's a -- the data are  
10 richer than this, but we've -- we've broken it out  
11 just into three categories -- collapsing that  
12 information into three categories: Unified  
13 Democratic, unified Republican, and the rest.  
14 Q. Okay. So if I could get you to identify the  
15 breakdown between the three categories for the  
16 1990's plans.  
17 A. Yes. So Figure 8 does -- does this for you. In  
18 Figure 8, we see that going back to the 1990s, the  
19 proportion of plans brought up under -- that were  
20 brought up through the legislature and control of  
21 the redistricting -- well, the state government  
22 itself, right, where that was Republican governor  
23 and Republican legislators. There was a  
24 relatively small number of such plans in the -- in  
25 the 1990s around -- and the number there, you

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1 know, again, reading off the graph is -- the exact  
2 number might appear in the report, but, yeah,  
3 about 10 percent. That's right.  
4 That goes up as we -- you know, and these  
5 data are just for the three -- the last three  
6 decades, 1990s, 2000s, 2010s, left to right, and  
7 that goes up. So that by the time we get to 2010,  
8 we're up to about 40 percent of plans were  
9 produced under that condition we're labeling  
10 unified Republican control.  
11 Q. And in the 2000s, is that about 20 percent?  
12 A. Yeah. Let's go ahead and -- that's -- that's  
13 about right, yeah.  
14 Q. And then Democrats -- I believe you said that  
15 1990s it started at 30 percent in the report?  
16 A. Yeah.  
17 Q. And then how does that change as we move to the  
18 2000s and then the 2010s?  
19 A. Well, that falls down to a roundabout 20 percent  
20 by -- 20 versus 15 into 2000s; and then in 2010,  
21 we're down to less than 20 percent designed by --  
22 under unified Democratic control.  
23 Q. Okay.  
24 A. So the point is we essentially invert the  
25 preponderance -- the relative preponderance of

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1 plans 1990s and we go from preponderance of -- to  
2 the extent they are unified, one side of politics  
3 or the other controlling the redistricting  
4 process, we go from that being a predominantly  
5 Democratic phenomenon in the 1990s to a  
6 predominantly, you know, Republican phenomenon by  
7 the 2010s, yeah.  
8 Q. And the other institution in the 1990s at  
9 60 percent?  
10 A. Yeah. That's about right, 60, 60, you know, falls  
11 slightly to the -- just above the Republican --  
12 unified Republican proportion by the time of the  
13 2010s.  
14 Q. And then in the 2010s is it -- looks about  
15 60 percent as well?  
16 A. No. To my eye --  
17 Q. Sorry. The 2000s. I misspoke.  
18 A. Oh, pardon me, yes, yes. That's right.  
19 Q. And then, I believe you say, it's 40 percent in  
20 the 2010s?  
21 A. Uh-huh. Yes.  
22 Q. So could you explain -- and your report references  
23 a regression analysis you performed on this data.  
24 A. Sure.  
25 Q. Could you explain what you did?

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1 A. Okay. So in each decade, you run a regression  
2 that predicts the magnitude of the efficiency gap  
3 based on which one of these three categories, as  
4 we were just talking about, the given election  
5 falls in; that is, is it an election under a plan  
6 that was designed entirely with Democrats  
7 controlling the process, with entirely Republicans  
8 controlling the process, or in that third category  
9 of none of the above, all other possibilities?  
10 You run that regression analysis, as I said, and  
11 it's a very simple regression analysis. You're  
12 essentially just classifying -- you know, you're  
13 basically breaking out efficiency gaps by those  
14 three categories, and you do that in each of the  
15 -- of the three decades. And that leads us to  
16 then the analysis that's presented in -- in  
17 Figure 9.  
18 Q. Okay. So why don't we talk about what you did to  
19 each specific category within a decade to run this  
20 analysis.  
21 A. Oh, okay. So you -- literally it's -- it's  
22 extraordinarily simple. You just literally  
23 clump -- gather up elections according to which  
24 one of those three categories they fit in, all  
25 right, and then -- and then it's -- it's --

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1 it's -- literally what you're doing is computing  
2 the average efficiency gap conditional on who  
3 controlled the redistricting, is perhaps the most  
4 simple way whereby, quote, who controlled the  
5 redistricting, unquote; we mean which one of those  
6 three categories, right, with that three-fold  
7 classification of control, yeah.

8 **Q. And is this an average of all the elections or is**  
9 **it an average of the plan averages?**

10 A. It's an average of -- they'd be the same, but it's  
11 a -- it's each individual election appears as a  
12 data point in -- in that analysis.

13 **Q. Okay. So, for example, like all the**  
14 **Republican-drawn plans in the '90s had an average**  
15 **efficiency gap of a certain value --**

16 A. Yes.

17 **Q. -- you just add them all up and divide it by the**  
18 **number and that's your average?**

19 A. That's right.

20 **Q. And you would do that for each of the -- each of**  
21 **the other components of Democrats and the**  
22 **Republicans?**

23 A. Yeah.

24 **Q. And so then you did that for the '90s, the 2000s,**  
25 **and 2010s?**

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1 A. That's correct.

2 **Q. Page 19, in the paragraph right underneath the**  
3 **figure has a parenthetical that talks about the**  
4 **omitted category --**

5 A. Yes.

6 **Q. -- being the other institutions. What does it**  
7 **mean to be in an omitted category?**

8 A. Yeah. Right. That's -- that's unhelpful to a  
9 nonstatistical reader. So let me -- let me  
10 explain.

11 When we use regression analysis to do  
12 something extraordinarily simple, that is, compute  
13 three averages, the way we do that with regression  
14 analysis is to arbitrarily define one of the three  
15 categories as the baseline and then estimate  
16 differences -- two differences relative to  
17 baseline. So the better word, rather, than  
18 omitted, which has prompted the question, I think,  
19 the -- the better label there would have been  
20 baseline. And then we -- you can estimate the  
21 three averages as three averages or you can  
22 estimate an overall average and then two  
23 differences from -- you can estimate the baseline  
24 and then two differences from that baseline. And  
25 so that's all -- that's really a function of how

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1 the statistical machinery wants to compute it.  
2 Perhaps isn't a helpful way to put it to a lay  
3 audience, yeah.

4 **Q. Maybe you can just explain how the other**  
5 **institution served as the baseline in the**  
6 **calculation.**

7 A. It's -- well, it's arbitrary as to which category  
8 appears as the baseline. It's really -- you know,  
9 everybody -- there's this baseline group that  
10 you're either in or not and now we're going to  
11 estimate differences, right? So I can recover the  
12 average of any group by its baseline plus the  
13 difference between baseline and that group, right,  
14 and so it doesn't really have -- it's of no  
15 statistical -- this is more a math thing than a  
16 stats thing, if you will. This is do I want to  
17 estimate B or do I want to estimate B and the  
18 difference between B and A and add that to get B  
19 is A plus the difference between B and A might be  
20 one way of putting it. If -- I'm not sure that's  
21 helpful, but it's -- it's -- this is really to do  
22 with, if you will, tricking regression analysis to  
23 do difference of means and, hence, the means by  
24 group. And it's -- it's a very standard usage of  
25 the term here, one that I understand in this

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1 context might be prompting a question or two.

2 **Q. Sure. And then just to kind of go back to the**  
3 **data set --**

4 A. Sure.

5 **Q. -- the specific plans that are grouped in each**  
6 **category change over time, correct, between the**  
7 **decades?**

8 A. If control of the plan change -- control of the  
9 redistricting process changed, yes.

10 **Q. So, for example, in your 1990's decade, the**  
11 **Wisconsin plan is counted as an other institution?**

12 A. Yeah. Yeah. We could verify that.

13 **Q. Because it was drawn by a court?**

14 A. And, indeed, it is.

15 **Q. And then the 2000's plan is also treated as a --**  
16 **Wisconsin plan is also treated under the other**  
17 **category because it was drawn by a court?**

18 A. And, indeed, it is.

19 **Q. But then in the 2010s, the Wisconsin plan was**  
20 **treated as a Republican plan because it was drawn**  
21 **by Republicans, correct?**

22 A. The 2012 election would be the first election  
23 under. So let's just check that one. Oh, indeed,  
24 2014 is the same, you know, and -- and there --  
25 there we've got, yes, unified government and a

<p>Deposition of SIMON JACKMAN 3-16-16 Page 93</p> <p>1 flag also for unified Republican government for 20 2 -- yeah, yeah, for those latter Wisconsin entries 3 in the data set. 4 <b>Q. And then why don't we look at Figure 9 then --</b> 5 A. Sure. 6 <b>Q. -- which contains like a graphical representation</b> 7 <b>of the regression analysis.</b> 8 A. Uh-huh. 9 <b>Q. What does the solid line represent?</b> 10 A. Okay. The -- the solid line is just showing the 11 average efficiency gap by decade, the -- and it's 12 blue on -- on my version of the report as well. 13 <b>Q. Yeah. I have a black-and-white copy.</b> 14 A. That's okay. 15 <b>Q. And then is that -- are the points there the</b> 16 <b>average of every election in that decade's</b> 17 <b>efficiency gap and then the average -- just flat</b> 18 <b>average of all of them?</b> 19 A. That's correct. 20 <b>Q. Okay. Regardless of what type of body implemented</b> 21 <b>that plan?</b> 22 A. Yes. 23 <b>Q. Okay. So then why don't we explain what the</b> 24 <b>dotted line represents.</b> 25 A. Okay. So the dotted line is using -- is a</p>	<p>Deposition of SIMON JACKMAN 3-16-16 Page 95</p> <p>1 <b>Q. Okay. So perhaps we could walk through like the</b> 2 <b>2000's calculation.</b> 3 A. Uh-huh. 4 <b>Q. Did you calculate an average efficiency gap for</b> 5 <b>all Republican plans that were in place in the</b> 6 <b>2000s?</b> 7 A. Yes. 8 <b>Q. Okay.</b> 9 A. And then what you do literally is just change the 10 number of plans, right, back to what the 1990 11 number plans looks like to sort of readjust the 12 average to account for the fact that there's -- 13 there's just a different balance of partisan 14 control of redistricting in the earlier decades, 15 yeah. 16 <b>Q. And then you also calculated an average efficiency</b> 17 <b>gap for Democratic-drawn plans?</b> 18 A. Yes. 19 <b>Q. And then also one for the other drawn plans?</b> 20 A. That's right, yeah, yeah. There were three 21 averages at the three data points, yeah, yep, and 22 -- but the counterfactual exercise comprises of 23 changing the amount of data -- when you get the 24 overall average reducing those three averages to a 25 single number, you do so by imagining that we're</p>
<p>Deposition of SIMON JACKMAN 3-16-16 Page 94</p> <p>1 counterfactual exercise, the results of a 2 counterfactual exercise. The counterfactual being 3 contemplated is: Suppose partisan control of 4 redistricting had stayed the way it appeared in -- 5 in -- in the -- in the 1990s. If -- what average 6 value of the efficiency gap would we see in the 7 2000s and in the 2010s if instead of the partisan 8 control of redistricting that we actually had in 9 the 2000s, we'd had the partisan control that we 10 had back in the '90s, we -- which, you'll recall, 11 was to the extent any one party dominated the 12 other with respect to partisan control, it was -- 13 it was Democrats were -- were controlling more 14 redistricting plans than Republicans back then. 15 So it's a -- it's an interesting attempt, 16 kind of nifty, if I do say so myself, to isolate 17 the -- the effect of one of the things that's 18 moving here and, that is, who's controlled the 19 redistricting versus other things that might be 20 changing over the period 1990s to -- to 2010, and 21 so as you ask, you know, what are the efficiency 22 gap -- on average what would be the efficiency-gap 23 values we'd see had we got -- had we had the same 24 partisan control balance as we had in earlier 25 decades.</p>	<p>Deposition of SIMON JACKMAN 3-16-16 Page 96</p> <p>1 back in -- in -- with the -- the -- that we had 2 the 1990's control of redistricting in place 3 rather than the ones we actually had in the 2000s 4 and 2010s. 5 <b>Q. Sure. And so -- and if I understand it correctly,</b> 6 <b>you also did the same thing for the 2010s then as</b> 7 <b>well?</b> 8 A. Exactly, an analogous exercise for the 2010s. 9 <b>Q. And 2010's exercise used the percentages from the</b> 10 <b>1990s; is that correct?</b> 11 A. Again, it's the same counterfactual. You're 12 asking if -- if -- in the 2010 round of 13 redistricting, what if we'd had the same mix of 14 Democratic control, Republican control, and other 15 that we'd had -- that we observed in the 1990s? 16 Had that been in place, what -- how would our 17 expectations as to efficiency gaps -- how would 18 they change, yeah. 19 <b>Q. And then did you -- for the 2010s, did you do a</b> 20 <b>calculation of what it would look like if you</b> 21 <b>instead of going all the way back to the 1990s</b> 22 <b>just went back to the 2000s?</b> 23 A. I haven't done that. 24 <b>Q. I think I'd like to get the averages for the three</b> 25 <b>different buckets --</b></p>

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1 A. Sure.  
2 **Q. -- for each one for each decade. That may be**  
3 **another --**  
4 A. That's another -- I can -- yeah, yeah.  
5 **Q. -- computer thing. So we can do that at a certain**  
6 **point, and then I may come back to have some**  
7 **questions on this.**  
8 A. Sure.  
9 **Q. And if I understand it correctly, your method is**  
10 **just to change the number of plans in each bucket**  
11 **to represent what it was like in the 1990s?**  
12 A. It's equivalent to doing that, yeah, yeah.  
13 **Q. I think we can start on the Section 6, the Chen**  
14 **and Rodden.**  
15 A. Okay.  
16 **MR. POLAND:** Now's probably a good  
17 time to ask. What are your thoughts just in  
18 terms of the amount of time you have left?  
19 Not trying to press you for anything.  
20 **MR. KEENAN:** Yeah. I'm thinking  
21 we'll probably have to take a lunch and come  
22 back.  
23 **MR. POLAND:** Okay. Okay.  
24 **MR. KEENAN:** But then I don't  
25 anticipate it going all the way until like

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1 five or anything. But, I guess, you never  
2 know, it's stats, and see how long it takes  
3 me to understand things --  
4 **MR. POLAND:** Okay.  
5 **MR. KEENAN:** -- and get what I  
6 need.  
7 **THE WITNESS:** Okay.  
8 **MR. KEENAN:** So I'm thinking maybe  
9 we can go until a convenient time for lunch  
10 and then break and then come back, you know.  
11 **MR. POLAND:** That's fine. Sure.  
12 **Q. Okay. So back to Chen and Rodden.**  
13 A. Uh-huh.  
14 **Q. Are you familiar -- were you familiar with Chen**  
15 **and Rodden's work before you were retained to be**  
16 **an expert in this case?**  
17 A. Yes.  
18 **Q. Okay. And is Professor Rodden a colleague of**  
19 **yours at Stanford?**  
20 A. He is. And Jowei Chen was -- is a graduate of our  
21 Ph.D. program.  
22 **Q. Okay. So I see that you said you respect their**  
23 **contribution to the field; is that correct?**  
24 A. Yes.  
25 **Q. Let's go to the first critique about simulating**

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1 **lawful plans. And I take it your criticism is**  
2 **that it doesn't account for majority/minority**  
3 **districts. It has to be created under the**  
4 **Voting Rights Act; is that correct?**  
5 A. That's correct.  
6 **Q. Okay. Do you have an opinion on whether if Chen**  
7 **and Rodden did account for the Voting Rights Act,**  
8 **whether that would make their results more or less**  
9 **advantageous to Democrats?**  
10 A. I don't have a view on that, no.  
11 **Q. Okay. Do you know is there literature in the**  
12 **field about whether needing to create**  
13 **majority/minority districts hurts Democrats'**  
14 **abilities to convert statewide vote totals into**  
15 **seats?**  
16 A. Yes.  
17 **Q. Is there?**  
18 A. Yes.  
19 **Q. And what does that show?**  
20 A. Well, there's a debate. There's a -- that -- that  
21 in -- you know, one of the -- and the way I'd  
22 characterize it, this is a debate that's been  
23 around since I was in graduate school. I remember  
24 being exposed to this. But in the name of  
25 creating majority/minority districts, you're

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1 inadvertently engaging in -- in packing, and it's  
2 pretty simple, pretty simple argument.  
3 **Q. And the argument would be that the minorities who**  
4 **are -- minority voters who are in the minority --**  
5 **majority districts are strong Democratic voters?**  
6 A. Yes.  
7 **Q. And then you're required to create a district that**  
8 **has a large number of those so that they can**  
9 **secure the representative of choice and,**  
10 **therefore, you're packing Democrats into a**  
11 **district?**  
12 A. That -- that's the way the debate goes. That's  
13 one of the opening salvos in what's a pretty  
14 lively debate inside the profession, yes.  
15 **Q. So it's a lively debate. You'd say there hasn't**  
16 **been a resolution one way or the other?**  
17 A. Well, it's almost a normative question. I think  
18 that's helped -- contributes to its liveliness.  
19 You're balancing two things that people care  
20 about. One is more minority representation versus  
21 not creating lopsided districts and -- yes.  
22 **Q. As an empirical matter, is there still a debate as**  
23 **to whether minority/majority districts end up**  
24 **packing Democrats into -- into districts?**  
25 A. I -- I wouldn't like to be drawn into trying to

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1 characterize the literature on the -- on the spot.  
2 **Q. So we can move on to your second criticism --**  
3 **A. Sure. Sure.**  
4 **Q. -- that Chen and Rodden used presidential election**  
5 **results.**  
6 **A. Yeah.**  
7 **Q. Are presidential election results indicative of**  
8 **what state legislative election results would be?**  
9 **A. No. There's considerable divergences.**  
10 **Q. What's the, I guess, magnitude of the divergence?**  
11 **A. Oh, again, I'm not a -- I couldn't authoritatively**  
12 **answer that for you. But the mechanism is**  
13 **typically a couple of things. One is -- we're**  
14 **talking about different districts, so it's -- it's**  
15 **-- you know, it's not always -- it's sometimes a**  
16 **technical feat. We're, you know, getting votes**  
17 **for Congress at the level of state legislative**  
18 **district. That's -- that's a technical issue that**  
19 **you can solve or you can't.**  
20 **But then -- then the more operative factor, I**  
21 **think, is -- is the different incumbency**  
22 **advantages operating on different levels. You**  
23 **might have a Democratic incumbent for a state and**  
24 **you might have a Republican incumbent in the -- in**  
25 **the -- because it's a -- you know, up at the**

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1 corresponding congressional district, and so that  
2 tends to muddy the waters. And then you also have  
3 the fact -- and tiny number stats. This isn't  
4 such a big issue. They're off sequence sometimes.  
5 Some states go on numbers -- with the off -- off  
6 the first state legislative elections. That's not  
7 a huge issue, but just yet another complicating  
8 factor here.  
9 **Q. In terms of establishing a partisan baseline that**  
10 **was not contingent on incumbency effects, would**  
11 **the presidential election results be useful in**  
12 **determining that?**  
13 **A. Yeah, and that's -- I would tell you is the**  
14 **industry standard for precisely that reason. It's**  
15 **the same two candidates appearing everywhere, and**  
16 **that's why scholars in the field prize those sorts**  
17 **of data. Presidential vote aggregated by,**  
18 **complete the blank, and we're always in search of,**  
19 **you know, state legislative, congressional,**  
20 **county. People -- people really value that sort**  
21 **of data.**  
22 **Q. Okay. So an analysis that used presidential**  
23 **election results as an input would be relevant to**  
24 **determining the -- the nonincumbent partisan**  
25 **baseline of -- of a particular geographic area?**

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1 **A. And, indeed, that's precisely the role that**  
2 **presidential vote aggregated to X plays in many**  
3 **redistricting matters, yeah.**  
4 **Q. And going on to that -- the last sentence in the**  
5 **-- in the paragraph, it says, "In fact, this is**  
6 **exactly what seems to be occurring at the**  
7 **congressional level. Efficiency gaps are about**  
8 **6 percent more Republican when they're calculated**  
9 **using" --**  
10 **A. Yeah.**  
11 **Q. -- "when they're calculating using presidential**  
12 **data than when they are computed on the basis of**  
13 **congressional election results"?**  
14 **A. Yeah.**  
15 **Q. Where did you get that fact from?**  
16 **A. I believe that's a number I found in**  
17 **Stephanopolous and McGee.**  
18 **Q. Do you know if there's a similar figure for -- for**  
19 **state legislative elections?**  
20 **A. Versus presidential?**  
21 **Q. This is for congressional level.**  
22 **A. Yeah. I got your question now. And the answer is**  
23 **no, I don't, offhand. No, I don't.**  
24 **Q. All right. Then moving to the third paragraph**  
25 **starting, "Third, Chen and Rodden's simulated maps**

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1 **do not constitute a representative sample of the**  
2 **entire plan solution space." What do you mean by**  
3 **that?**  
4 **A. Okay. There's another lively debate inside**  
5 **political science at the moment and as to whether**  
6 **the Chen and Rodden algorithm, in fact, will**  
7 **discover all possible plans. As we might say, to**  
8 **borrow an analogy, the jury's out on -- on that.**  
9 **And I know scholars at Princeton have a different**  
10 **view and there's a sense that we're going to need,**  
11 **perhaps, computer scientists and big-iron**  
12 **computing to maybe sort this one out. But I think**  
13 **there's -- it would be fair to say that there's**  
14 **some -- we don't know whether -- and there's**  
15 **reason to doubt that the Chen and Rodden algorithm**  
16 **generates an exploration of all possible plans.**  
17 **Q. Is there any research as to whether a different**  
18 **algorithm would lead to different results than the**  
19 **ones that Chen and Rodden discovered?**  
20 **A. This is very early days in the automated**  
21 **computer-generated redistricting world, so we**  
22 **don't have a lot of guidance on a question of that**  
23 **specific gesture.**  
24 **Q. So just to be clear, it's not clear whether that**  
25 **would affect Chen and Rodden's results one way or**

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1 the other more favorable to Republicans or less  
2 favorable?  
3 A. That's right. I think that's fair, yeah.  
4 MR. KEENAN: Mark this as 59.  
5 (Exhibit No. 59 marked  
6 for identification)  
7 Q. The first question on Exhibit 59 is if you could  
8 identify what this is?  
9 A. This is a paper by Fifield, Higgins, Imai, and  
10 Tarr outlining their attempt at automated -- using  
11 a computer to explore the space of all possible  
12 redistricting plans.  
13 Q. And is this -- is Exhibit 59 the article that's  
14 referenced on page 21 of your report in the  
15 paragraph starting third where it says Fifield,  
16 et al, 2015?  
17 A. Yeah. That's right. That's right.  
18 Q. Do you know if this article is -- has been  
19 published in a journal?  
20 A. I don't know the answer to that.  
21 Q. Okay. And so you don't know if it's been -- if  
22 this article's been subject to a formal  
23 peer-review process?  
24 A. I -- I -- I don't know the answer to that. It may  
25 be in the midst of it right now, but -- but I -- I

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1 don't know. I saw it -- this is the form I've  
2 seen it in. I haven't seen an update.  
3 Q. And when did you first become aware of the Fifield  
4 article?  
5 A. Ooh. Oh, first half of '15, I think, first half  
6 of 2015.  
7 Q. So that would be before you were retained as an  
8 expert in this case?  
9 A. Right around there. Certainly, my interest was --  
10 was piqued by the prospect of -- of -- of coming  
11 on, and I know quite well one of -- one of the  
12 authors and they were taking a shot at one of my  
13 colleagues, so I -- I -- I took it -- I took it --  
14 I took an interest.  
15 Q. So which author do you know?  
16 A. Kosuke Imai. He's a professor at Princeton.  
17 Q. And then the "shot" you're referring to would be  
18 Professor Rodden?  
19 A. Yeah. Yeah.  
20 Q. Okay.  
21 A. Yeah.  
22 Q. Although, I note that in the notes it says they  
23 thank Jowei Chen for useful comments and  
24 suggestions.  
25 A. Oh, there's plenty of that in our business.

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1 Q. So I think we can put this one aside.  
2 A. Okay. Okay.  
3 MR. KEENAN: We'll mark this one as  
4 60.  
5 (Exhibit No. 60 marked  
6 for identification)  
7 Q. We were going to move down for the -- your next  
8 critique, which references an article by Fryer and  
9 Holden. So I've marked the document as  
10 Exhibit 60. Can you identify Exhibit 60 for us?  
11 A. Yes. This -- this is the paper by Fryer and  
12 Holden looking at the relationship between  
13 respecting compactness criteria and various  
14 measures of the quality biasness, whatever. I  
15 mean, it's a little imprecise, the bias of  
16 redistricting plans.  
17 Q. When did you first become aware of Fryer and  
18 Holden's research that's reflected in this  
19 article?  
20 A. Richard Holden hails from the same country as I  
21 do. He's a professor of -- in the -- at the  
22 University of New South Wales in  
23 Sydney, Australia, and I ran into him -- I've  
24 never been introduced to him and I was -- somewhat  
25 thought I'd be curious to meet someone from

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1 Australia, and he's an economist by training.  
2 That's why our paths had never really intersected  
3 before. And as we started talking, I didn't -- he  
4 -- he mentioned to me that he's actually done work  
5 on redistricting, and I said, "That's great. Send  
6 me a paper." And he did, and that was about, oh,  
7 first half of last year as well, yeah.  
8 Q. And you said he's an economist, correct?  
9 A. Uh-huh.  
10 Q. So he's not a political science Ph.D.?  
11 A. No, he's not. No.  
12 Q. Do you know about his coauthor here, Roland Fryer?  
13 A. No. I don't know much about Roland Fryer.  
14 Q. What's your understanding of what Fryer and Holden  
15 did in this article which is titled "Measuring the  
16 Compactness of Political Districting Plans"?  
17 A. Yeah. Sure. Well, look, I think the key takeaway  
18 is -- is -- is to show that if you go after -- if  
19 what you try to maximize is compactness, what --  
20 you know, what does that do with the -- with these  
21 automated algorithms. So if that was a criteria  
22 that you paid most attention to, what would be the  
23 consequences for the -- what sort of plans would  
24 -- would -- would you generate, is can you -- can  
25 you -- can you make a strong statement about that?

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1 And their strong statement is that you get smaller  
2 measures of partisan bias almost always.  
3 Moreover, the responsiveness of the electoral  
4 system that you get under maximally -- by trying  
5 to maximize compactness, and by responsiveness,  
6 remember, we mean how your seat share changes as  
7 your vote share changes. They find that that goes  
8 up as well.  
9 And I think what this paper -- I think it  
10 just speaks -- I mean, the sequence of papers  
11 we've just seen in Exhibit 59 and 60 speaks to, I  
12 think, the unsettled state of the literature at  
13 the moment with respect to what one gets out of  
14 automated redistricting plans, the state of the  
15 art there and how it links up with the things we  
16 care about in -- in -- in the -- in the  
17 redistricting.  
18 So getting your computer to draw lines is one  
19 thing, what criteria are respecting as it does so,  
20 and what sort of plans does it produce? We're  
21 slowly filling that in as a body of knowledge, and  
22 Fryer and Holden is a contribution to that ongoing  
23 exploration in the field.  
24 **Q. Is it your understanding that Fryer and Holden**  
25 **generated multiple different districts in a state**

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1 **or just one districting plan?**  
2 A. Well, I thought they -- my understanding is they  
3 went for the maximally compact one.  
4 **Q. So that would just be one -- one plan that was the**  
5 **most maximally compact?**  
6 A. That's my -- that's my recollection of the paper,  
7 yes.  
8 **Q. And then they only looked at -- and their plan was**  
9 **for congressional elections; is that correct?**  
10 A. I believe so. Yeah.  
11 **Q. And, I believe, it was just for the 2000**  
12 **congressional elections in California, New York,**  
13 **Pennsylvania, and Texas; is that correct?**  
14 A. I'll just verify that. Yeah. They're -- they're  
15 examples, right? There's two parts of the paper,  
16 the theory, but then actual application to -- to  
17 quote/unquote real -- real elections is limited to  
18 those -- to those cases, yeah.  
19 **Q. And then, as I understand it, they compared the**  
20 **results of their maximally compact plan in terms**  
21 **of bias and responsiveness to the plan that was**  
22 **actually in existence in those states --**  
23 A. Yeah.  
24 **Q. -- for the 2000 election; is that correct?**  
25 A. That's correct.

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1 **Q. Okay. So the statements about --**  
2 A. Oh.  
3 **Q. -- bias being slightly smaller in all states**  
4 **except one and the statements about responsiveness**  
5 **are comparisons between the Fryer and Holden**  
6 **maximally compact districts and then the districts**  
7 **that were actually in place in those four states?**  
8 A. Yeah.  
9 **Q. Okay.**  
10 **MR. KEENAN:** I think now might be a  
11 good time to break for lunch.  
12 **MR. POLAND:** Break right now?  
13 Okay. Let's do that.  
14 (Recess)  
15 **MR. KEENAN:** Go back on the record.  
16 **Q. We're back from our lunch break. And I see,**  
17 **Mr. Jackman, I think you have the numbers we were**  
18 **looking for of the average -- efficiency gaps for**  
19 **the plans as put in place by Democrats,**  
20 **Republicans, and other units for the various**  
21 **decades. So why don't we go through those.**  
22 A. Yeah.  
23 **Q. You can give me the numbers.**  
24 A. Exactly. So of the three decades and three  
25 numbers -- and they are, as you said, the average

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1 efficiency gap in the corresponding decade or  
2 plans in place corresponding to the top of the  
3 redistricting cycle at the start of the decade.  
4 So let's start with the 1990s with plans that  
5 fall into that omnibus other category. The  
6 average value of the efficiency gap is negative  
7 .029, or if -- for clarity, I'll read these as  
8 percentages, so minus 2.9 percent. Same decade,  
9 1990s, Democratic control, 4.4 percent.  
10 **Q. And that's positive?**  
11 A. Positive, yes, consistent with, yeah. Republican  
12 control, negative 6.7 percent is the average.  
13 Okay. 2000s now, in the same order, other,  
14 Democrat, Republican. Other, negative 1.7;  
15 Democrats, negative .4.  
16 **MR. POLAND:** Do you want to say  
17 percent just to make it --  
18 A. Percent, negative .4 percent; Republican, negative  
19 4.8 percent. 2010s, other is negative 1.3  
20 percent; Democrats 2.1, and Republicans negative  
21 8.1 percent. So that should be nine numbers three  
22 by three.  
23 **Q. Okay. And so if I understand this, the efficiency**  
24 **gap -- the average efficiency gap for the plans in**  
25 **the other category has been negative in each**

<p>Deposition of SIMON JACKMAN 3-16-16 Page 113</p> <p>1 <b>decade?</b></p> <p>2 A. That is correct. That's what I just read to you.</p> <p>3 <b>Q. Okay.</b></p> <p>4 A. By a small quantity and lying between the</p> <p>5 Democratic number and the Republican number.</p> <p>6 <b>Q. Is it your opinion that the distribution of</b></p> <p>7 <b>partisans geographically is a neutral factor even</b></p> <p>8 <b>though the efficiency-gap plans instituted by</b></p> <p>9 <b>other bodies has consistently been negative since</b></p> <p>10 <b>the 1990s?</b></p> <p>11 A. I'm sorry. Just repeat the question.</p> <p>12 <b>Q. Sure. Does the fact that the efficiency gap has</b></p> <p>13 <b>been negative -- the average efficiency gap has</b></p> <p>14 <b>been negative under the other category plans</b></p> <p>15 <b>consistently since the 1990s, does that show you</b></p> <p>16 <b>that the distribution of partisans geographically</b></p> <p>17 <b>weighs against Democrats?</b></p> <p>18 <b>MR. POLAND:</b> Object to the form of</p> <p>19 the question.</p> <p>20 A. Well, I'm not quite sure what premises or what</p> <p>21 assumptions we're making about the distribution of</p> <p>22 partisans over the -- over the three decades.</p> <p>23 <b>Q. Sure. Wouldn't you expect if, you know, the</b></p> <p>24 <b>normal efficiency gap was going to be zero, that</b></p> <p>25 <b>the average for the other category would be about</b></p>	<p>Deposition of SIMON JACKMAN 3-16-16 Page 115</p> <p>1 A. Another hypothesis might be that the plans they</p> <p>2 are implementing are especially favorable to them.</p> <p>3 <b>Q. So much so that even though they constitute only</b></p> <p>4 <b>10 percent of plans, they have that much effect on</b></p> <p>5 <b>the average?</b></p> <p>6 A. Well, under the counterfactual scenario they have</p> <p>7 that. But the -- perhaps one of the -- if I --</p> <p>8 you know, it might be helpful to also realize that</p> <p>9 the prediction for 2010 is almost the same as the</p> <p>10 actual for the 1990s, right? So, to my mind, one</p> <p>11 of the takeaways from this analysis is that</p> <p>12 factors that might have changed between 1990 and</p> <p>13 2010, one of those I often hear advanced is the</p> <p>14 change in political geography, would seem to me</p> <p>15 that you can explain a lot of movement by -- if we</p> <p>16 -- if we -- we get back to the same level of --</p> <p>17 it's -- it's about who controlled it -- the</p> <p>18 redistricting would seem to be the -- you know,</p> <p>19 the compelling factor if one had to explain why it</p> <p>20 is the efficiency-gap numbers look the way they do</p> <p>21 now versus the past.</p> <p>22 <b>Q. And one thing that changes over time in this</b></p> <p>23 <b>analysis is the category in which a state will</b></p> <p>24 <b>fall into in the analysis in the different</b></p> <p>25 <b>decades?</b></p>
<p>Deposition of SIMON JACKMAN 3-16-16 Page 114</p> <p>1 <b>zero?</b></p> <p>2 A. It -- it -- it is about zero. It's -- I mean,</p> <p>3 it's very close to zero.</p> <p>4 <b>Q. And if we look at Figure 9 --</b></p> <p>5 A. Sure.</p> <p>6 <b>Q. -- which is the graphical representation of</b></p> <p>7 <b>this --</b></p> <p>8 A. Uh-huh, uh-huh, uh-huh.</p> <p>9 <b>Q. -- the 2010's decade predicted number --</b></p> <p>10 A. Uh-huh.</p> <p>11 <b>Q. -- the dotted line, that prediction is based on an</b></p> <p>12 <b>assumption that the Republicans would only have</b></p> <p>13 <b>drafted 10 percent of plans in existence?</b></p> <p>14 A. Uh-huh. Yes.</p> <p>15 <b>Q. And that Democrats would have put in place</b></p> <p>16 <b>30 percent of plans?</b></p> <p>17 A. Yes.</p> <p>18 <b>Q. And that neutral bodies would have put in place</b></p> <p>19 <b>60 percent of plans?</b></p> <p>20 A. Right.</p> <p>21 <b>Q. And with that distribution of control over the</b></p> <p>22 <b>districting processes, wouldn't you expect that</b></p> <p>23 <b>the average efficiency gap would be positive given</b></p> <p>24 <b>that Republicans are only implementing 10 percent</b></p> <p>25 <b>of all plans?</b></p>	<p>Deposition of SIMON JACKMAN 3-16-16 Page 116</p> <p>1 A. That's right, as revealed by Figure 8, yes.</p> <p>2 <b>Q. We can go to No. 7 --</b></p> <p>3 A. For sure.</p> <p>4 <b>Q. -- which is your analysis of Sean Trende's report.</b></p> <p>5 <b>I think it may be helpful in this one to have a</b></p> <p>6 <b>copy of your first report handy and we can look at</b></p> <p>7 <b>-- it's the table of the unambiguously negative --</b></p> <p>8 <b>or unambiguous-as-to-sign plans, which is what's</b></p> <p>9 <b>discussed here.</b></p> <p>10 A. Yes. Can you give the actual table --</p> <p>11 <b>Q. Yeah.</b></p> <p>12 A. -- in the back or page number it appears on?</p> <p>13 <b>Q. Here, page 55.</b></p> <p>14 A. Thank you.</p> <p>15 <b>Q. Table 1. And so your analysis finds that of these</b></p> <p>16 <b>17 plans, 5 of them were enacted with unified</b></p> <p>17 <b>party control over the districting process?</b></p> <p>18 A. Yes. That's right. That's right.</p> <p>19 <b>Q. And so then the implication of that 12 of the 17</b></p> <p>20 <b>plans were implemented without unified partisan</b></p> <p>21 <b>control over redistricting?</b></p> <p>22 A. Right, right.</p> <p>23 <b>Q. Okay. And so you've listed the five that were</b></p> <p>24 <b>enacted with unified partisan control on pages 22</b></p> <p>25 <b>and 23, correct?</b></p>

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1 A. Correct. That's right.  
2 **Q. Okay. So given the fact that 12 of these plans**  
3 **were enacted without unified partisan control,**  
4 **you'd agree that an unambiguous-as-to-sign**  
5 **efficiency gap can occur in the absence of any**  
6 **partisan gerrymandering at all?**  
7 A. Well, I'd say this is -- efficiency gaps without  
8 ambiguous sign are -- are an element of what  
9 constitutes a partisan gerrymander; are necessary  
10 but not sufficient for the definition. So I -- I  
11 guess, strictly speaking, I would disagree with  
12 your statement. Without this I wouldn't say we  
13 have a partisan gerrymander, but I think we'd need  
14 this -- this is an important constituent  
15 development on the way to calling something a  
16 partisan gerrymander.  
17 **Q. Sure. But there are plans that have been put in**  
18 **place represented on -- in Table 1 --**  
19 A. Uh-huh.  
20 **Q. -- that presented unambiguous efficiency gaps that**  
21 **were not the product of any sort of partisan**  
22 **gerrymandering on behalf of the districting body?**  
23 A. If by partisan -- if partisan intent is equated  
24 with control of the redistricting process, which  
25 party controlled it, that's right. But I'd agree

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1 with you -- your conclusion. But, like I said,  
2 this is an element of establishing whether or not  
3 we have a partisan gerrymander. It wouldn't --  
4 it's -- it's not unnecessary, but not sufficient  
5 condition.  
6 By that -- so that that there may be ways,  
7 and this is not a domain in which I'm an expert,  
8 of establishing partisan intent that go beyond  
9 simply reading off which party we deemed to have  
10 had control of -- of -- of the process.  
11 **Q. Okay. And so I'm just going to go through the**  
12 **ones that were identified as having unified**  
13 **partisan control.**  
14 A. Uh-huh.  
15 **Q. So that's Florida's plan in the 1970s, which I see**  
16 **is the bottom --**  
17 A. Uh-huh.  
18 **Q. -- listed?**  
19 A. Uh-huh, uh-huh.  
20 **Q. And we have Florida's plan in the 2000s?**  
21 A. Which appears?  
22 **Q. At the very top.**  
23 A. Uh-huh.  
24 **Q. Michigan from the 2000s?**  
25 A. Uh-huh.

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1 **Q. New York in the 1970s?**  
2 A. Uh-huh.  
3 **Q. And Ohio in the 2000s?**  
4 A. Uh-huh.  
5 **Q. And it's your opinion that these state plans are**  
6 **accurately captured by the test, because they had**  
7 **a large initial efficiency gap and then also never**  
8 **changed sign; is that correct?**  
9 A. That's right; and, moreover, the reason I singled  
10 out these plans is because, as we've discussed  
11 earlier, taking into account the -- the confidence  
12 intervals and the uncertainty attaching to any  
13 efficiency-gap estimate, these -- even taking that  
14 into account, these came nowhere near close to  
15 ever generating an efficiency-gap estimate with  
16 the opposite sign to the ones indicated in the  
17 table.  
18 **Q. Now, have you taken into account the fact that for**  
19 **Michigan, New York, and Ohio, that those plans**  
20 **also appear on this chart for other redistricting**  
21 **periods --**  
22 A. Oh.  
23 **Q. -- in a circumstance for which there was no**  
24 **partisan control over the districting process?**  
25 **For example, I see New York is on here four**

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1 **different times, I believe.**  
2 A. Uh-huh, uh-huh.  
3 **Q. You've identified the Michigan 2002 plan?**  
4 A. Uh-huh.  
5 **Q. But the Michigan 1992-to-2002 plan also appears on**  
6 **here; is that correct?**  
7 A. Uh-huh.  
8 **Q. And then Ohio, you've identified the 2002 plan,**  
9 **but the 1994-to-2000 plan also appears on here?**  
10 A. Uh-huh.  
11 **Q. Do you have any opinion on how that should affect**  
12 **your analysis of whether the plans implemented**  
13 **with unified partisan control should be seen as**  
14 **partisan gerrymandering?**  
15 A. None other than to say I think this is a piece of  
16 evidence in support of, you know, whether you have  
17 a partisan gerrymandering; I think in these  
18 particular cases quite compelling. I think the  
19 other important component would be to establish  
20 partisan intent through other means, one of which  
21 may be partisan control over the process.  
22 But, again, I'm -- I'm straying into a part  
23 of this matter that -- that -- where my expertise  
24 starts to run out as to how one might establish  
25 partisan intent -- partisan control. I can well

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1 imagine, indeed, all of us have two, that would be  
2 a critical element of it, but there could well be  
3 others.  
4 **Q. Do you have any opinion on whether each state  
5 should be judged on different efficiency-gap  
6 criteria -- whether states should be judged on the  
7 same efficiency-gap standard or whether a  
8 different standard should apply to different  
9 states?**  
10 A. No.  
11 **Q. But you'd agree with me that the effect on voters  
12 or a political party that is disadvantaged by a  
13 plan is the same regardless of whether that plan  
14 was enacted with partisan intent or not?**  
15 **MR. POLAND:** Objection; compound.  
16 **Q. Did you understand the question?**  
17 A. If you could repeat it?  
18 **Q. Sure.**  
19 A. I -- I -- okay.  
20 **Q. He can make some objections to the form of my  
21 question. It probably was a bad question, so I'll  
22 re-ask it. But if you do understand it, you can  
23 go ahead and answer when he does that. Will you  
24 let me --**  
25 A. Sure.

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1 **Q. -- recollect my thoughts to see what I was asking  
2 you about?**  
3 **MR. KEENAN:** Could you read back  
4 what my question was? I may then rephrase  
5 it, but --  
6 (Previous question read)  
7 **MR. POLAND:** Same objection just  
8 for the record. You can answer.  
9 A. The efficiency gap measures the consequences of a  
10 districting plan and the partisan advantage  
11 thereof. It's -- it's a consequence of a  
12 districting plan, I think a separate line of  
13 inquiry, but not unrelated one, obviously, is to  
14 do with -- you tackle the question of intent.  
15 **Q. And, I guess, my question is aimed at the  
16 consequence the efficiency gap is measuring is the  
17 same regardless of what went into enacting that  
18 plan?**  
19 A. Yes.  
20 **Q. And your analysis -- your historical analysis in  
21 both the -- in the initial report -- your  
22 historical analysis in the initial report measured  
23 those consequences irrespective of -- of what type  
24 of body enacted the plan?**  
25 A. Yes.

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1 **Q. Moving on in the Trende section of the report --  
2 that's Trende, T-r-e-n-d-e -- there's some  
3 discussion here of the differences between the  
4 efficiency gap --**  
5 A. Oh, yes, yes.  
6 **Q. -- as calculated in congressional plans and with  
7 respect to legislative plans and how it works  
8 differently. Did you -- is your -- are your  
9 opinions in that -- those paragraphs based on the  
10 reasoning in the Stephanopolous and McGee article  
11 on the efficiency gap?**  
12 A. Yes, because they are, at this stage at least, the  
13 canonical piece of scholarship on the performance  
14 of the efficiency gap in that set, and that is the  
15 congressional elections setting.  
16 **Q. And, basically, your criticism is that the raw  
17 efficiency data should be translated into a number  
18 of congressional seats affected?**  
19 A. Up at the congressional level, that's right, and  
20 that's -- well, I can elaborate as to why, but --  
21 **Q. And I believe that's in your report --**  
22 A. -- I did in the report, yeah, yeah, yeah.  
23 **Q. -- so I don't need to you repeat what's already in  
24 there.**  
25 **But would you agree that analyzing how the**

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1 **efficiency gap works in congressional plans even  
2 without converting to seats would shed light on  
3 how well the efficiency gap measures partisan  
4 gerrymandering?**  
5 A. With -- with one important caveat and, I guess,  
6 the heart of what that is about; and that is, it's  
7 just some states just have so few congressional  
8 seats, although they may have many numbers of  
9 seats in their state legislature. If we could get  
10 up to a state -- larger states and -- you know,  
11 let's hark back to the Fryer and Holden, please,  
12 for instance. The four states that they chose to  
13 look at were all states with large populations  
14 and, hence, large number of congressional seats.  
15 That's where we're more apples to apples, if you  
16 will.  
17 There's still a caveat, though, that the  
18 state delegations are part of a larger body in  
19 D.C., but that would be sort of a fairly strictly  
20 circumscribed set of circumstances where I would  
21 think analysis of the efficiency-gap's properties  
22 up at the congressional level starts to match up  
23 as roughly comparable, perhaps, to what I did with  
24 state legislatures.  
25 **Q. Okay. And then you -- further on on page 25 you**

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1 **discuss the difference between substituting**  
 2 **presidential election results and then using them**  
 3 **as an imputation for -- for the results, and we**  
 4 **went over last time in your deposition the**  
 5 **imputation model you used.**  
 6 A. Uh-huh.  
 7 **Q. My question is how big of a difference does it**  
 8 **make in determining the vote total of an**  
 9 **uncontested seat?**  
 10 A. I -- I -- I can't give you precise answer. I do  
 11 know that incumbency, particularly congressional  
 12 elections, is thought to be, you know, a critical  
 13 -- critical variable, and that no serious scholar  
 14 of congressional elections would ever ignore it in  
 15 modeling congressional election outcomes.  
 16 **Q. And you say that it produces -- Trende's method**  
 17 **would produce errors. I believe it says --**  
 18 A. Well, certainly less credible.  
 19 **Q. I was just going to say what -- an error as**  
 20 **compared to what?**  
 21 A. Excuse me?  
 22 **Q. You say that Trende's method is guaranteed to**  
 23 **produce errors.**  
 24 A. Yeah, yeah, by omitting -- in omitting a variable  
 25 that everybody in the literature agrees is -- is

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1 critical, such as incumbency. Moreover, just to  
 2 elaborate this point, the congressional setting is  
 3 -- is we have a lot of data aggregated up to the  
 4 level of congressional seats, census aggregates,  
 5 in a way that are sometimes sketchy for state  
 6 legislative districts, and that literature also  
 7 makes a lot of use of those variables. So simply  
 8 substituting presidential vote at the level of  
 9 congressional district is -- is -- is a long way  
 10 from what I think -- where the literature or --  
 11 or, you know, what -- how -- you -- just how  
 12 models for congressional elections are done in --  
 13 in political science.  
 14 **Q. And this is modeling the vote totals for an**  
 15 **uncontested seat as if it were contested?**  
 16 A. Well -- and, indeed, to do that, though, one uses  
 17 the data in the contested ones to help you  
 18 extrapolate out, so that's -- that's right.  
 19 **Q. And so what -- is there an average incumbency**  
 20 **advantage in congressional races that's applied,**  
 21 **5 percent, 6 percent, anything like that?**  
 22 A. Well, it is not plugged in. It is estimated as  
 23 you go; and that's kind of the point, that it does  
 24 vary cycle to cycle. But it's something you don't  
 25 have to make an assumption about. But it's --

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1 recent estimates of incumbency advantage have been  
 2 close to those numbers you just gave to me.  
 3 **Q. 5 or 6 percent?**  
 4 A. In the old days, we used to say 8 and, if  
 5 anything, it's probably come down a little bit.  
 6 But the point is you -- you estimate it, you know.  
 7 **MR. KEENAN:** Another exhibit.  
 8 (Exhibit No. 61 marked  
 9 for identification)  
 10 **Q. And while you're reviewing Exhibit 61, my first**  
 11 **question is going to be if you can just identify**  
 12 **what it is.**  
 13 A. It's an email from -- it's copy of an email from  
 14 Nick Stephanopolous to myself and some other  
 15 parties cc'd.  
 16 **Q. And is it your understanding that this email**  
 17 **contains a list of the tasks that you were to**  
 18 **carry out in your rebuttal report?**  
 19 A. Yes.  
 20 **Q. I'd like to direct your attention to No. 2 in the**  
 21 **email.**  
 22 A. Right.  
 23 **Q. And then there's a sub D at the end of that**  
 24 **paragraph --**  
 25 A. Right.

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1 **Q. -- where it says, "Addressing the validity of the**  
 2 **Trende analysis of political geography (paras 62**  
 3 **to 105) which relies primarily on data on**  
 4 **Wisconsin counties and wards."**  
 5 A. Uh-huh.  
 6 **Q. Did you do any analysis of Wisconsin counties and**  
 7 **wards in trying to determine the political**  
 8 **geography of Wisconsin?**  
 9 A. No. I did not.  
 10 **Q. And did you do any analysis in attempting to**  
 11 **determine why Wisconsin saw the efficiency gaps it**  
 12 **did over the course of the 1990's and 2000's**  
 13 **court-drawn plans?**  
 14 A. No. I did not.  
 15 **Q. Put that one aside.**  
 16 A. Okay. Oh, okay.  
 17 **MR. KEENAN:** Go to the next  
 18 exhibit, 62.  
 19 (Exhibit No. 62 marked  
 20 for identification)  
 21 **Q. Could you identify Exhibit 62 for us?**  
 22 A. This is a supplemental or an extra piece of  
 23 analysis that I ran looking at the sensitivity of  
 24 the efficiency gap to -- to uniform swing.  
 25 **Q. Is there a reason why this analysis was not**

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1 **included in the rebuttal report?**  
2 A. Overcommitment on my part. It wasn't -- we  
3 weren't quite -- haven't got to it.  
4 **Q. You mentioned the term "uniform swing"?**  
5 A. Yep.  
6 **Q. Could you define what that is?**  
7 A. Certainly. Uniform swing in political science  
8 refers to a method for constructing counterfactual  
9 elections by taking the set of seat shares -- vote  
10 shares we observe across seats in a given election  
11 and then shifting them all by the same quantity  
12 either up or down mimicking a jurisdiction-wide  
13 swing; and the word "uniform" arises there because  
14 the same swing is being applied to every seat. So  
15 it's a very simple technique that assumes away the  
16 fact that, you know, in a real election, election  
17 to election, the different seats swing by -- by --  
18 by different amounts. And just to be clear, the  
19 word "swing" here, also, what do we mean by that?  
20 We mean the difference in an election outcome,  
21 election one to election two.  
22 **Q. And are we looking at the two-party vote share for**  
23 **each candidate in addition?**  
24 A. Exactly. So that's the number when we have a  
25 bunch of those numbers over each seat, and then we

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1 shift them all up to the left or down, you know,  
2 to the right.  
3 **Q. And in your report, you state that it's considered**  
4 **to be a simplification. But that it still is a**  
5 **useful tool. Why is it still useful even if it's**  
6 **a simplification?**  
7 A. Because it's so easy to do. You can code it up  
8 and it zips along extremely quickly and it saves  
9 you from -- if you're going to have -- if you're  
10 open to the possibility that every -- the more --  
11 frankly, the more politically realistic assumption  
12 that each seat is going to change by a different  
13 amount from any other seat, then where is that  
14 coming from? So instead of now you manipulating  
15 many parameters, potentially one for each seat,  
16 versus just one for the whole jurisdiction-wide  
17 swing. So despite some mythological critique over  
18 the years of this technique, it enjoys a long life  
19 in political science, and there's a reason in this  
20 context as well.  
21 **Q. And there isn't currently an accepted methodology**  
22 **of figuring out the amount of swing that would**  
23 **occur in each district individually, is there?**  
24 A. The closest we have on that is a work by Gary King  
25 and Andy Gelman going -- who originally tried to

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1 get us away from uniform swing back in the -- with  
2 a -- with a particular view to redistricting  
3 questions in the -- in the 19 -- early 1990s.  
4 Their approach makes -- is -- is -- you have to  
5 know a lot of statistics and modeling to implement  
6 it. You also have to have a lot of data that can  
7 inform your best guesses as to -- informed by the  
8 model, of course, as to how individual seats  
9 differ. And the second fact to note, at least at  
10 the presidential level, and -- and it's an open  
11 question to how much this has happened at Congress  
12 or down at state legislature levels, but a funny  
13 thing has happened to the United States since the  
14 1990s; and, that is, uniforms -- swings have  
15 become more uniform certainly at the presidential  
16 level. So that is sort of reality, as it were, or  
17 sort of undercut kind of the -- the mythological  
18 imperative there to do better.  
19 And so given that it's so fast to do and it  
20 sort of kind of works certainly up at one level of  
21 American politics, it -- it -- it still is a go-to  
22 method for -- for many people in the redistricting  
23 world.  
24 **Q. And if I understand -- just so I understand it**  
25 **correctly, in your uniform swing, there's swings**

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1 **of plus and minus?**  
2 A. That's right.  
3 **Q. Is the plus -- the plus Democratic vote?**  
4 A. Exactly, yes. Plus means in a Democratic  
5 direction and negative means in a Republican  
6 direction.  
7 **Q. And so, for example, in a -- if a seat was one**  
8 **with 50.3 percent of the vote by Democrats and a**  
9 **plus-one swing, you'd make that seat 51.3 percent**  
10 **Democratic?**  
11 A. Exactly right.  
12 **Q. And then --**  
13 A. And the same shift for every seat. And we  
14 typically cap it. If a seat is going to go above  
15 100, we can't -- we -- we typically truncate them  
16 at a 100 or don't let them go below 30, but you've  
17 got the idea right.  
18 **Q. So why don't you explain the uniform swing**  
19 **analysis you did that's reflected in Exhibit 62.**  
20 A. Okay. Well, there were various components to it;  
21 and, essentially, what I set out to do was to  
22 demonstrate another robustness check, if you will;  
23 how -- we -- we observe -- here's the problem. We  
24 observe a value for an efficiency gap in one  
25 election, and our problem is we'd like to know how

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1 prognostic that is of -- of what we might see  
2 under the plan. And my initial report provided a  
3 lot of analysis on that sign flipping and -- and  
4 we've talked at length about that.  
5 There's another way you might approach that  
6 problem. That is to ask, well, take that election  
7 as given and ask, well, let's perturb that  
8 election that we actually got and suppose, you  
9 know, there's a swing to the Democrats of  
10 X percent or a swing away from the Democrats of  
11 X percent, what sort of efficiency gap would we  
12 get then? And that's -- that's not an  
13 unreasonable way to approach this.  
14 The one -- as -- as we've been talking, as  
15 we've been discussing, this -- the method of  
16 uniform swing is a device for generating  
17 counterfactual or hypothetical elections based off  
18 an observed set of election results has a -- has a  
19 long and durable legacy in -- in the political  
20 science world.  
21 Now, so what I did was to say, you know, in  
22 response to criticism of -- of why didn't we do  
23 that, was one of the criticisms of -- of my  
24 initial report, so we did it. I did it.  
25 **Q. And maybe I could just stop you and just -- so you**

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1 -- you have an initial efficiency gap of the  
2 actual election, correct?  
3 A. Based on an actual election.  
4 **Q. And then you did uniform swings of different  
5 amounts --**  
6 A. Uh-huh.  
7 **Q. -- on that same election?**  
8 A. Yes.  
9 **Q. And then you recalculated the efficiency gap based  
10 on the uniform swing?**  
11 A. Yes, under the new scenario; because note what  
12 happens, by the way. As you shift those seat  
13 shares by some amount, some now flip past 50,  
14 right, and the seats that you originally were  
15 saying were going to be Democratic wins become  
16 Republican wins or vice versa. So remember the  
17 efficiency gap compares seat shares against vote  
18 shares, essentially, and so that's why the  
19 efficiency-gap numbers will change as you -- as  
20 you change the level of statewide vote share.  
21 You're also changing who wins seats.  
22 **Q. And so just as an example, on a 2.2 percent swing  
23 in favor of the Democrats, they would end up  
24 winning additional seats -- any seat which they --  
25 which they had a 48 percent share or great -- up**

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1 **to 50?**  
2 A. You've got it exactly. Any seat that previously  
3 was within that window now will either go right up  
4 to 50 or over. That's right, yeah.  
5 **Q. And then in terms of measuring the efficiency gap,  
6 the expected seat share will also change; is that  
7 correct --**  
8 A. Well --  
9 **Q. -- based on the vote share?**  
10 A. Well, it's purely -- the allocation of seats given  
11 votes is purely deterministic, right? So if --  
12 right? If we're talking -- we're in this  
13 two-party world. The magic number's 50. If I'm  
14 above 50, I win the seat. If I'm below, you win  
15 it. And we can just as we move -- as we move vote  
16 shares up, now some are more -- more -- more seats  
17 are falling over that threshold or fewer depending  
18 on however.  
19 **Q. Yeah, and I understand that. But then in terms of  
20 then calculating the efficiency gap on the --**  
21 A. Oh.  
22 **Q. -- uniform swing, if Democratic vote went from 50  
23 to 52, the Democrats are now expected to win --  
24 are judged against whether they won 54 seats,  
25 correct, because that's what the zero efficiency**

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1 **gap hypothesis line would call for; is that  
2 correct?**  
3 A. That's correct. Very good, very good.  
4 **Q. Okay. First, why don't we just look at  
5 Figure 1 --**  
6 A. Uh-huh.  
7 **Q. -- and you can explain what these various -- it  
8 looks like it's a similar figure multiple times.  
9 So maybe we can just look at the first one, swing  
10 plus .20, and explain what -- what's reflected  
11 here.**  
12 A. Yes. So -- right. So there's a variety of swings  
13 presented there, but the one on the top left  
14 corresponds to where we perturb election results  
15 just in -- right? And this is just down on -- on  
16 elections in 2012 and 2014, so there's a  
17 relatively small number of elections. Each one  
18 has an actual efficiency gap corresponding to  
19 their actual election outcome, right, the actual  
20 election we observed, and so that's what's plotted  
21 on the horizontal axis, right?  
22 And then on the -- on the vertical axis is  
23 the efficiency gap for that election you get if  
24 you apply the designated level of uniform swing.  
25 And to use a graphical convention I've used

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1 elsewhere today, the black line in each panel is a  
2 45-degree line, right? So if all the efficiency  
3 gaps lined up were the same as the actual ones --  
4 and by the way, the limiting case there is right  
5 in the middle of the plot where the uniform swing  
6 is zero. We're basically -- that's the trivial  
7 null case, if you will. We're just replicating  
8 the same election. All the data are on the  
9 45-degree line there. And then the idea is to see  
10 -- as -- as we get different efficiency gaps under  
11 higher levels of -- of uniform swing, we will  
12 start to -- we should expect to see and we do see  
13 efficiency gaps looking increasingly different  
14 from the ones we got under the actual election.  
15 And the goal of this analysis is to sort of  
16 understand the pace at which that happens. Higher  
17 and higher levels of uniform swing will -- will  
18 have to generate different election outcomes.  
19 Possibly different values of the efficiency gap  
20 would be astonishing if they didn't. The real --  
21 the real thing to -- to try and understand is how  
22 much you have to change the election you got to  
23 get something different with respect to the  
24 efficiency gap.  
25 **Q. And is it at a certain point in the uniform swing**

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1 **where that difference starts to emerge?**  
2 A. Yeah. Just purely seat of the pants here. This  
3 is not especially rigorous. But the middle-road  
4 swings that aren't especially large, right, you  
5 see very little -- the data are almost  
6 indistinguishable. And, in particular, keep in  
7 mind that any given efficiency gap, because of  
8 uncontestedness, is equipped with some  
9 uncertainty. You know, where the -- the changes  
10 in the uncertainty -- in the efficiency-gap  
11 measures that we're getting actual to simulated  
12 under different levels of uniform swing, that  
13 change is often not large relative to your  
14 uncertainty about the efficiency-gap number in a  
15 given election to begin with.  
16 So you've really got to go out to quite large  
17 swings, two and a half, threes, and higher, before  
18 that data starts to really open up and we're  
19 starting to see considerable divergence from an  
20 actual efficiency gap to a hypothetical efficiency  
21 gap that might have arisen had the state swung  
22 three points one way or the other from -- from  
23 what we actually saw.  
24 **Q. Why don't we turn to Figure 2.**  
25 A. Yes.

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1 **Q. And, again, we have a series of somewhat similar**  
2 **graphics. Maybe you could explain what each of**  
3 **these graphics represent.**  
4 A. Certainly. So it's the same exercise just with  
5 summarizing a different output, right? So, again,  
6 we're perturbing observed election results by  
7 different amounts of uniform swing with the actual  
8 election, of course, being, again, the trivial  
9 null case corresponding to a uniform swing of zero  
10 in the middle of each panel. The top three panels  
11 report the correlation between actual efficiency  
12 gaps and the efficiency gaps observed under  
13 hypothetical levels of uniform swing across that  
14 range of simulated values of uniform swing.  
15 Moreover, the data are broken into three  
16 chunks: Elections that had a low value of the  
17 efficiency gap, and by that I mean less than .03;  
18 medium -- in absolute value. Medium levels of the  
19 efficiency gap, and that's in the middle two --  
20 the middle column of the figure, and by medium  
21 levels of the efficiency gap I mean .03 to .07 in  
22 absolute value. And the column on the right shows  
23 us the case of where we began with an election  
24 that was exhibiting a high efficiency gap above  
25 .07 in absolute value.

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1 And the -- let's just take the first row.  
2 The correlations stay between -- actual and  
3 simulated efficiency-gap estimates are quite high  
4 as we shuck the actual elections even with quite  
5 large values of uniform swing. So the takeaway  
6 there, say, the top right panel, if you had a high  
7 value of the efficiency gap and you considered a  
8 fairly broad range of alternative elections held  
9 under the same plan, in fact, generated through  
10 this methodology called uniform swing, you would  
11 end up observing hypothetical values of the  
12 efficiency gap that look an awful lot like the  
13 ones you actually got.  
14 The efficiency-gap measure is -- is quite  
15 robust when it's high to begin with. When it's  
16 low, it doesn't take much uniform swing to come up  
17 with an efficiency gap value that in some cases  
18 has the opposite sign, or even after a while  
19 starts to bear very little reliable relationship  
20 with the original set of efficiency-gap estimates.  
21 So now I'm referring to the top left panel of  
22 Figure 2 where some of those correlations start to  
23 fall away toward zero. And, remember, zero  
24 correlation means there's no relationship between  
25 the original efficiency gaps and the simulated

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1 efficiency gaps. And about the only place we see  
2 that, right, is, again, when you take something  
3 that began life -- an election that began life  
4 with a low efficiency gap and you subject it to a  
5 fairly high level of uniform swing. So this does  
6 -- this shows, if you will, the robustness of  
7 efficiency-gap estimates as a function of how  
8 large they were to begin with to different levels  
9 of uniform swing.

10 The second row of Figure 2 repeats that  
11 exercise using the same sign test that I've used  
12 throughout my original report and at various parts  
13 of the rebuttal as well. And, again, just to --  
14 to move this along, the takeaway there is --  
15 direct your attention to the bottom right panel of  
16 Figure 2. There's a series of dots there that  
17 tell us that the proportion of simulated  
18 efficiency gaps that have the same sign as the  
19 actual efficiency gap we saw. It's essentially  
20 100 percent, and only starts to tail away even a  
21 little once you get up to quite massive amounts of  
22 -- of -- of swing in the neighborhood of minus 5  
23 or 5 -- that might dip down to 90, 97 or 98  
24 percent, or something like that.

25 So, again, the takeaway, you begin life with

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1 a high level of the efficiency gap. You -- you  
2 simulate other elections, even some that depart  
3 pretty radically from the one you got under this  
4 uniform swing methodology. You -- you make the  
5 same conclusion about the efficiency gap under --  
6 under that scenario.

7 **Q. And to be clear, all this analysis is just on the**  
8 **2012 elections?**

9 A. 2012 and 2014 --

10 **Q. Okay.**

11 A. -- I believe.

12 **Q. Both of them?**

13 A. Yeah.

14 **Q. And --**

15 A. Yeah.

16 **Q. Okay. And then the correlation?**

17 A. Uh-huh.

18 **Q. Is the correlation number represented in Figure 2**  
19 **equivalent to the difference between the slopes of**  
20 **the lines in Figure 1?**

21 A. You're on absolutely the right track, okay. So if  
22 the data -- okay. So I can -- I can map you from  
23 Figure 1 to Figure 2 now. Observe that anytime  
24 the uniform swing -- okay. Figure 2, anytime the  
25 uniform swing is zero, the correlation is 1.0, and

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1 exactly 1.0. There's no confidence interval  
2 around that. That corresponds to that middle  
3 panel of Figure 1 where we're getting back exactly  
4 the same results. So if I were to -- essentially  
5 the correlation is 1.0 there where the data  
6 coincide and will slowly get -- fall away from 1.0  
7 as we take on larger and larger values of uniform  
8 swing towards the -- the corners of our Figure 1,  
9 yeah. So your intuition was absolutely correct.

10 **Q. And then those lines, the lines on Figure 1 or you**  
11 **graphically represented, a subset of -- maybe I**  
12 **should say like the Figure 1 represents all plans,**  
13 **correct?**

14 A. All elections.

15 **Q. All elections. And then Figure 2 is broken down**  
16 **into different subsets?**

17 A. Exactly, subsetting the data by the magnitude of  
18 the efficiency gap into three -- three classes,  
19 low, medium, and high.

20 **Q. And then the lines on Figure 1 --**

21 A. Are -- are all the data together.

22 **Q. And the line -- does the line correspond to the**  
23 **average of all of the plans or -- I may be**  
24 **phrasing that wrong. So if you could maybe just**  
25 **explain to me the -- what the line is supposed to**

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1 **fit.**

2 A. It's a -- it's a regression line.

3 **Q. And I don't know if you can explain that maybe in**  
4 **like more layman's terms.**

5 A. So there's a line of -- if you will, that's often  
6 a delayed interpretation of regression. There's a  
7 line of best fit to a -- to two variables that  
8 minimizes some of the squared errors.

9 **Q. So there will be plans -- or, I guess, this would**  
10 **be elections on both sides of those lines or both**  
11 **above and below the line?**

12 A. And, indeed, we -- we can observe just as much  
13 from -- from Figure 1 if we were to sort of strain  
14 our eyes and investigate what's going on in any  
15 given panel. But by its nature, that's what  
16 regression will do. It will be trying to balance  
17 out points that will lie above the line with  
18 points that lie below the line --

19 **Q. And --**

20 A. -- approximate -- to a rough approximation.

21 **MR. KEENAN:** Maybe we could take a  
22 short break.

23 **MR. POLAND:** Sure. Absolutely.  
24 (Recess)

25 **MR. KEENAN:** Go back on the record.

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1 **Q. We're back from a short break. I just have a few**  
 2 **more questions here. Then we can send you on your**  
 3 **way --**  
 4 **A. Okay.**  
 5 **Q. -- back home.**  
 6 **We put before you what's been marked as**  
 7 **Exhibit 63. Could you identify Exhibit 63 for us?**  
 8 **A. It's a copy of an invoice from myself back to**  
 9 **plaintiffs' attorneys.**  
 10 **Q. I believe there's -- I put two documents together.**  
 11 **There's a two separate invoices; is that correct?**  
 12 **A. Let me just check the dates on them. You are**  
 13 **correct. There are two invoices here. That's**  
 14 **right, yes.**  
 15 **Q. And the last time you were deposed you produced**  
 16 **some documents to your attorneys who gave them to**  
 17 **me that included some invoices. Do you remember**  
 18 **that?**  
 19 **A. Yes.**  
 20 **Q. And then does Exhibit 63 represent all the**  
 21 **invoices after that time that you've sent to**  
 22 **plaintiffs' counsel?**  
 23 **A. That's correct. Yes.**  
 24 **Q. And have you been paid for the invoices that**  
 25 **you've submitted?**

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1 **A. Yes, I have.**  
 2 **Q. Okay.**  
 3 **MR. KEENAN:** And that's all my  
 4 questions.  
 5 **MR. POLAND:** We don't have any  
 6 questions. So we're all set.  
 7 **MS. GREENWOOD:** Read and sign.  
 8 **MR. POLAND:** Yeah. We'll take a  
 9 look at the transcript and reserve signature.  
 10 (Adjourning at 2:09 p.m.)  
 11  
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1 STATE OF WISCONSIN )  
 2 COUNTY OF DANE ) SS:  
 3 I, LISA L. LAFLER, a Registered Professional  
 4 Reporter, Certified Realtime Reporter, Certified  
 5 Livenote Reporter, and Notary Public in and for  
 6 the State of Wisconsin, do hereby certify that the  
 7 foregoing deposition was taken before me at the  
 8 State of Wisconsin Department of Justice, 17 West  
 9 Main Street, City of Madison, County of Dane, and  
 10 State of Wisconsin, on the 16th day of March,  
 11 2016; that it was taken at the request of the  
 12 Defendants, upon verbal interrogatories; that it  
 13 was taken in shorthand by me, a competent court  
 14 reporter and disinterested person, approved by all  
 15 parties in interest and thereafter converted to  
 16 typewriting using computer-aided transcription;  
 17 that said deposition is a true record of the  
 18 deponent's testimony; that the deposition was  
 19 taken pursuant to Notice; that said SIMON JACKMAN  
 20 before examination was sworn by me to testify to  
 21 the truth, the whole truth, and nothing but the  
 22 truth relative to said cause.  
 23 Dated March 24th, 2016.  
 24  
 25 \_\_\_\_\_  
 Notary Public  
 In and for the State of Wisconsin

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